The Fragility of Fugitive Spaces

By

Malaika S. B. Baxa

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The dissertation is approved by the following members of the Final Oral Committee:

Maxine McKinney de Royston, Associate Professor, Curriculum and Instruction

Carl A. Grant, Professor, Curriculum and Instruction

Priyanka Agarwal, Assistant Professor, Curriculum and Instruction

Anjalé Welton, Professor, Educational Leadership and Policy Analysis

Acknowledgements

For Shirley J. Baxa and Donald E. Baxa. -The Kid

Abstract

This study is a cautionary tale about Black pushout and the fragility of fugitive spaces in the context of an afterschool Science Technology Engineering and Mathematics (STEM) club designed for Black high school students. This historical case study examines this club from its beginning in 2014 until its end in the spring of 2019 and focuses on understanding how Black students were pushed out of the club following a decision to shift the club from an all-Black space to a multiracial space. This study utilizes the theories of Afropessimism and anti-Black racism to examine shifts in the club's racial composition. I analyze participant interviews to understand how the goals of the club shifted in response to changes in the racial composition of the space and how this shift mapped on to the experiences of Black students.

This dissertation examines whether the club functioned as a space of Black educational fugitivity and shelter from racial harm, how racial solidarity may have contributed to this functioning, and how the educators that designed and facilitated the space thought about what they were creating and/or sustaining. I argue that as the club became more multi-racial, a greater number of anti-Black discourses were introduced into the space, disrupting its fugitivity in ways that were harmful to Black students and pushed them out of the space. This dissertation will expand upon current understandings of how fugitive spaces develop, the experiences of Black learners in fugitive spaces, and how fugitive spaces are often the targets of disassembly in ways that become harmful and un-useful for Black students. This dissertation will also offer insights into the challenges faced by educators as they support students in the creation and maintenance of fugitive spaces.

Keywords: fugitive spaces, pushout, Black students, supplemental educational spaces

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Chapter 1: Introduction & Literature Review

Introduction

Schools regularly fail to serve Black children and are often sites of anti-Black violence and suffering (Dumas & Ross, 2016). This paragraph discusses specific incidents of abuse experienced by Black children for the purposes of illuminating the harm which Black children experience in schools. These incidents are disturbing. This paragraph can be skipped if you are familiar with the literature documenting this abuse. Some of the physical abuse Black children have experienced include assaults such as being punched by teachers (Chappell & Díaz de León, 2019), children slammed to the ground, thrown across the room, having their face slammed into file cabinets (Jarvie, 2015), objects like books thrown at children (Morris, 2016). Black children also experience a wide range of psychological abuse in schools.

Some examples include having their locs or braids cut off as a form of punishment (Young, 2014), a 5-year boy being forced to use his hands to unclog fecal matter in toilets as punishment for clogging the toilet (Burke, 2021), the handcuffing and arrest of school aged children including toddlers (Morris, 2016), students being portrayed as monkeys by teachers (Jurado, 2020b) and required to portray slaves in classroom activities (Jurado, 2020a). More veiled forms of psychological abuse include Black students being told they cannot achieve their goals of attending prestigious colleges, being stereotyped as; uninterested in learning, dishonest, criminal and generally a problem (Caton, 2012), the hyper-control/vigilance of Black children's bodies (Wun, 2016) and Black children being disproportionately singled out for punishment in comparison to children of other races (Leverett, D'Costa & Baxa, 2022).

Outside of these more direct forms of violence Black students' opportunities to learn are also restricted by inequality in educational policy and practice. Ladson-Billings (2006) has

termed the educational inequality that Black students experience, The Educational Debt. This Educational Debt can be defined as inequity in financial, social, and cultural educational resources and opportunities for African American students which create a barrier to African American students accessing high quality education**.**

Some examples of the educational inequalities Black students experience include but are not limited to; being tracking into lower level classes (Darling-Hammond, 2010), AP classes not being offered at predominantly Black schools (Darling-Hammond, 2010), disproportionate punishment (Gregory, Skiba &Noguera, 2010) removal through disproportionate levels of suspension and expulsion (Meiners, 2010)(Morris, 2016) under-funding and under-resourcing of schools serving predominantly Black populations (Darling-Hammond, 2010), less experienced and credentialed teachers in schools and classrooms serving predominantly Black populations (Condron & Roscigno, 2003; Darling-Hammond, 2010), being over diagnosed as having learning differences and removed from rigorous academic classes (Erevelles, 2014), being under-diagnosed as having learning differences and experiencing greater discipline as a result (McWilliams, Mark & Fancher, 2010), lowered teacher expectations and culturally irrelevant teaching (Ladson-Billing, 2009), learning materials void of Black history and Black perspectives (Darling-Hammond, 2010), various forms of interpersonal racism such as dysconscious racism (King, 1991) and microaggressions.

While the examples of harm and educational inequality discussed above illuminate Black students' schooling experiences as a group, these experiences cannot be separated from Black students identities of; gender, LGBQ+ identity, ethnicity, nationality, skin tone, learning and physical differences, experiences of trauma and income level, in addition to other identities not listed here (Agyepong, 2019; Erevelles, 2014; Gregory, Skiba & Noguera, 2010; Hannon,

DeFina, & Bruch, 2013; McWilliams, Mark & Fancher, 2010; Morris 2015; Winn, 2011). The amount of educational violence that Black students experience and the forms that violence takes are often shaped by Black students' intersectional identities. A recognition of this is essential in any analysis of Black students' learning experiences.

Black students' experiences of educational violence in the American school system leave them stuck between a proverbial rock and a hard place. Forced to choose between the harmful and sometimes traumatizing experiences of schools and the deadly and debilitating reality of navigating the Anti-Black carceral United States of America with low formal educational attainment (French, Goodman & Carlson, 2020). Black children who refuse school-based harm by opting out of schools and those pushed out through expulsion, abuse or discriminatory practices resulting in low educational attainment are at greater risk for early morbidity, increased aging (Walsemann, Geronimus & Gee, 2008) and entering the prison industrial complex (Meiners, 2010) in comparison to peers of other races. Low educational attainment has greater negative consequences in the areas of physical health, income earning capacity, social relationships and life expectancy rates for African Americans than for other racial groups in the United States with the exception of Indigenous people (Walsemann, Geronimus & Gee, 2008).

Despite the extensive documentation of school-based abuse and educational inequalities experienced by Black children (Gregory, Skiba & Noguera, 2010; Morris, 2016; Wun, 2016), Black children, Black families and Black communities are often blamed when Black children receive lower grades than peers of other races or are pushed-out of schools (Carter and Reardon, 2014; Morris, 2016). Popular media and Educational Research discourse often frame race-based disparities in test scores or graduation caused by the educational debt as "natural" and overly focus on inequality of outcomes or specific policies and interventions, and neglect to examine

the roles of elite, private institutions and corporations in shaping policies and social or historical reproduction processes that create and maintain inequality (Carter and Reardon, 2014).

Within the realm of STEM education, mathematics and science based supplementary educational programs serving Black middle school and Black high school students, this leads to curriculum interventions focused on increasing students interest in higher education and academic achievement rather than helping students access quality educational learning spaces, despite findings that Black students often hold high career aspirations regardless of their current level of school engagement (Carter, 2005). A deficit-based focus on motivation and grit has persisted in research focusing on Black children despite Black families and Black communities placing a high value on formal education (Anderson, 1988) and Black students being highly motivated to succeed in school (Bacon, 2015). This deficit thinking around Black children and communities persists despite the African American history of community built and sustained Black educational institutions (Anderson, 1988), highly valued pedagogies of Black teachers and school leaders (Siddle-Walker, 1996), secret night schools (Givens, 2021) and the Kemetic history of ancient mathematic philosophy and knowledge predating and informing Greek and Roman mathematic philosophy (Bangura, 2011).

Deficit narratives portray African Americans as uninterested in education despite histories which show that Black American communities place a high value on education and have consistently placed themselves at great personal risk to obtain education and create educational institutions (Anderson, 1988; Givens, 2021; Siddle-Walker, 1996). Black educational institutions created by Black communities have been extremely successful in providing Black students with holistic and enriching educational experiences (Anderson, 1988; McKinney de Royston, 2011; Moses & Cobb, 2002; Payne & Strickland, 2008; Siddle-Walker,

1996). Due to Anti-Black violence and intimidation aimed at destabilizing and draining the wealth from Black communities, there are not enough community-run schools to serve every Black child residing in the United States (Baldridge, Beck, Medina, & Reeves, 2017) resulting in most Black children attending the Anti-Black American school system. However, just as Black educational projects in the United States have been fugitive from their inception and are by definition of being Black, fugitive in nature (Givens, 2021), Black children and Black educators within American schools have resisted Anti-Black violence by creating spaces of fugitivity which function as shelters from Anti-Black harm and spaces of Black joy (ross, 2021; Givens, 2021).

This dissertation examines the creation of an all-Black STEM club by a Black educator and a group of Black high school students. In this historical case study, I examine Black students' experiences of the after-school club as it shifted from serving only Black students interested in STEM to serving Black students and students of other races. It will address the following research questions:

1) How did educators and students' goals for the space shape the experiences of Black students? Did these goals shift as the space became multi-racial?

2) What did Black students value about the club? Were these aspects influenced by shifts in the racial composition and structure of the club over time?

This study is grounded in theories of Afro-pessimism and theorizing around anti-Black racism and aims to broaden our understanding of how Black-serving supplementary educational spaces that support Black students in American schools are often disassembled. It may also illuminate the challenges youth, youth workers, and educators face in sustaining educational programs that serve the needs and desires of Black students in the context of all Black educational spaces and integrating educational spaces and may provide suggestions toward addressing those challenges.

Literature Review

Black students' cultural navigation of schools. In Keepin' it Real (2005) Carter provides a potentially useful tool to examine how variations in the different cultural approaches students take in navigating the school system may have shaped Black students' experiences in schools. The classification put forth by Carter in Carter's study of how Black and Latino Yonkers youth navigate the mismatch between their home and peer group cultures and the white middle class culture of schools. Carter identifies students as falling into three categories as it pertained to their educational aspiration and engagement with schools: 1) Noncompliant believers were characterized by high educational aspirations but little school engagement as a result of a lack knowledge pertaining to dominant cultural norms (the white middle class culture of schools) and/or a refusal to acculturate into dominant cultural norms instead continuing to embody their own ethnic and cultural practices within schools. These cultural practices and markers were unwelcomed by teachers who perceived these students as anti-intellectual or academically uninterested despite this groups' high level of academic aspiration leading to disengagement through non-attendance and poor academic performance; 2) Cultural mainstreamers who comply with the cultural mandates of school and view white middle class dominant cultural practices as normative and the property of all people. For these students, the cultural mandates of schools do not create a barrier to their accessing of curriculum but their adherence to them puts them at risk of rejection by peers of their ethnic group; 3) Cultural straddlers—those students who utilize multiple cultural tool kits which allow them to navigate schools while holding onto their own cultural expressions and form connection and respect among peers of their ethnic group while also obtaining their desired educational outcomes. These

students achieve this through co-creating meaning with their co-ethnic peers and while critical of schools' cultural exclusivity they embrace dominant cultural codes and resources.

These categories provide insight into the experiences that Black students, such as those interviewed in this dissertation, have in schools as well as how Black students create and cultivate racial solidarity. For example, while noncompliant believers and cultural straddlers may have put a great deal of importance on the freedom that the after-school space provided to learn about mathematics and science while also expressing their own cultural norms this might have been a much less valued aspect for cultural mainstreamers. Likewise, as the racial demographics in the group shifted, students such as the noncompliant believers and the cultural straddlers may have been deterred from the space of the after-school club as the student demographics began to shift and cultural norms shifted with it. However, cultural mainstreamers in this club may not have been affected by these shifts.

Educational inequalities in STEM. Within the educational inequalities that Black students experience and the ways they are forced to engage in navigating the racial and cultural aspects of schools, the greatest disparities and most challenging issues affecting them often occur in mathematics and science learning spaces. Anti-Black conceptualizations of Black students often hinder teachers, administrators and policy makers from viewing Black students as mathematics and science learners (Martin, 2019). Platonic ideologies have shaped western thought around mathematics elevating mathematics to the domain of the intellectually elite (Stinson, 2004). When Platonic ideologies intersect with Anti-Black ideologies which position Black people as intellectually inferior, Black children are excluded as legitimate mathematical learners and achievers in the minds of policy makers, administrators and teachers (Stinson,

2004). Black students also experience this exclusion in science subject areas, as these are also elevated due to their reliance upon mathematics.

This thinking leads to less access to rigorous science and mathematics learning for Black children. Analysis of the 2015-2016 public high school data by the U.S. Department of Education's Office of Civil Rights shows race-based disparities for Black children in access to higher level mathematics and science classes (Sawchuk, 2018). Black students represented 16% of total high school enrollment and were underrepresented in physics and calculus representing 12% of physics enrollment, and 8% of calculus enrollment (Sawchuk, 2018). While White students were adequately or overrepresented in these classes, comprising 51% of total school enrollment, 51% of calculus enrollment and 58% of physics enrollment (Sawchuk, 2018). Black students have less access to higher level mathematics and science courses. Majority Black and Latino serving High Schools are less likely to offer higher level mathematics and sciences courses than majority White or Asian schools, or multi-racial schools. During the 2015-2016 school year though calculus was offered at half of the high schools in the United States, it was offered at only 38% of schools serving majority (defined here as over 75%) Black and Latino student populations.

When Black students attend schools which do offer AP and higher-level mathematics and science courses, they are less likely than their White and Asian peers to be tracked into AP or higher level mathematics and science courses (Chatterji, Campbell & Quirk, 2021). White and Asian students are disproportionately enrolled in Algebra I in 8th grade, with the majority of these students passing this class in the 8th grade while Black students are overrepresented in Algebra I in 11th and 12th grade, giving Black students little time to complete the higher level mathematics and science courses of calculus and physics making it improbable that Black

students will take higher level mathematics and science courses in high school (Sawchuk, 2018). Black children are less likely than their White and Asian peers to be steered into trajectories that include higher level mathematics and science courses.

A lack of access to higher level mathematics and science courses creates a barrier for Black high school students seeking to pursue Science Technology Engineering and Mathematics (STEM) courses of undergraduate study since AP and higher-level mathematics and sciences courses are favored and often required for admittance into these programs. If students are admitted into undergraduate STEM courses having not taken AP or higher-level mathematics and science courses in high school, they often must take these courses while in college. Adding length, expense and difficulty to their degree programs, decreasing their likelihood of degree attainment.

Inequality is also present in Black students' experiences of mathematics and science classrooms where Black students are subject to gratuitous violence. In the fall of 2015 a Black female South Carolina student, Shakara, was assaulted by school police officer, Ben Fields, while attending her math class. The assault occurred after Shakara was asked to leave the classroom after having her phone out during class. Though Shakara put her phone away when asked by the teacher, she was still asked to leave the classroom. When Sharaka decided to stand in her constitutional right to receive an education, by refusing to leave the classroom officer Fields wrapped his arm around Shakara’s neck, pulled her out of the desk, flipped her onto the ground on her head and threw her across the room (cbsnews.com, 2016). The assault was recorded by a classmate, shared with the media, and widely broadcast on national news programs. Shakara obtained neck and back injuries, rug burn on her face, and a cast on her arm as a result (cbsnews.com, 2016). I could not locate any comments from Shakara about the impact

of this assault on her life. A classmate, Tony Robinson Jr., was interviewed by a news program and described the terror he and his classmates felt during the assault sharing they were "scared for [their] lives" and that he now feels unsafe at school (Jarvie, 2015). Officer Ben Fields was fired from the police department but faced no charges for his assault of Shakara (Associated Press, 2016). Shakara and a classmate who attempted to stand up for Shakara, Niya Kenny, both faced misdemeanor charges of disturbing schools (Love, 2015).

As with other school-based violence toward Black children, this assault must be understood through a lens that reckons with the suffering that Black children experience during the violence (Dumas, 2018) but also recognizes how systemic racism shapes the context and student experience of this violence (Winn, 2011)(Dumas, 2018)(Wun, 2016). In Winn's (2020) humanizing reimagining of this incident the teacher inquires about why Shakara is not putting her phone away quickly when asked to, and learns a close family member of Shakara's has been threatened and Shakara is checking her phone for updates on their safety. While Sharakara's experience is the result of officer Fields subscribing to anti-Black ideologies which view Black bodies as the deserving recipients of gratuitous violence (Introduction, 2017), Shakara's experience is also the result of systemic racism which produced the unsafe conditions of the neighborhood that Shakara and her family lived in, resulting in her having her phone out in class so she could check on the safety of a family member whose life had been threatened (Winn, 2020). The intersection of systemic and interpersonal racism often combines to create more frequent experiences of punishment for Black girls in comparison to their peers of other races (Wun, 2016; Winn, 2011). White students rarely experience the burden of having their learning experiences disrupted by concerns for the safety of loved ones.

While the above scholars have taken a humanizing experience-based perspective on Black children's school-based learning, most of the research examining Black children and math and science learning disregards Black children's experiences of harm and inequality. Blaming Black children, Black families and Black communities for the Educational Debt (Ladson-Billings, 2006) and subsequent disparities in outcomes, framing these disparities as natural rather than the result of addressable inequalities (Walker, 2006) (Carter & Reardon, 2014). Scholars working in multicultural education (Grant, 2011) and culturally relevant teaching (Ladson-Billings, 2009) have disputed Anti-Black narratives in educational research by theorizing and researching curricular practices that serve Black students by creating supportive communities of learners and grounding curriculum in lives and experiences of Black learners.

The stark differences between African American cultural views of educational and anti-Black discourses are critical in understanding the experiences of Black learners in educational spaces as the ideologies which educators and program creators hold about learning, the uses of education, the needs of students and general views about the student population can be fundamental in shaping students' experiences in educational settings (Baldridge, 2019). In this dissertation, I acknowledge that the all-Black after school club space existed within a politicized and racial context and that the Black racial solidarity developed within the after school space was built upon how the students and/or the educators intentionally disrupted or reiterated anti-Black sentiments (McKinney de Royston & Vakil, 2018).

While I found that anti-Blackness increased as the space under study went from predominantly Black to multicultural, it is important to remember that all young people living in the United States are exposed to anti-Black ideologies regardless of race and have the ability to reproduce Anti-Black sentiments (Kendi, 2017). Intersectional identities of Black students

within the group increased the risk of racial harm between Black students despite a shared Black racial identity (Agyepong, 2019). Black people can internalize anti-Black discourses about themselves and anti-Black stereotypes can be connected to intersectional identities and experiences allowing Black students and Black educators to invest in anti-Black discourses they view as not pertaining to themselves including identities of gender and sexual orientation (Winn, 2011; Morris, 2016), class (Carter, 2005) ethnicity (Apengyengo, 2019) bi-racial identities (Sexton, 2008), and skin tone (Hannon, DeFina, & Bruch, 2013).

Chapter 2: Theoretical Framework & Methodology

Theoretical Framework

The reality of anti-Blackness means that educators must be intentional in centering the humanity and safety of Black children in educational spaces by attending to racial solidarity and politized trust (Vakil & McKinney de Royston, 2019). Anti-Black racist ideas have been defined as "as any idea suggesting that Black people, or any group of Black people, are inferior in any way to any other racial group (Kendi, 2016, p. 5)." This dissertation research will be grounded in several assumptions related to Anti-Blackness: 1) Anti-Black ideas are not the result of hate and ignorance but were created to further individuals' or groups' self-interests (Kendi, 2016); 2) Anybody can believe in, produce or consume both racist and antiracist ideas (Kendi, 2016); 3) Anti-Black narratives are continually evolving to in response to anti-racist ideas and are often implicit, or hidden in seemingly racially neutral or liberal rhetorics (Kendi, 2016).

Anti-Black racism has been utilized to extract free labor from enslaved people and low cost labor from un-enslaved people, and continues to be used to derive freed labor from Black bodies and to break cross-racial labor and political alliances that would result in a more even distribution of wealth across the U.S. population (Alexander, 2012; Davis, 2011; Kendi,

2016). The economic function of anti-Black thought means anti-Black discourses are continually shifting and changing into less easily recognizable forms which may not appear racist but are anti-Black (Kendi, 2016) such as assimilationists narratives (Kendi, 2016), whose narratives appear less racist than segregationists but still adhere to the definition of anti-Blackness in presuming inherit wrongness in the actions of Black people (Kendi, 2016). This assumption allows for the identification and analysis of educators and students actions or words which fit within the definition of anti-Black racism but which might be otherwise overlooked because of the presumed good intentions of educators or students.

Afropessimism. Afro-pessimism understands the treatment of Black people in the United States and elsewhere as the result of antagonist relationships between conceptualizations of the racial categories of Black and White (Dumas, 2016) tying Blackness inextricably to slaveness 'marking the ontological relationship between Blackness and humanity as an antagonism (Ross, 2021)'. Tenants of Afropessimism include: 1). understanding the slave as property, i.e. a object, within U.S. chattel slavery and thus precluded from humanness valuation of life, and socially dead. This social death includes: being the subject of gratuitous violence, natally alienated (familial structures not recognized and intentionally broken apart) and generally dishonored and 2). While the "nonevent of emancipation" following the end of the civil war disavowed the legal category of slave, Black people continued to be the necessary recipients of gratuitous violence and social death, even if tools of domination were reformulated and unrecognized (slave catchers to police, chattel slavery to white supremacy (Hartman, Wildersen, Hortenese & Sexton, 2017).

Fugitive Educational Spaces. Givens (2021) articulates Black Education as a fugitive project from its inception. The history of Black education and Black teachers in the United States began with the first introduction of enslaved Black people to the United States colonies. On

plantations enslaved Black communities created night schools, where mostly enslaved Black educators taught other enslaved people to read and write despite the threat of severe physical and psychological punishment (Givens, 2021). Even in non-slave holding states Black education was suppressed through social practice or illegal activity such as the arson of schools serving Black children (Givens, 2021).

Givens points out that this history provides the basis for understanding fugitivity and Black education as inextricably linked, as a literate slave was by definition a fugitive slave. From this Givens has defined fugitivity as "a social and rhetorical frame by which we might interpret Black Americans' pursuit to enact humanizing and affirming practices of teaching and learning (Givens, 2021). Givens has utilized fugitivity as an "analytic," viewing fugitivity as indexing "a broader repertoire of secret acts and subterfuge in Black life and culture." The acts referred to by Givens (2021) are those which affirm Black humanity and Black intelligence in the face of governments and institutional agents who sought to negate these truths for the purposes of obtaining and retaining access to Black bodies for profit.

Givens' conception of the Black education and fugitivity as inextricably linked suggests that despite the non-event of emancipation, spaces of Black educational fugitivity still exist and exist in a state of contestation with the carceral state and American school system. Three aspects of fugitivity which may be key to this examination are the marginal and fragile nature of fugitive spaces, how fugitive spaces can function as shelter from racial harm, how fugitive spaces encourage a love of, and celebration of Black culture, Black achievement and Black people (ross, 2019; Givens, 2021).

One way Black educators and students enact educational fugitivity and resist anti-Black racial socialization processes within schools is through the creation of "Black space in the

margin" in which children are sheltered from racial harm created through "the afterlife of school segregation" (Ross, 2019). While it may be unrealistic to think that schools benefiting from the current capitalist structure would support education toward greater economic and political empowerment for Black people, scholars such as Ross (2019) have suggested that small spaces of Black fugitivity could be carved out within these institutions.

Lastly fugitive spaces are often fragile and impermanent. Spaces of fugitivity can easily go from being spaces relatively free from Anti-Blackness, to spaces which feel unsafe for Black youth and Black educators, or be downsized or dissolved completely (Baldridge, 2019)(Mirra, Garcia, & Morrell, 2015). For this reason, it is important to understand fugitivity "...not as a theory of resolution but a descriptor of core conflict in Black educational life and a particular posturing, or mode of being (Givens, 2020, p. 27-28)." As Givens contends, no practice of escape has been permanent for Black people. "This is a reality of relations of power, despite infinite acts of subversion Black people engaged in over generations (Givens, 2020, p. 28)." While this fact is sobering, it also does not negate the power and importance of fugitive spaces, fugitive acts and fugitive pedagogy for Black communities and learners.

As fugitive spaces have historically been all or predominately Black, one of the ways we can understand the experiences of students within fugitive spaces versus non-fugitive spaces is through the beliefs that Black educators hold about Black children, Black families and Black Children's ability to learn. Below is a chart outlining influential differences between common views held by Black educators about children, and popular anti-Black discourses which are more likely to be adhered to by non-Black and non-anti-racist educators.

Table 1. Black cultural views of Black learners vs mainstream anti-Black narratives

Cultural view or socialization	African American cultural view	Popular anti-Black educational discourses
General characterization of Black youth	• precious, Intelligent, well intentioned and creative (Emdin, 2010), optimistic, driven	• invaluable, intellectually inferior, criminal
Black students & parents' investment in learning	• invested in learning	• uninterested in children's learning
Importance of Black history as it pertains to STEM learning	• value placed on knowing Black history, Black mathematicians & scientists	• erasure of Black mathematicians' & scientists from history of STEM subjects
Understanding of the causes of Educational Debt	• education often made inaccessible through Anti-Blackness • Black students benefit from programs that increase access to educational institutions through culturally relevant teaching, humane treatment and respect (Baldridge, 2019)	• Black children in need of saving from morally and culturally deprived communities
General beliefs about education	• holistic approach to education, physical and spiritual aspects important for student well-being • achievement and learning communal endeavor, achievement of peers as important as individual achievement • Knowledge which serves community and family is of greatest value	• learning individual pursuit • Knowledge need not be useful to other to be of value • competition and comparison in learning valued
Beliefs about necessity of learning about racism	• Black students need racial awareness and tools to navigate anti-Black racism (Boykin & Ellison, 1995)	• anti-Black racism exists mainly in the distance past • narrow definition of Anti-Black racism and denial of Anti-Black racism • blames Black children for experiences of racism
Beliefs about student-	• teacher-student relationships of mutual respect and demonstrated care	• teacher-student relationship of little consequence,

teacher relationships	are a necessary aspect for learning (Siddle-Walker, 1996; McKinney De Royston, Madkins, Givens & Nasir, 2020; McKinney De Royston, 2011)	authority of teacher granted through title (Delpit, 2006) not relationship

Methods

In this case study I examined Black students' experiences in one after school club which shifted from serving exclusively Black high school students interested in STEM to serving any high school student interested in STEM. I used semi-structured student interviews and semi-structured facilitator/ teacher interviews to address the following research questions:

1) What did Black students value about the club? Were these aspects influenced by shifts in the racial composition and structure of the club?
2) How did the goals of the club shape the experiences of Black students? Did these goals shift as the space became multi-racial?

Case Study

In qualitative research case studies researchers are primarily interested in the ways that people understand and make meaning from their lives in specific contexts (Dyson & Genishi, 2005). Learning is understood as complex social happenings, and case study as a tool to understand these processes (Dyson & Genishi, 2005). A beautiful example includes Siddle-Walker's (1996) utilization of interviews and historical documents to present a picture of a supportive and effective community-parent-school network working in cooperation toward the goal of helping Black children reach their greatest potential in Piedmont, North Carolina. Though Siddle-Walker was no longer able to observe the teaching practices of Black area educators working in the historical segregated south nor the social dynamics of this segregated community-parent-school network, Siddle-Walker examined the meaning making of participants

memories of their experiences to identify the characteristics of the network and assess participants valuing of the network. Siddle-Walker describes the methodology used for this study as a historical ethnography.

Her inquiry can also be viewed as a historical case study as the focus of the inquiry is how participants made meaning of their experiences in the specific context of the Caswell County Training School. Like Siddle-Walker, my aim is similarly to understand the meaning making of the participants in this study relative to the specific context of the after-school STEM club. Namely, the analysis in this dissertation is solely based off the remembered experiences and meaning making of students, facilitators and one teacher interview. This historical case study aims to examine perspectives and experiences of the educators and the students in the STEM after-school club as a way to theorize about how Black push out in learning spaces occurs even within those designed to operate as fugitive spaces for Black students.

Context

This study is located in a medium-sized midwestern city with a history of racial disparities in education, incarceration, housing, health, and other social indicators. For example, within the county where the study occurred, 26.5% of the non-Hispanic Black student population experienced suspension in comparison to only 2.7% of their White peers (2010-2011 data, 5 years before the beginning of the club). Though Black non-Hispanic students made up only 11.3% of the enrollment in the county at that time, they accounted for 48.9% of the students who experienced suspension. Racial disparities in graduation rates were also prevalent at the state level at that time and continue to persist. During the 2010-2011 school year 36.2% of non-Hispanic Black students did not graduate within four years with a regular diploma, compared to only 8.6% of their White counterparts.

Background of the STEM Club. The club began as Black Students Achieving in Science (BSAS) in the fall of 2014 and existed for 5 years. The club has begun in partnership by two individuals. The club was created by a female Afro-Latina AmeriCorps volunteer as part of an AmeriCorps service requirement that she continue or pilot an after-school program. She noticed the school lacked extra-curricular programming for Black students who were excelling academically and sought to address this void. The club was also begun by a white male advanced sciences high school teacher who had recently learned of the Society of Hispanic Professional Engineers, an intra-racial engineering mentorship organization. The teacher had noticed a pattern of Black male students leaving his advanced science classes, and desired to see if a Black, male intra-racial learning space at the high school could support his Black male students through his advanced science classes. Later the club name changed to Multicultural Students Achieving in Science (MSAS).

The High School. The racial demographics of the high school that the club took place at were reported on the school website as 21% African American, 5% Asian, 25% Latinx, 11% multiracial and 37% White, with a total enrollment of about 1,600 students. Of these students, 58% were reported as coming from low income families, and 19% of students were identified as having a learning difference. On the school's website, the school is described as having an "Equity Vision" and a holistic approach to education which includes, "growth mindset, self-knowledge, creativity, wellness, interpersonal skills, confidence, cultural competence, and community connection."

Club Creators & Facilitators. Three main adults were involved in the creation and sustaining of the club. First, there was an AmeriCorps volunteer who co-created the club and facilitated the club for one year. Second, an advanced science teacher co-created the club with

the AmeriCorps volunteer and served as the primary advisor of the club for the duration of the club's existence. Finally, I was the third and final educator to lead the club. I, a graduate student and a native of the same city, began working with and facilitating the club during the second year of the club until the club ended. While the first two educators overlapped, I only worked with the second educators (the white male science teacher) and did not meet the AmeriCorps volunteer until I initiated this study.

Club demographics. During the first year of the club it began as a space for only for Black male students interested in STEM fields but was broadened quickly to include Black female students interested in STEM. During the second year of the club, other racial minority students interested in STEM began to be let into the club and eventually the club was eventually opened to any student attending the high school with an interest in STEM. Students within the after-school club came from all grade levels and came from both general and advanced science tracks. The club took place on Mondays and the number of students participating in the club on any given Monday fluctuated greatly from week to week; from 0 to 10 but most weeks between 4-7 students attended. The group was begun intentionally as an all-Black space for Black STEM learners, with participation limited to students identifying as Black. Sometime after the end of the first year and the beginning of the second year the decision was made to open the space to students of other races. During the first year of club student membership of the club was all Black. During the second, third and fourth year the group the club included mainly Black and Asian students with a smaller number of Brown students. During the fifth year of group the club was being attended by White students and Black students.

Club meetings. The club met once a week after school on days when school ended early for teacher professional development. Most club meetings were one hour long. During these

meetings students, discussed science topics, engaged in peer mentoring, conducted a hands- on science activity or some combination of these activities. Meetings took place in the classroom of the science teacher but shifted to different areas of the building when needed for activities. For example, a cooking session took place within the family and consumer sciences room, and a session that included gardening took place in the courtyard area where the student gardening club met. Students engaged with guest speakers around 2-4 times a semester and took field-trips to science-based sites 1-2 times a semester. This included trips to various laboratories on the campus of a nearby, large, R-1 university. Field trips usually lasted an hour and half with travel. These field trips began during the 2nd year of the club and often included a great deal of hands-on learning, an aspect students requested.

Table 2. MSAS Fieldtrips

Fieldtrip Locations at R1-University	**Activity/Activities**
Department of Geo-Science	Presentation by current graduate students and professors about yearly research trip to antarctica, included high-tech 3-dimensional globe map, trying on antarctica data collecting gear and visiting weather radar devices on roof of building .
Medical school	Presentation by current medical students and administrators about medical school, included viewing medical dummies, playing on game consoles used to enhance dexterity for surgeons
Astronomy Department	Tour of department by current astronomy graduate student, included discussion of high powered telescope (though they were not allowed to touch the telescope, they were able to view it) and hands on science activity lead by astronomy graduate student
Dairy Science Department	Presentation and tour of department by current graduate students and professor of department which included dairy science equipment, participating in ice cream making, eating ice cream
Computer Engineering Department	Demonstration by graduate student on current research which included computerized reactive prosthetic foot, students measuring their balance on research equipment designed to measure balance and weight distribution between feet

Club Ending. The club's name changed after its first year and became Multi-Cultural Students Achieving in STEM (MSAS) in the fall of 2019. During the last two years of the club, the educators and students involved had engaged in various activities to raise awareness of the groups existence and to recruit new members. This included handing out fliers, an announcement about the club over the school PA system on club days and current members inviting their friends to join the group. These measures often did not result in new membership. Over the last year of the club and the summer of 2019 the teacher advisor and myself meet to discuss how the club might move forward or evolve into a sustainable program. Among these ideas was the possibility of a new iteration of the club being run by a university affiliated STEM based diversity program, department or society. We had found some interest among different programs at the University and elsewhere, but nothing solidified. In the spring of 2020, the covid pandemic began and the attempts to revive the club ended.

Study Participants

This study consists of three adult interviews. This includes myself and the two other educators—the AmeriCorps volunteer and the science teacher. It also consists of nine interviews with former students/club alumni.

Teachers. ***AmeriCorps Creator/Facilitator/Planner.*** The club was co-created and facilitated during its first year by a Black Latina woman in her early 20s who will be referred to by the pseudonym of Verónica. Verónica worked at the high school for one year through the school district's recreational department as an AmeriCorps volunteer. Her largest role at the school was supporting students who were reading between 3-5 grade levels behind to increase their reading skills. Part of her work was also to help students who had been diagnosed with oppositional defiant disorder feel safer in class by sitting next to them in class. Verónica was also

in charge of after school snacks. Verónica said her position was created for the purpose of increasing student, parent and community engagement with the school. Creating the club was the fulfillment of an AmeriCorps requirement that she began or help sustain an educational space that took place outside of the classroom. Because Verónica only facilitated the club for one year and there was great turn around in student attendance between the first and second year, there is less data about students' perceptions of Verónica. The data I do have characterizes her as friendly and informative.

Teacher Creator/ Advisor. The club was co-created and advised by a White male science teacher who worked at the high school and who will be referred to by the pseudonym of Paul. This teacher taught advanced science courses at the high school during the duration of the club, and also taught science classes at a local community college during the last couple years of the club. At the time of the club Paul had been teaching around 15 years and was inspired to co-create the club because he wanted to do something to support the Black male students in his advanced science classes who he noticed struggled to complete the course. Paul laid the groundwork for the creation of the club by brainstorming with parents and students about the club and acting as an advisor and advocate for the club with school administration. Paul took part in planning the club at times and would visit the club when he was able. The time that the club took place coincided with the school's professional development for teachers so though he would have liked to have been more present in the club he was unable to be. Paul also helped to organize and plan different trips, speakers and activities at times. Student interviews characterize Paul as a humanizing, asset-based educator who positively impacted students and was sometimes hugely influential to their success in college.

Facilitator/ planner Researcher. The club was facilitated and co-planned by myself the second year—after Verónica finished her year of service with the AmeriCorps—and I continued to facilitate the club until it ended during the beginning of what would have been its 7th year. I am a Black Bi-racial community-based educator and researcher. At the time of my participation in the club I was in my early 30's. I acted as a club facilitator and co-planner of the club with the teacher during the second year of the club, during the third year we created student leadership positions and the club was co-lead and co-planned by myself, the teacher and student-leaders. I have been characterized by some female students as someone they looked up to and generally by students as friendly and open to receiving input.

Students. This study also consists of nine student interviews. Four of the students interviewed attended the club consistently throughout their high school career, or the years that the club was in existence. Two of the students attended the club regularly for a year or two but decided to stop attending. Two of the students interviewed attended the club only a couple times. And one interviewed had no recollection of attending the club but was recommended to be interviewed by another student who felt the student had attended. All interviewed students self-identified as Black. Four interviewees identified as male. And Five interviewees identified as female. No students identified as non-binary. Three students identified as queer. Six students identified as having one or more parent born in a West African country. Five students identified as having one or more African American parent. Students' identified their Black parents as either African American or born in an African country. Three students identified as bi-racial. All bi-racial students identified as having one Black parent and one White parent. Two students reported having one or more parent working in a STEM. And two parents reported having one parent working as a nurse. All names have been changed to pseudonyms.

Dayo. Dayo identifies as female. Both her parents are from the same West African ethnic group. In high school her father worked as a delivery truck driver and her mother worked as a nurse. In high school Dayo was shy and friendly. She attended the club her sophomore through junior years. She was a consistent member and acted as a student leader her junior year. We formed a mentorship relationship and I had the opportunity to meet her mom.

Megan. Megan identifies as a bi-racial African American and White female student. Her mother is European and her father is African American. Her mother worked as a scientist at chemical company while she was in high school and her father worked as a technical writer. Megan is a thoughtful leader. She enjoyed mentoring younger students in the club and was extremely helpful in planning the club. She attended the club for her entire student career and gained leadership experience in the space.

Chi. Chi identifies as female. Her parent are both West African. Her father worked for an industrial manufacturer while she was in high school and her mother worked as an registered nurse. Chi is an excellent communicator and very sociable. She spent a significant amount of time mentoring students during her senior year and created these opportunities herself. Chi attended the club regularly for two years. Chi valued and enjoyed much of her experience in the club but also experienced harm in the space. She experienced anti-Black racism as feelings of intimidation and scientism was reinforced for her.

Amir. Amir identifies as male. His mother is African American and his father is West African. While in high school his father worked for a West African government and his mother worked in insurance marketing. In high school Amir was both very academically intelligent and good with people and attended the club from when the club started during his sophomore year through his senior year. He was an active member and took on a leadership role in the club. Amir

is the only male "cultural navigator" (i.e. a student possessing and using multiple cultural skill sets to be academically and socially successful among Black students in school) who participated in the club long term. The club was a relaxing safe space for him and kept him on the high school campus for the hour between school ending early on professional development days and sports practice starting.

Byron. Byron identifies as a Black bi-racial male. He has one African American parent and one white parent. Byron's mother owned a daycare while he was in high school. Byron attended the club only once or twice and it was during the club's second year. Byron has a strong sense of the kind of life he wants and understood in high school that a STEM major in college would not be a fit for him. His interview provided information around students' decision making when choosing not to attend the club.

Zola. Zola identified as female. Both her parents are from the same sub-Saharan African country. And they both worked in business. One parent in the private sector and one in the public sector. Zola was a very academically driven and focused high school who seemed very secure in herself. Zola attended the club one year while she was taking a course with the teacher creator and primarily utilized the club as a support for that class.

Naila. Naila identifies as female. She has one African American parent and one West African parent. In high school one of her parents was a technical writer for technology company and the other was a software engineer. Naila is artistic and optimistic. She often sees things positively or objectively. Naila attended the club regularly from her sophomore through her senior year. She is one of several students interviewed who enjoyed the math and science based learning and exploration that happened in the club, but enjoyed her high school and college level

mathematics and science classes less due to their structure of book based learning and focus on testing. She found it harder to learn in these spaces.

Tafor. Tafor identifies as an African American male. His mother is from North Africa. Tafor did not recall actually ever attending the club but was referred for the study by close friends who thought maybe he had. Tafor is a very focused and goal oriented individual. His interview provided me with information about the kinds of educational programing that would have been appealing and beneficial to him sepcifically as a Black male high school student who would go on to major in STEM in college and work in the STEM field.

Khabrem. Khabrem identifies as male. He has one white parent and one Black parent. He attended the club during his junior and senior year but only attended two or three sessions. Khabrem is a warm person and passionate about social justice issues. His interview data showed an interesting contradiction which represented a small trend. Though he reported really valuing his brief experiences in the club and thought it was very important that all Black spaces for high school students interested in STEM fields exist, he rarely attended the club.

Data Collection

I choose to use semi-structured interviews for the purposes of obtaining data that reveals Black students' perspectives and focuses on what these students deem as relevant by allowing responses to dictate the direction of the conversation (Alan, 2006, p. 437). Interview questions focused on participants understandings of the goals of the space over the course of the club, and what students valued about the club. For example, the student interview question: "How did the goals of the club change when the club became multi-racial?" And the teacher interview question: "What was the purpose of MSAS?" Examples of interview questions that sought to get information about what students valued about the club, included student interview questions such

as: “Did you tell your friends about the group or encourage them to come? Why or why not?” and “What did you like about participating in the club?”

Questions were intentionally repetitive and designed to ask similar topics in slightly different ways. The aim of this style was to get at the same information from different angles and to give participants multiple chances to think through the same topic. Here are examples of these types of redundant questions: What did you feel was the purpose of the club?; How was the decision to make the club multiracial implemented?; How did the goals of the club change when the club became multi-racial?; How were you expecting the club to change when it became multi-racial?; How did the club change once the club became multiracial? Were there changes in the club you were not anticipating? These similar questions were designed to understand how students experienced and felt about the racial shift in the club and to give them multiple opportunities to reflect on their feelings and perspectives.

As participants progressed in answering questions around the same topics their answers sometimes varied or became more multifaceted. Likewise, in using this approach of continually prompting participants to discuss the same topic with similar questions, they also began to share information and thoughts about the topic which were not direct answers to the question but provided valuable information about their views and experiences pertaining to topic. For example many student participants whose shared that they were not negatively affected by the shift in the racial demographic also discussed the importance of all Black STEM spaces and the racially based harm that they experienced in STEM classroom settings towards the end of the interviews though there are not questions which directly ask about their general view of all Black educational spaces or about harm they experienced in classrooms.

An important aspect of my interviewing practice was to rephrase students' longer or less clear responses, to ensure I was correctly interpreting their responses. (See Appendix A: Student Interviews Protocol, Appendix B: Teacher Protocol, Appendix C: Adult Facilitator Protocol).

Data Analysis

The data analysis of this study will be guided by methodological decisions which will be used to create a study which is transparent and rigorous. While traditional research methods urge scholars to bound case studies this view is inconsistent with the "interactive, iterative and emergent design required of non-positivist qualitative research (Bartlett & Vavrus, 2018)." Case studies are never intrinsically bound, boundaries are created and maintained by the researcher, can be quite arbitrary and exclude relevant influences (Bartlett & Vavrus, 2018). I will attend to this by revising the boundaries within the data analysis and making them subject to modification as my understanding of aspects which influence the study broadens (Bartlett & Vavrus, 2018).

Reflexive and Analytical memos. I used analytical memoing as an iterative tool throughout this research, to document and clarify my methodological decisions (Bartlett & Vavrus, 2018) and to help me process and analyze data. Initial Reflective memos were made within 24 hours after each interview and constituted the first step in my analysis (Maxwell, 2013). These memos were reflections on; my experience of the interview, responses from the interviewees, and reflections on my interview technique and protocol. The memos helped me identify themes within the interviews. Additional memos were made when re-watching recordings of interviews and during the creation of codes for the purposes of clarifying my thinking and keeping a record of my decision making around code creation and modification.

Coding. After memoing, coding was the next step in my data analysis (Maxwell, 2013). The first set of open coding took place shortly after the first couple interviews. This helped me to re-tailor my research questions to better fit the data (Maxwell, 2013, p. 73). I was

influenced by a presentation I saw by the qualitative researcher Johnny Saldana at this time, during which he suggested that beginning with Nvivo coding i.e. using participants direct verbiage to create codes, was most beneficial to encourage the development of codes which were truly reflective of participant feedback and not be less bound by what I was expecting to see in the data. My first couple interviews used only Nvivo coding, however, I felt I was skipping over important analytical material by using only the verbiage of student participants which did not always reflect the fullness of what they were expressing. I felt I was overlooking valuable insights about their experiences of fugitivity and racial harm, so I created a code book that also included aspects of fugitive spaces as discussed in the text The Future is Black: Afropessimism, Fugitivity, and Radical Hope in Education (2020). Examples of codes created from *The Future is Black* include "joy" and "navigation of anti-Blackness". Examples of codes include "affective experience of space", "safe space" and "pathway to STEM careers." As I continued to code interviews, I cleaned up the code book by combing repetitive code, subsuming codes, categorizing and sometimes discarding codes. I did an official review of the code book after I had completed all interviews and completed a second round of coding.

During my initial write up of findings, I went through each interview and highlighted the quotes which were most analytically interesting and or representative of trends across the interviews. I used these quotes to begin to construct the first draft of my paper. As I did this, I reviewed the notes at the top of each interview which I had made during my coding of interviews, which included the codes and themes found within the interview. Here I define theme as a slightly larger chunk of data which combines codes. For example, a common theme found within the data was confusion around who initiated the club doing from an intentionally all Black space to a multi-racial space.

Validity. The largest point of validation used to check for correct interpretation of students interview data was member checks which occurred during the interview process. I did this by articulating my own understanding of participant responses back to participants confirming with the participant that I had correctly understood their responses. I also relied upon a group of trusted readers who I shared small portions of my written data and analysis with who called my attention to misinterpretations of participant responses and holes in my arguments.

Chapter 3: Educators' Perceptions and Desires about the Creation of MSAS

In this chapter I am examining data from the three educators who played significant roles in the creation and continuance of the club. As discussed in my methods chapter, the club was created by two educators. The first creator was a female Afro-Latina AmeriCorps Volunteer who worked at the high school for one year supporting students who were reading 3 to 5 grade levels behind and who was helping to increase student, parent and community engagement with the school. She helped launch and facilitate the club during its first year. The second creator was a White male advanced-science teacher who had been working at the school since 2000. He acted as the teacher advisor to the club for the entirety of the club. I (Malaika) was the third educator. I facilitated the club from the club's second year through its 5th and final year as part of my dissertation research after the departure of the AmeriCorps facilitator. I am a Black bi-racial African American and mestiza woman and community educator.

The club can be understood as experiencing two distinct phases–an all-Black phase and a multi-racial phase. The first phase took place during the first year of the club and was characterized by all Black composition of the club (students and educator) and the goals and practices of the AmeriCorps facilitator. The second phase of the club began the second year of the club and continued through the club's fifth (and final) year. During this phase the club was

shaped by the district recreational department's decision to make the club multi-racial. This decision was seemingly made without consideration for the group's origins as an all-Black space nor for how this shift might affect the Black students the club was already serving. This second phase of the club was shaped by the goals and practices of the white, male teacher and myself.

The research questions I will answer in this chapter are:

1. How did the educators' goals shape the experiences of Black students in the club?
2. How, if at all, did the educator's and/or the club's goals shift as the space became multi-racial?

As you will see, I ultimately argue that the club was intentionally created as a safe space for Black students to discuss their experiences as Black STEM learners, to combat the racial isolation they felt in upper-level STEM classes, and that the club functioned as a fugitive space for Black students during its first year. I also argue that the club shifted from being a space of fugitivity as the club went from all Black to multi-racial, and that this shift resulted in the push out of Black students from that space. This push out was not merely a result of the shift in the racial composition of the group, but was a resulted of the lack of clarity among educators and the recreational and school districts around the need for spaces of fugitivity for Black students, particularly those learners who were in upper division science and math classrooms.

This chapter is organized by the three educators that led the space. It begins with the group's two co-founders, Verónica and Paul, and finishes with me as the third and final educator. Each educator's section outlines their goals & desires for the club, and their reflections on what happened with the club over time.

Verónica's Goals & Desires for BSAS (what would later become MSAS)

This section examines how the AmeriCorps volunteer saw a need for a Black fugitive space and used her skills, pedagogical perspective, and position at the school to create a fugitive space. I also examine how she had to fight against the educational institution she was working in to defend this fugitive space. I was unable to identify and locate a significant number of students/club alumni who had a recollection of Verónica, which I attribute to the passage of time, that she was only there for the club's first year, and that she was an AmericCorps volunteer rather than a full-time teacher at the school. Towards the end of this chapter, I offer one student's perspective of Verónica to offer a counterpoint to this educator's description, intention, and facilitation of the space. Since the students in the club at that time were upperclassmen (mainly seniors), they were no longer in the club nor at the school when this dissertation was being developed nor when I started working with the club later on during its second year. In the next chapter, I dive more deeply into the experiences of students/club alumni who participated in the club across time.

I begin with analyzing three-hour interview with the Afro-Latina AmeriCorps volunteer, Verónica. In this interview, Verónica was asked to articulate what led to the creation of the club, her goals for the club, and reflect on how and why things may have changed for the club during and after her year with the club. For her, it was important that the club serve the specific needs and desires of Black advanced STEM learners:

> *[my desire to create the club] started as a [AmeriCorps] requirement that I had to run something [at the school]… The year that I moved to [the area, it] was voted the worst state to live in as a black person…And I dealt with a fair amount of racism living in [this*

> *state]. And so I wanted my program to be Black focused…And the high school had a lot of support for Black athletes. It had a lot of support for Black students around restorative justice. But we didn't have any programming or support for Black students who were already doing well. And so those were the students that I decided to, target …And then because I was working with [the science teacher], we narrowed it to our Black science students."*

Verónica 's desire to create the club came from an understanding of the anti-Black racism of the state in which she was living and the high school was situated. She learned about this anti-Black racism through the news and personal experiences, which we hear her reference when she says, "*I dealt with a fair amount of racism living in [this state]."* She shared that her desire to create the club arose from recognizing that no programming existed for high academically achieving Black students.

Likewise, Verónica 's desire to start this club drew upon her own experiences of being an advanced Black learner who was treated with apathy and neglected in her own schooling experience. She shared that, "*I was a black kid engaged in advanced science classes in [high] school. And you end up in this kind of perspective of like, 'Oh, well, you're doing well enough, you're already fine, on your own.'"* Verónica thus had a concern that Black students who were doing well were being overlooked, despite the possibility that they might be in need of support.

In her interview, Verónica articulated that she had four main goals for the club. Namely that the club would:

1) Serve the specific needs and desires of Black advanced STEM learners;

2) Expand Black students' understanding of STEM careers and broaden their understanding of what their relationship to science could look like;
3) Offer students a pathway toward STEM careers; and
4) Cultivate a fugitive space from anti-Black racism/be a safe space for Black students and include race-based discussions.

Goal 1: Serve the specific needs and desires of Black advanced STEM learners. Verónica also understood the creation of the club as a support for the Black students enrolled in higher level science classes at the school. As she shared,

> *...the official goal of the club was to keep our black students engaged in science. Because [the science teacher had noticed]…a drop off of students who were engaged in science, usually, like freshman, sophomore year, and some junior year, [Black students] frequently dropped out of engaging in science courses. And so the official goal was to see Black students… addressed specifically, as individuals with programs created for and around them, that we would see more long term investment on their part in STEM education.*"

Verónica desired to create a space that was centered on meeting the desires of Black students that would help Black students to continue to engage in their science classes. Verónica also desired to help students achieve long term engagement with STEM, "… *that we would see more long-term investment on their part in STEM education.*

Goal 2: Expand Black students' understanding of STEM careers and broaden their understanding of what their relationship to science could look like. Verónica wanted the club to expand students' understanding of what STEM careers and a relationship to science over the course of a lifetime could look like. This included engaging in active conversations

about science and science classes with Black students in various grades, receiving mentorship from science professionals in the community, and gathering information regarding school community and university opportunities in their field of interest. This desire stemmed from a racialized understanding of the specific challenges that Black STEM learners faced as well as an understanding of what was lacking in high school science curricula for all students regardless of race. In Verónica 's descriptions of what she wanted the club to offer students she included the opportunity to engage in active conversations about science and science classes with students in various grades, receive mentorship from science professionals in the community, and gather information regarding STEM based school, community and university opportunities:

> *Yeah. And that was my that, that right there was kind of the perspective that I had diving into the club, [to make] a space where all of those conversations that our Black students should have, and don't have…giving them a space to bring it up. And I defined Black really loosely. And I did it on purpose. The only reason actually Black students was in the name of the club was because the students picked it…what are the conversations that we should have with our teenagers, and we don't? That's a lot of what the club was initially about. We have students engaged in science, we want them to see a future in science, we want them to see a future where they have a career and they make a living wage, and they are supported. But a lot of high schoolers don't know what that looks like.*

Here, Verónica grounds her discussion of what she hoped the club would provide for Black students by specifying that she wanted the club to provide space for the "conversations that"… "*Black students*" in particular "*should have*" but were not. Her definition of Black was intentionally very loose, possibly so that the space could be inclusive to Black students who were bi-racial or Black students who were still working through their relationship to Blackness.

When she discusses the need to help students *"...see a future where they have a career and they make a living wage*" because "*a lot of high schoolers don't know what that looks like.*" We can understand this need as an attempt to fill in gaps in science class curriculums, gaps in connecting fact learning to professional practice which are present for all high schoolers regardless of race, but also as a specific need for Black learners who are less likely to see depictions of Black STEM professionals in classrooms and the media due to anti-Black racism.

As discussed above Verónica 's understanding of Black students' needs was also shaped by students' schooling experiences in ways that were not just connected to their racial identity. For example, she desired for the club to provide knowledge in the area of science-based careers; an area she frames as neglected in school science curricula,

> *So,my goal was for students to understand what opportunities were available to them. We talked about STEM in lots of contexts. But usually when you're in high school, and we talk about STEM, we're talking about, you know, just your classes, we might talk about a STEM major in school, in your undergraduate, but I wanted them to have a better kind of wide range view of what working in science can mean. So I had weekly guest speaker[s] come in, and every week was a different guest speaker, every person a different field. So we had a suit scientist come in who worked at craft, we had an engineer come in who had successfully participated in a Indiegogo campaign for gadgets to do more like incenting style work…And so that was my goal for the students to just have someone in front of them. And it ended up being kind of free form. I asked every guest presenter. Where did science take them? And how did they stay engaged in science? That was my only real question for the guest presenter. It's just like, where did science take you in life?*

Verónica says again that she wanted the club to open up opportunities for students "*my goal was for students to understand what opportunities were available to them."* Verónica explains that high school student's experiences of science-based careers are often limited and that she wanted the club to broaden students' experiences of these careers, "*I wanted them to have a better kind of wide range view of what working in science can mean."* Lastly Verónica really wanted the club to help students understand where science could take them in a broader way "*I asked every guest presenter. Where did science take them? And how did they stay engaged in science…where did science take you in life?*

From Verónica 's perspective she was successful in her goal to help Black students connect their science learning to science-based careers. She was also successful in creating a safe space for students to examine and strengthen their identity as Black science learners, as well as develop a stronger relationship to their Black identity in general. When I asked her "*What kinds of shifts did you see in students…over the course of the year?*" She shared,

> *So a lot of that shift that I saw wasn't in their perspective around the science, it was around their perspective of being black actually…students become more comfortable talking about racism…students become more comfortable being addressed as Black because they started addressing themselves as Black. So I can't say that I saw any significant shift around their perspective in science, because all of the students that I pulled were engaged in science already and were committed to that. I saw more curiosity in what you can do with science. People were really interested in, like, the medical sciences, and people were really interested in food science. But a lot of the shifts that I saw were more around being Black and their own relationship with their black identity.*

In these comments we see that students have a more positive relationship to their Blackness and were better able to identify and articulate their experiences of racism, "*students become more comfortable talking about racism…students become more comfortable being addressed as Black*." Her comments also suggest that the club helped students to connect their broad science school-based learning to interest in specific science-based careers as well as gain a broader possibly more long-standing interest in science, "*I saw more curiosity in what you can do with science. People were really interested in, like, the medical sciences, and people were really interested in food science."*

Goal 3: Provide Black STEM learners with a pathway toward STEM careers.

Verónica can be understood as desiring to provide club members with a pathway toward STEM careers and viewing some of the skills needed to travel theses pathways as specific to Black learners. Verónica understood increasing students' knowledge around STEM based careers as essential to opening up opportunities for students to have STEM based careers and or lifelong engagement with science. Verónica understood the freeform and student lead nature of the club as shaping this student learning in positive ways. Within this format speakers from a variety of fields spoke with students about different aspects of their careers helping students to connect their classroom knowledge of science to careers in science.

> *But when the speaker was there, I let the students kind of run [with] whatever it was, they were curious about. When the engineer came out, he talked about what it was like to market, a product that was based in science. When the food scientists came out, she talked about, like nutrition at more of a molecular level, and how that gets becomes kind of political. When we had the doctor come out, [they] talked about you know, how you have to stay on top of medical research all the time when you work in a field that's*

> *always growing and adapting. But that was all student led. I let them kind of do and ask whatever they were curious about. p. 2"*

Here we see that Verónica "…*let the students kind of run [with] whatever it was, they were curious about."* and *"I let them kind of do and ask whatever they were curious about,"* creating a somewhat student lead space. Students' interviews confirmed that they appreciated the speakers, and the vast majority of students enjoyed the freeform more student directed space comparing it favorably to more restrictive classroom experiences. This quote also demonstrates that Verónica was successful in her goal of getting speakers from various STEM fields in front of students so students could broaden their understanding of science focused careers.

Verónica also understood "*the social and emotional learning component of what does it take to be different"* as an important aspect of preparing students for success in a STEM careers and science engagement and used a free from structure within the club to address this goal. This free form structure in conjunction with the all-Black composition of the space led to peer mentoring around racialized experiences and group based conversations about race which helped students identify the skills necessary for their success in STEM spaces:

> *The freeform sessions ended up being some of the best ones. And I would start with an icebreaker. And then I would start with just like a general. 'Does anyone have anything they want to talk about?' And so the ones where the freshman were asking the seniors questions that was them, actually, one of my freshmen turned to a senior and said, I have a question for you. And it turns into a session where the younger students had questions for older students…The day of where, my senior was asking about being the only black person in the room, he had won a scholarship and had to go to the scholarship dinner. And sat there the only Black person in this room, I don't think his parents could go with*

> *him. And I knew that this dinner was coming up and I'd asked him about it. And he talked about how uncomfortable he felt. And so that just became the topic of the day… He wanted to talk about what it felt like to be the only Black person in a room full of White people. And so we talked about it in terms of a skill. What are the skills necessary to be the only Black person in a room full of White people and to still convince yourself that you belong there?... If I had any overarching learning goal, it would have been that the social and emotional learning component of what does it take to be different?*

Here we see the club providing a space for Black science learners to share racialized experiences within a safe space and community who could relate to those experiences. The first part of the quote demonstrates how this occurred within the context of peer mentoring and how the free form structure of the club facilitated peer mentoring. The second part of the quote in which the senior discusses anxiety about a upcoming experience of racial isolation we can see how this students sharing became an opportunity for a group discussion about experiences of isolation in mostly White spaces. And how the opportunity of this discussion was used by Verónica to facilitate a conversation around "*What are the skills necessary to be the only Black person in a room full of White people and to still convince yourself that you belong there?"* Which we can see can see was in line with her learning goals of "*that the social and emotional learning component of what does it take to be different."*

Learning Goals: Verónica

Verónica's learning goals functioned as an aspect of her larger aim to provide students with a pathway toward STEM based careers, which included specific activities such as providing information about scholarships and applying to college as well as social-emotional supports. These diverse goals and activities were subsumed under the larger aims of helping students to

identify their long-term goals and providing a safe space for students to explore their Black identity as STEM learners. Here's how she articulated her goals and aims:

> *Some Sessions had learning goals. So,the overarching goals were about connecting with each other as a group, and themselves with their long term goals. Some Sessions had specific learning goals in that we talked about college applications. We talked about scholarships. We talked about social emotional learning skills needed to go against the tide, and be different. But those were more individual session goals… But some of the conversations that we had were the students facing racism in their classrooms. And then the students getting kind of beat down from some members in their Black community. And giving the students a space to kind of talk about all of that…being called Oreo being called coconut being told that we Black people shouldn't do all of these things (STEM studies)*."

In this quote we see that Verónica addressed a variety of aspects needed for students to pursue a STEM career through traditional paths, such as assisting students with "*college applications*" and "*scholarships*" as well as providing a space for students to identify and share their "*long term goals*". Lastly, Verónica reiterates that her most important goal was attending to the "*social emotional learning skills needed to go against the tide and be different."* Here she is referring to pursuing STEM study and engagement while belonging to a group that is constructed by popular anti-Black thought as existing outside of STEM learning and practice. She gives the example of supporting learners in this by creating space in the club for student to unpack experiences of classroom-based racism, often from teachers, as well as prejudice and stereotyping from peers. When we look at findings from the student interview section and combine them with data

from Verónica's interview, it suggests that Verónica created a space which addressed many of the aspects which students said they desired from a STEM space.

Goal 4: Racially safe space for Black students and race-based discussions. One of Verónica 's main goals for the club was that it function as a safe space for Black students. This included safety from anti-Black racism and stereotyping. When I asked Verónica, "*What did you hope the club would provide for students*?," she shared that she desired for Black students to have a safe place specifically for Black students within schools and within that a safe space for Black students interested in STEM. The concept of safe spaces was introduced to Verónica through her Americorps program director she worked with to think through how she could make the club a safe space for Black students. Verónica attended weekly professional development meetings with this director and Verónica also discussed having formal training around leading race-based discussions as part of a club at her university called Campus Conversations on race.

Verónica explained her goal this way,

> *My goal for the program was for [students] to have a safe space. Because being Black in school isn't always safe. And being Black and not fitting into Black stereotypes, sometimes makes that safe space even smaller. And so my goal was for them to have a safe space where younger students could ask older students questions, and older students could talk about college and careers in a way that was safe for them… So we had some really free-form sessions where the freshmen just talked to the seniors about why did [seniors] stay engaged in science for so long? What were they planning on doing with it? Some of the questions were about dealing with teachers who were not supportive. And the teacher creator of the club was not ever on that list, the students always spoke really highly of him. But some of the conversations we had were about students facing racism in*

> *their classrooms. And students getting kind of beat down from some members in their Black community. …being called oreo, being called coconut, being told that Black people shouldn't do all of these things… And so that was part of what they had to face and talk about.*

We see that for Verónica, building a space specifically for Black STEM learners, meant building a space that was a shelter not only from the general harm that Black students often experience in schools but the harm that can be specific to Black students interested in STEM, *"My goal for the program was for [students] to have a safe space. Because being black in school isn't always safe. And being Black and not fitting into Black stereotypes, sometimes makes that safe space even smaller."* Verónica sought to help students process their experiences of racism and discrimination through peer mentoring, free from discussions and students sharing in a supportive safe space. Verónica was successful in her goal of creating a supportive community in which students could explore and share about the skills necessary to navigate mostly white spaces as well as how to navigate experiences of discrimination and racism.

For Verónica creating a safe space for students meant creating a teacher free space. In her role as a classroom student support specialist she recognized that Black students sometimes did not feel safe in the presence of teachers. Literature documenting the physical, psychological and spirit violence that White teachers sometimes enact on Black children contextualizes this understanding (Gregory, Skiba & Noguera, 2010; Morris, 2016; Wun, 2016). When discussing the choice to hold the club during the school's teacher development time, preventing the teacher from attending the club, Verónica shared, "*Yeah, so that was partially designed on purpose…because my focus was safe spaces for the students. Some [students] were not comfortable with a teacher being constantly present in the space…"* It is important to note that

interviews and personal observations depict the teacher as a humanizing, deeply invested in the learning of students, and maintaining a positive relationship with students. Suggesting that Verónica did not make this decision in response to negative behavior from the teachers but in response to the kind of authority and possible harm that students associated with teachers as a group Verónica continued, " *[Students] felt like [a teachers presence] made [the club] more like school. And less of a kind of informal setting that I was trying to create. So he was present sometimes, but he wasn't always very active….*" Here we see that it was important to Verónica that students experience the club differently than school, in that the club have a more informal feel than school.

Verónica also felt that an important part of creating a safe space was creating a dynamic of equality between herself and the students:

> *I was really careful to tell them, I'm not a teacher. And I always held that perspective, I am not a teacher. I would say, 'I'm here to hold safe space.' And so part of having safe space was that they were allowed to disagree with me, and I was never gonna get upset. Part of having safe space meant that I always had food, and they were allowed to ask for it. You know, part of having safe spaces was that I was not there to teach them things. We all had a space, to have conversations and to learn and to grow, and to talk. I wanted them to feel really comfortable addressing me by my first name.*"

Here, Verónica describes creating equality between herself and students by asking students to address her by her first name, letting students know it was okay for them to ask her for resources such as food, encouraging them to challenge her when they disagreed with her, framing learning as collaborate communal experience and directly telling them that her purpose in the club was to create a safe space. For Verónica, all these practices distanced her from the role of teacher,

which for her was an important aspect in creating a sense of safety for students who most likely experienced harm from teachers.

When I asked Verónica, "*Were there any changes that you noticed in the club throughout the year you ran the club?*", she reported that the largest change she observed in students over the year she planned and facilitated the club was an increase in students' willingness to engage in race-based discussions and a shift in their racial awareness. She went on to say,

> *Towards the end, part of what I loved is [students] became more comfortable addressing really heavy topics…conversation about being the only Black person in the room, conversations about the type of racism that they faced in school. One of the Black students that we had in the club was an African student [and] we… had a really good conversation about how his experience being Black was different than everyone else in the room... And as a club went on… [the students] became much more comfortable having those conversations and pushing back against me when they didn't agree with me, which I was totally okay with. .. when we talked about racism, some of the students said, they had never faced racism… And so then it became a conversation about let's hold this perspective for when we're in college, we had speakers who talked about racism that they had experienced…. I adopted this perspective of, remember these conversations later. If this is ever something you experienced in the future…so a lot of that shift that I saw wasn't in their perspective around science, a lot of it was around their perspective of being Black. What I saw was students become more comfortable talking about racism… become more comfortable being addressed as Black students, because they started addressing themselves as Black students…having their own relationship with their Black identity.*

We see from Verónica 's reflection that students grew in their ability to discuss their experiences of racism, as well as define these experiences for themselves, when Verónica discusses students reflecting on how their experiences of racism differed from other students as well as when students rejected the idea that they'd experienced racism. Toward the end of this quote we see Verónica reflecting that the greatest development she observed in students was positive change in their relationship to their Blackness, sharing that students became "*more comfortable talking about racism*" and "*being addressed as Black*." In saying that students were, "*having their own relationship with their Black identity*," Verónica 's words suggest that she saw students creating their own definitions of Blackness which better fit their understandings of themselves.

The club as a fugitive space under Verónica 's leadership

I argue that BSAS (before it became MSAS) can be understood as a fugitive space during Verónica 's leadership. Verónica intentionally and successfully created the club as a fugitive space which successfully served Black advanced science learners. This space was shaped by Verónica's understanding of the educational needs of Black youth interested in STEM, which was informed by her own experiences as a Black learner in advanced science spaces. Understanding the club as a fugitive space under Verónica's guidance helps to clarify how the perspectives of myself, the teacher, and the administration differed from Verónica, leading to a lack of unity in the vision and purpose of the club.

Three aspects of fugitivity which may be key to this examination are (1) how fugitive spaces function as shelter from racial harm, (2) how fugitive spaces encourage a love of, and celebration of Black culture, Black achievement and Black people, (3) and lastly the fragility of fugitive spaces which are often marginal in nature and are targeted for disassembly (Ross, 2019)(Givens, 2021). Fugitive spaces often function as shelters from racial harm. These spaces are often intra-racial, all Black spaces. Critically, these spaces can serve as a refuge from the

white gaze and can allow Black people to relish in the full spectrum of their Blackness without fear of retribution or silencing. Black people are less likely to experience anti-Black harm in intra-racial spaces however the intra-racial composition of a space does not ensure the absence of racial harm, only makes it less likely.

An intentional commitment to the love and celebration of Black culture, Black achievement and Black people is also fundamental to creating a space of safety from anti-Black harm. These spaces are especially essential in the context of the lack of celebration and love of Black people and achievement in mainstream media and schools and the dissemination of anti-Black thought from these sources, who depict Black culture and Black people in degrading and violent ways. Fugitive spaces offer the opposite in their celebration of Blackness creating shelter from racial harm.

Lastly, fugitive spaces are targeted for disassembly due to anti-Black racism. The dissemination of Anti-Black thought is a fundamental aspect of white supremacy. White supremacy is essential in the disrupting of inter-racial labor alliances that threaten to disrupt exploitative practices and wealth inequality. Black economic success is a threat to exploitative power structures because it disrupts anti-Black narratives of Black inferiority which are the foundation of white supremacy, and because it creates wealth which would often otherwise belong to white individuals. As a result, any space which supports the spiritual and psychological health of Black people which might lead to their economic success and empowerment is a great threat to the current power structures. Because of this, fugitive spaces by definition support and celebrate Black people and Black culture and achievement are relegated to the margins especially within non-Black institutions and are constant target for disassembly

making them fragile in nature and often non-permanent. Indeed, Verónica was concerned that the STEM club would be the subject of scrutiny and a target for dissolution,

> *"I had opposed [opening the club to non-Black students], actually. I received a fair bit of pushback from the teachers and administration for keeping the group Black focused… all the voices that I've heard of people saying that it's exclusionary, to have a space for only Black people. All of them were white people saying that. And so I was dismissive of their perspective... When I left, [the] decision was made [to open the club to non-Black students]. That change happened as I was leaving…But I was willing to say, no, I'm sorry, this space is for Black students…"* Her concerns that the club would be opened to all students and become less useful to Black students did come to pass. I discuss these racial shifts at the end of this chapter.

Student recollections of Verónica 's teaching

Naila, (an African American and Nigerian American female student), is the only student interviewed who had a clear recollection of Verónica and the club under Verónica 's facilitation. Here I will analyze Naila's reflections of the club the first year in comparison to subsequent years. As discussed in my student findings, students valued exposure to STEM based professionals and spaces as well as a chance to engage in low-stakes STEM based activities, across the entirety of the length of the club.

One difference described by Naila between Verónica 's facilitation of the club and my later facilitation of the club was a switch from doing more pre-college preparation activities to more college speakers and field trips, *"Yeah, I think it was more about exposure to different sort of science fields, science paths, college paths. And less so about what it's like getting into college. What do you do to like, succeed in college?"* This observation seems to reflect the

strong focus on college preparation which was a prevalent aspect of the club during it's first year under Verónica 's leadership, and the inclusion of field trips which began after the club was officially run by the school district beginning in its 2nd year. Like Verónica, I prioritized inviting Black guest speakers.

Naila's characterization of her relationship with Verónica is very similar to her characterization of her relationship with me and is characterized by a sense of feeling listened to. When I asked Naila, *"So with Verónica , were there things that you remember liking or disliking?"* Naila replied,

> *I think I know Verónica, I appreciate, I think I remember there were times where I asked her about, like, how is it like to be in college, and she sure let me know, because I was very curious about that at the time. And then I think maybe at that time, the club was still newer. And so I think there were a few times where there wasn't really much in terms of learning more about the science field. And I think I would have liked to have done more of what we eventually did later on in the club.*"

When asked what she liked about the club when I ran the club Naila reflected with *"I definitely liked how you took into consideration all of our interests, and I feel like we were able to have moments where we got to learn stuff and learn from people that sort of catered to what we were interested in."* When examining these two comments we don't see a huge difference in terms of Naila's affective experience of the space. In both instances Naila describes feeling listened to, with Verónica this listening happened one on one with me it happened collectively with me listening to all of the students as group, including her. In her comment that "*we got to learn stuff and learn from people that sort of catered to what we were interested in"* she may be referring to the feedback I elicited from students about the kinds of field-trips students were

interested in, and my attempt to find guest speakers working in those fields. In both instances of feeling listened to Naila shared a sense of being seen and heard. In her critique of the group while under the direction of Verónica, Naila is most likely referring to campus visits and other in town field trips to explore STEM based occupations when she says she "*would have liked to have done more of what we eventually did later on in the club*." Verónica was not able to take students off the high school campus for field trips, an aspect which was incorporated after the club officially shifted to run by the school district and was given some funding.

When I asked Naila to reflect on how she felt about the changes her response suggests that what the club provided during different years lined up with what was most useful for her at those different times,

> "*I think personally, I had neutral feelings. Um, I think when I first started off, I definitely needed the college prep stuff. And then later on when it got more about, like exploring what majors, what stuff people studied, it might have also aligned with my interests, because also, I was doing other like college prep stuff. And so I had other situations where I got exposed to people like, this is what college might be like, and this is what you're doing. And I was pretty sure, like, chill with it, I was kinda of like, you know, this is just what it is..I just have very neutral feelings about it.*

This quote also suggests that gaps in her needs during this time might have been filled with other programming or experiences and thus she did feel she needed the continuation of college preparatory programming after her first year.

Paul's Goals & Desires for BSAS, and later MSAS

Paul worked full time as an advanced science teacher at the high school and had great relationships with students. He started the club with Verónica because he kept experiencing Black boys being pushed out of his advanced science classes and desired to create an

intervention which would help him to support this population in successfully finishing his classes and would help him to become a better teacher of Black students. In his formal interview and informal conversations with me, Paul located the cause of Black boys struggling within his classes to his teaching insufficiencies and never to any perceived deficit on the part of students. Both Paul's interviews and student interviews construct Paul as a caring and humanizing teacher who has excellent relationships with Black students in which they feel seen and respected. Several students discussed the great positive impact which their relationship with Paul had upon them, and sometimes attributed part of their college success to their experiences with him and within the club. None of the students who I interviewed had anything negative to say about their interaction with Paul. In terms of students feeling safe, respected and seen there seems to be little difference between student reflections on the three educators. With the expectation that students characterized Paul as having the greatest long term positive impact on them long term.

However, when we look at Paul and Verónica 's goals for the space and their understanding of students experiences of anti-Blackness we will see that Verónica had a more advanced understanding of students experiences of anti-Blackness and was therefore more able to protect the fugitivity of the space. Paul was mostly focused on what can be done in this club to help students achieve in their high level mathematics and science courses while Verónica focused on creating a safe space for students to better understand their Black identity in relationship to their other identities, such as Black STEM learners and future STEM professionals. Verónica also hoped the club would help Black students stay engaged with STEM throughout their life and hoped to show students 'where STEM could take them.' While the teacher did not state a broader goal of helping students to stay engage with STEM over the course of their lifetime, the teacher's desire to help students stay in spaces which would create

greater access to STEM careers suggests he desired to help students pursue STEM careers. Both educators wanted students to be able to successfully navigate STEM spaces.

Goal 1: Serve the specific needs and desires of Black advanced STEM learners.

While Verónica and the teacher shared the goal of assisting Black students to persist in advanced science classes Verónica and Paul had different understandings of what Black students needed to achieve this goal, and held different larger goals for students. The teachers main focus was for students was academic success in current advanced sciences classes which would help them matriculate into STEM-based college careers. Though Verónica also desired for students to do well in their current advanced science courses and to matriculate into STEM careers she, held a more nuanced and political understanding of the needs and desires of Black STEM learners, and desired to help students build a long term relationship with STEM and a positive relationship to their own Black identity, through exposure to Black STEM professionals, race based discussions, and developing the tools necessary to be one of only a few Black people in a space.

Like Verónica, Paul sought to support the needs and desires of Black advanced STEM learners by helping them to succeed in their advanced science classes at the school. He stated that his main goal with the club was the support of Black STEM learners in upper-level science and math classes, some of whom he had encouraged to move from lower level science and/or math classes to his more rigorous math and or science classes:

> *… if they make that jump [from lower level science class to a more rigorous science class], especially if they're a student of color, they look around they see that there aren't a lot of other students like them, we really wanted a way to support them…one of my main motivations was to try…to support students of color in advanced STEM classes, so that they wouldn't change levels… [i.e.]sign up for an advanced math or physics course,*

> *think it was too hard, and move to a lower course… So that if they felt like they were getting overwhelmed or struggling, that there was support that they could continue in those advanced classes, and not drop to a less rigorous course*

For the teacher one of the main reasons he co-created the club, was to support Black students who transferred from general sciences to higher level sciences classes. He hoped the club would provide support for these students to persist in these classes, "*…to support students of color in advanced STEM classes, so that they wouldn't change levels… [i.e.]sign up for an advanced math or physics course, think it was too hard, and move to a lower course…"*

Both educators understood helping students to persist in advanced level science courses as necessary aspects in helping them to achieve their desires however these educators' views differed on what this entailed. The teacher shared that the was at a loss for how to help Black students persist in these classes but that his exposure to a STEM focused intra-racial space and his realization the Black students experience isolation in these classes suggested to him that a Black intra-racial space might help them to persist in these courses, "*… if they make that jump [from lower level science class to a more rigorous science class], especially if they're a student of color, they look around they see that there aren't a lot of other students like them, we really wanted a way to support them…"*

Verónica held a more specific and robust understanding of what would help Black students to persist in higher level STEM courses. Within her interview she discussed assisting students in developing positive feelings around their Black identity and expansive views of Blackness which encompassed the pursuit of mathematics and science, as well as exploring the specific skills necessary for Black students to navigate the experience of being the only, or one of only a few Black people in a space. Verónica also discussed the importance of helping

students to connect their science-based school experiences to STEM careers and the importance of exposure to Black STEM professionals working in those fields.

Paul's desire to start the club was also shaped by an early teaching experience in which he felt a great deal of frustration from being unable to teach a group of Black male students whom he greatly cared about:

> *…my first year [teaching] in the fall [of]2000… there were probably four or five African American boys in [my] class. And these guys were great, I loved them. And they were involved in class, they were interested, I felt like I had a good working relationship with them. And their exam scores were awful. And I couldn't figure out why… I remember very clearly saying to one of my colleagues, 'I don't think that I can write a chemistry exam that an African American male can pass, but I don't know what I'm doing wrong.'... I remember going to the homecoming football game, my first year there, and these guys saw me and they could have been, oh, that's one of our teachers, why do we even go talk to that guy, but they like, came right over and said hello. And they just like, brought me into their space. So I felt like we had such a good relationship. But, they weren't succeeding on these assessments. And I just couldn't figure out why. And so I guess that just kind of stuck with me over time, like trying to, trying to figure that out."*

The teacher's strong personal relationships with Black students shaped his desire to create to help Black students achieve in class and eventually motivated him to create the club.

For Paul, his desire to provide an educational experience in which Black children could thrive, was partly motived by a desire to do so for specific individuals who he cared about and respected. He recognized students' genuine interest in science and high intelligence, as suggested by his deducing that their low test grades were a result of his inability to create a assessment that

allowed them to demonstrate what they had learned, not a deficit on the students part. This experience spurred him to continue to try and address the aspects of his teaching which were not effective for Black students. Though he was unable to find the root cause of this issue within his teaching his discovery of STEM based affinity spaces at the college suggested to him that these spaces might be of use to racially minoritized students taking high level STEM courses at the high school level.

In another reflection the teacher discussed his desire to create the club to expand access for Black students in higher level science and mathematics classes and beyond, discussing the possible broader implication of strengthening the relationship between families and the school.

> *You know, I guess I was really hoping that [the club] would enrich our math physics classes… [the club] would ..expand [the] population [of Black students in higher level science and math classes] and it would give more students access to more rigorous curriculum. So that was really important to me. And so I really, I really wanted that. And I… also hope[d] that [the club] …would strengthen the school relationship for some of the families of those students… to provide another school connection for students…we've also seen so much research that students that are involved in even one club or activity at school [are] so much more likely to be successful… And maybe…I was hoping to get to the bottom of this mystery a little bit about why these students…had struggled so much my first year of teaching at the high school…to understand this deficit in my own teaching better and to start to fix it.*

Here the teacher discusses again that he hoped the club would give participants greater access to "*more rigorous curriculum*" but also discussed the positive aspect these students would have on other members of the class, saying that classes would be "*enriched*" these classes. He also hoped

participation in he club would *"strengthen the school relationship for some of the families of those students"* and that students might be more "*successful*" overall. He was also hoping to understand why he struggled to effectively teach Black students in his higher-level science courses.

When asked how and why the club was created the teacher positioned the creation of the club as aligning with his personal discovery of academic spaces organized around students' racial identity and focused on STEM learning:

> *The idea actually came out of something that happened the year before we started [the club]...I was working with some students in [] a mariachi ensemble…they didn't have any trumpet players, and I'm a trumpet player, and they asked if I would help them get started. And so I did… And for some reason, we were talking about engineering, and we learned about something called the Society for Hispanic Professional Engineers… And that made me realize that there's an organization, that's a space for people from a particular demographic to be supportive of each other in [Engineering]. And when I looked into it a little bit more, I realized that [the local university] actually had a student chapter of that organization. And I thought, you know, we're having trouble with students of color achieving in higher level STEM classes, if it helps to have a space of other students that are of similar demographics that maybe we should try that at the high school level. And so that was really where the idea came from.*"

From the teacher's reflection we can see that the foundation of the club was based on the idea of intra-racial space focused on STEM subject matter, as described above. It is curious then that the club after it's first year became a inter-racial space. It is important to remember that the

AmeriCorps volunteer creator reported significant pressure from the administration to open the club to students of other races.

Goal 2: Give Black students the opportunity to work on a long term science project.

For Paul, the club goals were also shaped by feedback from parents which the teacher carefully elicited in his creation of the club. Continuing his response to how the club was created the teacher continued,

> *And so I looked at my math physics class…And I called the parents of every student in those classes that identified as African American… to tell them that I was thinking about trying this kind of group… just to ask what, what their thoughts about it would be…but I remember that the response was generally very positive. And then we actually had an in-person meeting [] the night of…a school open house… so we could just talk about what the club might be and what it might do. And that's how I got the push to really go forward with [the club]. And there was one other thing that was really important…a number of parents said that they remembered from their own school experiences that large science projects…were really important to their learning and maintaining interest in science. And they felt like that wasn't happening in schools in [the host city] anymore…we weren't really very successful at doing this, we never really settled on a good long-term project. But we wanted to do a large, comprehensive [project] from the very beginning...*

For the teacher the input of parents was important and shaped his goal of having students work on a long-term science project. "*I remember a number of parents said…large science projects… were really important to their learning and maintaining interest in science."* The teacher shares that though this never came to fruition in the club it was a part of his original intention. As a facilitator it was also my intention to engage students in a large long-term project but other

priorities dominated the space, such as guest speakers, field trips and providing space for students to share about their day and planning. The unfulfilled intention of the teacher and myself to engage students in a long-term science project suggests that club facilitators and advisors/organizers were unable to fully realize their goals for the club. And that the club could have potentially benefited from additional support either from administration, parents, other school support staff, or other sources. A desire for better organization and less planning was a finding of student interviews, further suggesting the need for more support, greater clarity around club goals, and how those goals could be carried out.

The importance of parental input in creating the club for the teacher is also evident in this quote with the teacher going to get length to create a space to get parent feedback and framing parents support as essential in his decision to go forward with the club. It does beg the question as to why parents were not consulted before opening the club to non-Black students. My guess is that there was a lack of understanding of the influence of the intra-racial composition of the group to students' experiences in the group, and how greatly students would be affected by this change on the part of the teacher.

The large work load of the teacher and the lack of support from the administration in terms of allocating time for the teacher to support the club decreased the time that the teacher had to process the decision to open the club non-Black students, both individually, but also with students. When I asked this teacher if there was anything he would change about his experience with the club he touched on a number of these aspects,

> *...I would work harder right away to find a co-facilitator. I think more support would have been really helpful. I would have worked harder to find an administrative partner, like a vice principal that could have helped to support [the club]... I also really would*

> *have wanted some kind of big science project, that could have been sort of a unifying year long project to help connect students and to sort of deliver a kind of end product that would have also been really satisfying…One thing that also happened over time, is that we, I didn't work hard enough to maintain connections with parents. I really think that that could have been an important difference in what was happening. And I don't know why I didn't, but I didn't. And that really, that was really important early on, and it should have persisted and it didn't*."

Here he discusses again that he desired to have a long-term project for the club and that he needed more support in achieving club goals suggesting an "*administrative partner, like a vice principal"* and *"co-facilitator,"* He also shared a desire to be in better connection with families. While he does not specify, his previous actions to illicit parental feedback suggest that part of this connection would have included feedback on the club structure and racial composition. Again, while a greater connection to parents could have helped the group to persist it is important to remember the large time constraints and often lack of resources and support which teachers often operate under. During the last year of the club and possibly before this teacher was teaching at both the high school as well as a local community college and also ran a physics club. I responded to the teacher's comments about not keeping in contact with parents, saying "I imagine you must have had a lot of other things going on as well. (we both laugh)." The teacher responded by saying, "That's, that's true…ideally…you could have some space in the [school] schedule where [the club] is what you worked on…that's hard to come by…time was definitely a very short resource."

Support from Black school workers and lack of support from Administration.

There were times that the teacher experienced a lack of support for the club from school administration:

> *"It's very interesting to me, how and in what ways [the club] was supported over time. [a Black school district support staff] was sort of a tireless advocate for us in terms of resources and connections…But at the same time, in some ways, it felt like we weren't supported…I remember there was a pretty important club meeting that you were running [that coincided with professional development time], and I really wanted to be there… and they wouldn't let me. And I was really frustrated because the professional development was to watch…a video on redlining, which is really important to learn about, but I could have done that, you know, anytime. And I could have actually been with my students working on the very thing that is five steps down the road from what you do after you watch the redlining video… I was like, we're trying to do the work that you're getting ready for, we're already doing it. And I just want to go do it… I just want to work with the kids…I'll do this other stuff because I know it's important but can I do that at another time, so I can spend this time with the students that are right here. That was just a frustrating moment for me…*

It was frustrating for the teacher to be pulled away from working with students to address racially minoritized students' lack of access to rigorous science and mathematics education to watch a video meant to increase his awareness of the racial disparities. As described by the teacher the administrator's decision to not allow him to work with racially minoritized students attending the club in order to have him watch a video about redlining was antithetical to the supposed aim of the professional development by pulling him away from the work of addressing

this issue. In this example we see again, with the expectation of the teacher, support for the club was drawn along racial lines with Black individuals supporting the teacher in his work with the club while white individuals disrupted that work.

Goal 3: Get information about what he needed to be better teacher

Paul also shared that he hoped that a student perspective might be shared with myself or the Verónica in the smaller group setting that wasn't accessible to him, that could lead to him improving his teaching in a way that would create more access for his students:

> *And I think that's also something I hoped for, as an educator, to get student perspective that I wasn't really getting, I thought that that smaller group meeting outside of class time, especially with, you know, a facilitator who wasn't me, could give me feedback about, you know, what could I do to change that would improve access and education for my students.*

The teacher shared that he met the personal goal of finding information in the club that would improve his teaching practice. The teacher did share that the club gave him a better understanding of the effect of racial isolation for students in his classes. The teacher reported that his experience with the club was beneficial to him as an educator in a number of ways.

When I asked Paul, "So how did you feel about the club when the club ended? And what did you gain from your experiences with MSAS and creating the club?," he replied:

> *I think I did get a lot of feedback from students about just how hard it is to be a student in a class and look around and not see a lot of other people that you perceive as being like you. And I know also that I learned kind of, from my observations just in my classes, but also through MSAS, the importance of students, who are underrepresented in classes having students that look like them, but also students that look like them and are their friends, I think there's tremendous power [in that]. And… some of those students…[who]*

> *were grouped together helped each other persist... And I think we can leverage that. And we can use that to help students, but we have to plan it in the right way. You know, if we have four sections of math physics, and every one of those students is in a different section then that's a problem…putting students in the best position to be able to support each other is really important. And I think that's something that I learned from MSAS and from the connection that it had to my classes."*

The club helped Paul understand the impact of racial isolation for Black students attending and how this made classes more challenging for these students. The teacher also reported learning the importance for students of having friends in their courses, not only people of the same racial background but friends specifically. He also reflected on how teachers might be able to use racial solidarity and friendships between students to help students succeed academically by grouping these students into the same sections so they could better support each other.

The teacher also shared that the club space helped him to learn the importance of student feedback and how to utilize it. A practice he now uses in his teaching,

> *And I also learned the importance of student feedback. And to be honest, this is funny, I should tell Verónica this, but she helped the students develop a questionnaire to use. And I still use most of that questionnaire with my own classes now, like, I'll give it to my college students in a couple of weeks, probably two thirds of the same questionnaire that she wrote with students back in 2015. So that's amazing…*

Here we see that the teacher still utilizes the instrument of a questionnaire made by Verónica and the students to elicit feedback for in his current teaching practice at the college, something he really values framing this as "*amazing*." Paul excitement about using the questionnaire can be

understood as an example of his general newfound understanding about "t*he importance of student feedback,"* a potentially influential shift in teaching paradigm.

Learning goals: Paul

When asked if he had specific learning goals for the club the teacher reported that he did not. "*No, I don't, I don't think we ever set specific goals…we didn't do any of that really the first year, we just wanted to try to create a space, and to see what students could tell us would be most useful for them and just to try to focus on supporting students to persist in advanced courses. That was really the main goal*." While both the teacher and the AmeriCorps volunteer had clear visions of what they hoped the club would provide for students, when initially asked they both replied that they did not have session learning goals but shared their larger goals for the club. For Paul these larger goals included that the club would help him to better understand students' needs "*...to see what students could tell us would be most useful for them…"* and to help them succeed in their advanced science courses *"...supporting students to persist in advanced courses."*

As shown above, these main goals differed from those of Verónica. Unlike Paul, when asked a second time if she held learning goals for the club, Verónica shared that at times individual sessions had specific learning goals which supported her larger goals. These learning goals included discussing the topics of: college applications, scholarships, and the social emotional learning skills needed to be different (not fit into Black stereotypes). The language used by Paul to discuss the larger goals suggest that the teacher saw himself and Verónica as having similar goals for the space as he uses plural pronounces when discussing the larger goal of the space, "we" however my analysis show that these educators had sometimes over lapping,

but significantly different larger goals for the club. As with the larger goals of the club, the teacher and Verónica did not align on their learning goals for the club.

What Paul felt was accomplished

Paul was unsure of whether his main goal to support Black learners in higher level STEM classes was accomplished but felt good about his suspicion that the club may have helped prepare students to be successful in college:

> *One of my main motivations was to…support students of color in advanced STEM classes…And I don't know that we were very successful in accomplishing that goal.… But I think we ended up accomplishing a different goal, which was to help prepare students to do better and to be to be more successful in college…I do think that many of the participants gained experiences that hopefully helped them make decisions more easily in college, or just introduced them to things that they didn't know before. And I hope that they were able to persist more in some of their college work, because of strategies or techniques or even just personal confidence that they learned as being part of the group. I think those are the main things that I hoped for.*

Here we see that the teacher felt the club may have benefited participants in a number of ways which he felt may have helped the students to succeed in college. He hoped the club may have introduced them to information that they didn't know before. He felt the club may have helped students to be able to persist more in their college work because of helpful strategies/ techniques or increased confidence gained in the club. And he hoped that maybe they were also able to make decisions more easily in college as a result of their experiences in the club.

Secondly, Paul states that he is unsure if the club was able to accomplish the goal of supporting Black students in upper level science and mathematics courses but felt that the club might have helped students to persist and achieve in their college degrees. "*I think we ended up*

accomplishing a different goal, which was to help prepare students to do better and to be to be more successful in college."

Another point of satisfaction for Paul was the leadership experience that the club provided for students in student leadership roles. The teacher specifies that Black students in particular did find value in the space and worked sometimes in student leadership roles to make the space a success. When I asked the teacher if he wanted to reflect on the impact of student leaders on the club or any changes to the club over time he shared,

> *Just that student leaders were extremely important. And were really what made it as successful as it was, you know, in some ways, I take some satisfaction from the fact that I feel like there were some students, especially Black students, that recognized that there could be real value in a space like this, and that they worked really hard to make it meaningful and successful and useful. And so I was really, I mean, they put a lot of work in, and I was really glad for it. And I think it made a tremendous difference in what happened. I think that's the main thing that I that I noticed, really.*

One student leader, while not going into depth about the benefit of the leadership position discussed the tremendous positive impact that the teacher had on their future success as a college STEM major. When I shared with the teacher that a lot of the preliminary data suggested that students felt good about their leadership roles, he continued,

> *…in some ways I hoped that it became a space where students could get just some practice in a leadership role, and that, hopefully, that was beneficial for them laterwe did really kind of create, you know, almost officers and kind of let them, you know, take on those roles. And it was really helpful*.

One student interviewee did go into depth about valuing their leadership experience in the club and saying they experienced a lot of development and pride from their role as a student leader in the club and that they continued to pursue leadership roles in college. This suggests that for at least one student the club did provide valued leadership experience that encouraged future leadership experiences.

Lastly, Paul felt that the experience of the club positively impacted his teaching practice. And that it was a meaningful and worth while pursuit:

> *...I do think [the club] was meaningful and impactful. And I'm certainly glad that we did it… I'm really, thankful that we did, and it certainly made me a better educator, I know all of those things to be true.*

Paul's feedback frames himself as having gone into creating the club with the goal that the club might help Black male learners specifically persist in his upper-level science classes, but also with the goal of learning things which would help him improving his teaching practice towards this population. His reflections around the club and the racial shift of the club suggest that while he was not happy that the club ended and that the club did not meet the goal of helping Black students to persist in upper level STEM classes, he felt good that the club may helped participants succeed in college and that he learned things from the club that improved his teaching practice.

Malaika's Goals & Desires for MSAS (no longer BSAS)

I came to the club during the beginning of the club's second year to facilitate the club after Verónica , the club's co-creator left at the end of her year of service. I identify as a queer Black bi-racial woman. My biological father is African American, and my biological mother is a light skinned mestiza woman. As a Black learner who grew up in the city of this study, I was familiar with the kinds of harm which Black students experienced in local high schools but I had

no personal interest or back ground in mathematics and science. This lack of understanding of what it is like to be Black and have an interest in mathematics and science, was an aspect that I found hindered me in someways in being able to facilitate the space. While it was not problematic when we went on fieldtrips or had guest speakers, as the other adults in those situations took over the discussions of STEM subjects, during days when we executed or planned experiments, I sometimes found it hard to relate to the students excitement and curiosity around the activities. I was recruited at the end of the club's first year. My advisor was forwarded a solicitation by the teacher co-creator looking for Black facilitator. At the time my research focus was the experiences of Black adolescent STEM learners and my advisor felt the space might be a good for my dissertation research.

The shift in the club's racial makeup from Black to multi-racial was also challenging for me in that it shifted not only my interest in facilitating the space but also my feeling that I could relate to students in the club and create the kind of environments that I had observed in other all Black learning spaces. It created a sense of disorientation and intimidation. I did not express these feeling to the teacher co-creator, though I wish I would have. As sharing this might have led to being put in contact with Verónica, who had created curriculum for the club which I was unaware of until interviewing her for this dissertation. I think I would have greatly benefited from Verónica 's insight around leading the group and facilitated a more enriching learning experience for myself and youth. That the teacher was not aware that I might consider leading an all-Black group, as significantly different than leading a multi-racial group, suggests a lack of understanding around fugitivity and racial solidarity that can exist in all Black spaces. I did not have the clarity around what I desired to provide for Black learners, like Verónica did, I did understand that there was a significant difference in the ways that I had experienced Black

learning spaces in comparison to other spaces, and I desired to create all Black learning spaces for Black youth. After writing this dissertation I have a better understanding of racial solidarity and fugitivity, aspects which if present can create positive experiences for learners. I also understand how an all-Black racial demographic within a spaces can make facilitating these aspects more likely. Confusion about my role as a facilitator, which I thought would involve being a legal chaperon for group more so than a curriculum creator also made the transition into this role challenging for me, as I was unprepared for the workload. As I struggled to identify what students desired from the club, I decided to work with the teacher to create student roles, such as president and vice president. In these student roles, students helped me to find guest speakers and plan curriculum for the group and drove the direction of the group. I found this to be somewhat effective in steering the group in a more meaningful direction for students.

Malaika's Goals and Learning goals for the club

Like other educators working with the club, I did not think that I had specific learning goals when I started working with the club. It seems that none of the educators working to create the club had "learning goals" for each session as you would typically conceptualize them, however Verónica did have a fully conceptualized ideas about what she thought would benefit students based upon her own experiences of being a Black STEM learning and her experiences of racism in the city in which the club took place.

Initially, I saw my role as executing the daily plans for the club that Paul identified, and later that student leaders identified. While I did not have many learning goals for the club, I did have some strong opinions about what Black learners would find most useful and determination in implementing them. I did think that bringing in guest speakers and taking fieldtrips to different science-based spaces was important. I also felt it was important that guest speakers be Black when possible. In recruiting I focused my recruitment efforts on Black students, most

recruitment efforts took place in later years and was very vocal and transparent with Paul and students about this fact. The club was having a hard time retaining Black students at the time of these recruitment efforts and I was never faced with any pushback and always felt that both Paul and the students also thought that it was important that Black students have access to the club. It was very disheartening to see that the club was becoming less and less Black when the club was intentionally created specifically to serve Black learners.

What Malaika Hoped to Gain

I hoped to gain a dissertation site for my research from my work with the club, and I did gain this. I also hoped my participation would be useful to Black students by simply being in the room so they could legally met and by bringing in speakers and fieldtrips that would further their knowledge of various STEM fields. My goals were nowhere as near as extensive as Verónica's, and it took me a great deal of time to take ownership over the groups direction. This is partly because I had not intended to place myself in a position of leadership in planning curriculum and steering the course of the group thought my role would be more so facilitating educational programing determined that was more so determined by others. This reluctance was also shaped by the shift in the racial demographic of the space, as I felt less prepared and less interested in serving a multi-racial space as I had fewer experiences in leading multi-racial spaces as opposed to all Black educational spaces. I also felt that my specific experience as a Black learner had best prepared me to teach that specific population. The shift in the racial demographic created a barrier for me as the educational leader of the space.

What Malaika actually Gained. I gained a sense of the level of various and specific skills that go into creating a well-organized effective educational space. I didn't take the job as facilitator as seriously as I needed to when I began the position but through this experience I gained a sense of how much work and how much intentionally around goals for myself and

youth are needed to create a successful space. Something I learned from this space as well as other spaces I have worked in is the importance of having on boarding conversations, in which I can clarify my role in the space and learn about what has already taken place in the space I am entering. In my opinion a meeting with the teacher at the beginning of my experience in the club in which we clarified our goals for the space together, and set clear and measurable goals for the space attached to a timeline and resources to help us meet these goals, and revisiting those goals in a meeting that at the beginning of each semester might have really helped us to build a sustainable club that was more successful in consistently providing meaningful educational experiences for students.

Reflecting back on the experience, I wonder if I had taken more ownership of the club earlier on, and given myself permission and time to lean into the wealth of research I had been introduced to around YPAR and Black educational spaces, that the club would have been successful long term. I also think that the club would have benefited greatly from me intentionally creating mentorship relationships specifically for the purposes of getting help with the club. Lastly, during my facilitation of the club I had other responsibilities and felt at times that I did not have time to facilitate the club, this was especially the case after the first two years of the club. When I took the facilitator position, I thought that I would only be working as the facilitators of the club for a couple years but because I was unable to find another facilitator. I ended up facilitating the club for 5 years until the club's end due to dwindling numbers and then COVID.

While I did not have the ability to lessen my other obligations during the time of my life when I facilitated the club, I could have been proactive in shifting the format of the club so that the demands of the club were more in line with what I was able to provide. Examples of this

might have been, meeting only every other week, having more free days or low prep days where we discussed where the entirety of the sessions was spend discussing how students were doing with schoolwork or life in general. Such that these meetings were still useful to students but required less of me from a planning standpoint.

Analysis on my reflections

I imagine my reflections are typical of beginning educators. My comments reflect a lack of understanding of the various kinds of skills that would be needed to keep the program going, as well as a lack of accurate expectations in terms of the time that program planning and implementation will take. We can also see that the shift in the racial demographics was a source of confusion and frustration. As I stated earlier, I thought I was coming in to run an all-Black student club. The all-Black configuration of the club was in-line with the previous experiences I had, had as well as my research interests and my comments here suggest that I felt unprepared to facilitate a multi-racial space. I also reflect here about some organizational and attitude changes, and I wish I had made earlier in my time at the club. The regrets or changes are connected to my own personal growth, learning and feeling comfortable in the space. But they are also connected to structural issues, such as the racial shift in the club, how that shift was communicated to me and the lack of communication around what had previously been done in the club.

My experience also lacked structured time and space with the teacher co-creator to address issues arising in the club and to update and co-create goals for the space. Some of these aspects discussed could have been influenced with increased guidance, had I asked for it, but some of these aspects were shaped by institutional forces, such as the administration's decision to open the space up to non-Black learners despite the refusal of Verónica, and the administration's lack of support of the teacher by not giving him time within his job to attend to the club. As discussed, the shift in the racial demographic combined with a lack of experience in

facilitating race-based discussed as negatively affected my experience in the group and ability to have the kinds of race-based discussions which I felt would have been beneficial for students.

There were times which I was successful in having race-based conversations. For example, a student who was of African American and more direct West African heritage, and they made a remark in front of me and another student who was bi-racial African American and European. The student made a comment that they felt that the African American side of their family did not value schooling, but the African side did, but they had just said that one of the biggest influences on them in terms of academic achievement was their mother who they said was African American. I and another student noticed this and pointed out this contradiction to the student. This disrupted the student's anti-Black narrative and helping the student see how their comments contradicted their previous statement, leading them to self-correct.

However, at other times when I attempted to have conversations around race or racism I was shut down by students in the space. For example, I tried to have a discussion with students about racism in a film and was shut down by another student who seemingly didn't want to talk about race, strangely the same student who had helped me in the conversation. While not having formal training around leading discussions about race as Verónica did would have been helpful in this instance, the configuration of the space as a multi-racial space instead of an all-Black space may have facilitated a desire among Black students not to discuss anti-Black racism as doing so in inter-racial spaces can be more challenging than doing so in all-Black spaces.

Reflections on racial demographic shift

Educators' reflections on the racial demographic shift varied and reflected their understandings of race, anti-Blackness, and the need for fugitive spaces for Black learners. Verónica viewed the all-Black nature of the club as helping to ensure that the space of the club remained a racially safe space for Black learners. Her desire was for the club to be free from

anti-Black discourse and action, a contrast to other STEM spaces these learners might occupy. She also desired for the space to be a place of celebration and appreciation for Blackness, where Black STEM learners could create a more expansive understanding of Blackness that included STEM learning and learners. Verónica was strongly opposed to opening the club to non-Black students and felt such a shift would comprise the racial safety of the space, compromising the spaces ability to reach its goals in serving Black students. The club was opened to non-Black student's after Verónica left. In contrast, Paul was not opposed to opening the club to non-Black students. He believed the decision to open the club to non-Black students arose from a session led by Verónica as a result of student feedback. This misunderstanding suggests a lack of communication, shared goals, conceptions of the club between the two educators. Paul's lack of opposition to opening the group to non-Black students suggests a lack of understanding of Black students' need for shelter from anti-Black racism, and possibly a lack of understanding of how racial harm was occurring in other STEM spaces such as classrooms.

Though my facilitation of the club began after the decision to open the club to non-Black students occurred, I was recruited to facilitate the club before this decision was made. I found this racial shift jarring. My awareness of the need for shelter from racial harm for Black students fell somewhere between Verónica 's and Paul's, during my facilitation of the club. My previous experiences of creating and working in all Black educational spaces. I felt myself unprepared to facilitate a multi-racial space. My experiences as a Black learner having attended predominately White and often anti-Black learning spaces as well as and Black fugitive learning spaces showed me the power of all Black fugitive learning spaces. However, I was not able to fully understand or create these spaces myself before my experience of facilitating the club and writing this dissertation. I did not like that the club had been opened to non-Black students but was not able

to articulate why this was problem and was not in a position to un-do this decision as new-comer to the space. As discussed below, all the adult educators involved eventually came to believe that the club would have better served Black students had it stayed all Black.

Verónica's Reflection on the Racial Shifts. Verónica's reflection on the racial shifts in conjunction with student interviews suggest that even in the first year, the all-Black club was targeted for disassembly by school administration, and that this disassembly happened during an (end of year) club meeting in which Verónica was not present. Interviews suggest that, during this meeting an employee of the recreation department was successful in persuading club members to open the club to students of all races presumably for the purpose of increasing the size of the club. Student quotes around the racial shift, analyzed in the last chapter, revealed that even though students desired to increase the size of the club they preferred to do so while keeping the club all Black. This finding suggests that methods of increasing the size of the club outside of opening up the group to non-Black students were likely not explored or presented to students in the meeting during which this decision was made. Further suggesting, as does Verónica 's interview, that the decision to open the group up to non-Black students was an administration, or recreation department led decision not a student led decision. Verónica 's interview reveals that school administration had been attempting to disassemble the all-Black space by opening the club to non-Black students throughout the first year of the club and that they took the opportunity to do so when she left,

> *"I had opposed [opening the club to non-Black students], actually. I received a fair bit of pushback from the teachers and [the school] administration for keeping the group Black focused. And I was rather dismissive of their perspectives, because none of the people opposing it were Black. The minority service coordinator [a Black man] was totally on*

> *board. He loved what we were doing with the group, [the teacher] had always been supportive of what we were doing in the group. But all the voices that I've heard of people saying that it's exclusionary, to have a space for only Black people. All of them were white people saying that. And so I was dismissive of their perspective... When I left, [the] decision was made [to open the club to non-Black students]. That change happened as I was leaving. I had a really negative year in [the city] that year. And I had a really negative perspective, or negative experience in my work space at the school…Honestly, it had a lot to do with cultural differences between myself and my [recreation department] supervisor [a white woman]. And so, this was actually one of those things that she fought me on. She did not like that I held this. But I was willing to say, no, I'm sorry, this space is for Black students…"*

We can see that for Verónica the safety of club was interconnected to the club's intra-racial configuration, and this understanding led her to resist external pressures to open the space to non-Black students, "*No, I'm sorry, this space is for Black students…"* . For Verónica, the introducing of non-Black students created a disruption in the racial safety of the space. White teachers and white administrators, aside from the club's co-creator, were seeking equality without regard to equity in pushing to open the club to non-Black students, "…*all the voices that I've heard of people saying that it's exclusionary, to have a space for only Black people. All of them were white people saying that."* In pushing to open the club to non-Black students, white teachers and administrators used a rhetoric of equal access to center the needs of non-Black students without regard for how the safety and learning of Black students in the club would be impacted by this shift.

In contrast, Verónica and the other Black educators understood that an all-Black club space was a protective counterbalance to the mostly white and often harmful STEM spaces that Black students in higher level mathematics and science classes experience. This understanding was couched in Verónica 's personal experiences of anti-Black violence in society and schools having been as a Black student in higher level mathematics and science courses herself and as a Black woman. For example, Verónica describes experiencing anti-Black violence when she shares that her work experience at the high school was negative partly due to *"cultural differences"* between her and her supervisor, a white woman, and partly caused by Verónica 's refusal to open the space to non-Black students "*this was actually one of those things that she fought me on. She did not like that I held this. But I was willing to say, no, I'm sorry, this space is for Black students…"* We can understand the reaction of white teachers and white administrators as an attempt to defend White privilege, as the club could be understood as an attempt to create equity for Black students by providing resources often cut off to them by anti-Blackness but available to peers of other races. For example, the resource of academic communities of peers and mentors who reflect your racial background, something white students have access to in their mostly white classrooms and in the mostly white popular media depictions of science and mathematics achievers. Ultimately the administration made the choice to support white dominance within STEM spaces at the school by opening the club to non-Black students despite the refusal of Verónica.

While the schools administration supported safe spaces for other affinity groups, Verónica discusses how Anti-Blackness often results in the targeting of all Black spaces for disassembly. And that this was the case with the club,

> *"I've had people say later that it's illegal to hold spaces for only specific groups. But we hold spaces for men, we hold spaces for women, we hold spaces for a variety of minority identities, you know, we hold spaces for our Jewish students…When I lived in [the city], there was a really specific space held for our Hmong students, since [the city] had such a large population of former Hmong refugees. And so we have spaces held, for really specific groups of people. And for some reason, there's always this discussion when we hold spaces for Black people, especially when we hold spaces for Black children, that suddenly it's illegal. And no, I would have argued that forever if we hold spaces for men, and we hold spaces for women, and we hold spaces for Christians, and we hold spaces for people who are Jewish, we can also hold spaces for our Black students [] to create safe spaces for them…And eventually, after pushing back when people pushed back against the club being limited to Black students, and I pushed back every single time. Eventually, administration just left me alone. They obviously didn't change their mind, because they changed it as soon as I left. And as soon as I left [the city] is when they opened it up to people of other races. But as long as I was there, I pushed back against that every single time.*

Verónica points out the anti-Blackness in the singling out of spaces held specifically for Black students for disassembly. Verónica makes the point that spaces created for such groups as "women," "men," religious groups such as "Jewish" and ethnic groups like "Hmong" are allowed to exist however when a space serves Black people and especially Black children, that space becomes a target for disassembly. While other groups are able to have spaces which are held for them, when Blackness is the organizing category that space becomes a threat and is disassembled.

Student reflections on the shifts in the club's racial demographics. Students also understood the intra-racial configuration of the group as essential to creating a racially safe space. All interviewed students either expressed directly that they would have preferred the space to stay all Black or discussed the co-opting of Black space by other minoritized groups. Below is a quote from a student Naila, reflecting on her feelings about the club shifting from an all-Black space to including non-Black students. Naila reflected,

> *..I think it was also sort of necessary, a student a situation where it was just Black students in STEM and what they sort of needed because I do remember [Black students] being very underrepresented in my school, and especially in terms of like, at least the science classes that I was in…And I think it would have been nice to encourage more Black students…I just sort of have mixed feelings about [the shift], because I appreciate having more voices and more opinions and like feeling, like we could do more, because there are more people in it. But I also understand the value of having a Black only space because there's like some specific like stuff and opinions and experiences that you can only get or only relate to with other Black students, you know…like lack of representation, or people around you interested or pushing for people to take science classes or more advanced science classes…I remember being in like, physics classes, or AP, or like, honors physics or like, honors chemistry or whatever and just being like maybe one of two Black students in the class…and I think it can be a little un-encouraging, or not really very encouraging when like, all your teachers are also white, in science classes, and all your peers are white or not Black. And then like,[the only Black people you hear about are doing crazy stuff] that you see in the news. And you're like, Whoa, look at this, like you know.*"

In this example Naila has clearly stated she would have preferred the group to be enlarged by better recruitment of Black students "*I think it would have been nice to I don't know encourage more Black students…"* Naila explains that she preferred the club stay Black because it provided a counter-balance to the White dominated spaces that she experienced in her STEM classes. She also discusses the sense of racial solidarity she experienced because of the experience of being around Black people who have similar experiences of racial isolation in their STEM classes "*experiences that you can only get or only relate to with other Black students*." Her comments suggest that for her the act of simply being in an all-Black space with other Black people interested in STEM, who had the same types of racialized experiences was helpful for her. She shared that she wished there had been an attempt to preserve the Black intra-racial composition of the club and suggested that another method might have been used to increase the size of the club outside of racially diversifying it, such as stronger recruitment efforts of Black students," *And I think it would have been nice to encourage more Black students."*

Paul's reflections on the Racial demographics of space/ shifts. Paul's interview suggests he did not have an understanding of the importance of the intra-racial configuration of the space to the racial safety of the space. But gained this understanding after the club became multi-racial. When the club was opened to non-Black students, Paul believed the decision occurred under the direction of Verónica and was a student-led decision. He did not view the decision as negative or potentially harmful to Black students and was unaware of Verónica's strong opposition to the decision, suggesting a lack of communication between the two educators around the goals and configuration of the club:

> "*…the idea of MSAS actually came at the end of the first year, we asked the first year participants who were only African American or mixed race, should the club stay only African American? Or should we expand it to include other students… And the students, as I remember, fairly strongly decided that they wanted it to be open to other minority ethnicities… And so that's why it became multicultural…. There was that first group of students that wanted to make that change, and the AmeriCorps volunteer really is the person that led the group discussions around that, she was kind of advising me about what was going on. But I wasn't directly involved in most of those conversations. She was great at really drawing information out from students.*

This view suggests a low awareness of the need for racial safety in the club, and the role that the intra-racial nature of the club played in this safety. His understanding of the importance of intra-racial spaces for Black students seemed to develop alongside his experiences with the racial shifts in the club.

In reflecting upon opening the club to non-Black students, the teacher discussed the pros and cons of the decision, suggesting with some ambiguity that he felt a model which kept the club all Black might have been more beneficial to the club than opening the space to non-Black students,

> *You know, I think that [racial shift] is really key…it really did []change the group in an important way… the population of students in those advanced classes that identify as African American was small at our school…I wonder if the students wanted to expand [the club] just to build a larger group….And I thought maybe this will help grow the group, strength [the group], having a larger community with more diversity, there's more expertise in that community in terms of students tutoring each other, and that sort of*

> *thing…but…it does change the value of that space for Black students so there's a, cost is maybe not the right word, but it's, there's a change that happens when you do that. And, you know a different decision could have been made, if we just felt like we needed more students… [expanding] by combining [Black] students from all four high schools…that might be a model for the future. That's better than the model that we tried. I don't really know how to answer that."*

The teacher's comments suggest that he reluctantly viewed the transition of the club from all Black to multi-racial as negatively impactful for Black learners, "*I think that transition is really key.. …it does change the value of that space for Black students..."* He is careful not to define this change as negative, saying that "cost" might not be the right word, and sharing "he doesn't know how to answer that," at the end of his answer.

However, when taken as a whole his response suggests that he felt opening the club to non-Black students may have decreased the usefulness of the club for Black students, offering that if students only wanted to open the club to non-Black learners to "increase the size" it might have been "better" to achieve this by joining with Black students from other high schools rather than opening the club to non-Black students. This appears to be a shift in his previous understanding of the importance of the racial make-up of Black serving spaces for youth. From not that important to important. It is important to remember that he was inspired to start the club as a intra-racial space after encountering another intra-racial STEM space organized around race. Suggesting that he did have some previous awareness of the importance of the all-Black nature of the club for its members.

Paul also did not report any significant shifts in the learning goals of the space when it shifted from serving Black students to any minoritized student. When I asked, "*Were there any*

shifts in the learning goals after the club became multiracial, or intentionality about shifts in the learning goals?," Paul responded:

> *I don't think necessarily. My goal was still the same. I want students to persist in these advanced courses, that goal stayed the same. I know, one thing that didn't change was less a change in the learning goals, but more a change in the structure of the group. Because we started to wonder, and you might remember some of these conversations, we (the teacher and myself) started to wonder, is it best to occasionally take this larger group that is multicultural, and break it into smaller portions where students who identify as Black can have a space that's just a space for Black students not including other ethnicities? And so that conversation, I feel like continued for a number of years…maybe one week, it's Black students. And one week, it's Hispanic and Latino students, and one week, it's, you know, another group, and then once a month, it's everybody or something like that. We (the teacher and myself) started to have that conversation… But that wasn't really a change in the learning goal, or the overall objective, I think of the program.*

We see that the learning goals that the teacher held for the students in the club did not change after the racial shift. The goals which the teacher held for Black students were just expanded for all members of the club no matter what their race or ethnicity. The teacher's statement this quote reflecting on past conversations between him and myself about creating intra-racial spaces in the groups within club even while it was undergoing racial shifts on the conversations between, the teacher and myself about creating intra-racial spaces after non-Black students joined the club, suggests we recognized the importance of intra-racial spaces in students' learning. That we were seeking to bring intra-racial spaces back to the club suggests that we may have been trying to re-introduce a lost sense of racial solidarity that existed when the club was all Black.

Lastly, I did ask the teacher if there were any outcomes from the inclusion of non-Black students that he had not anticipated and his response was stating that he wasn't really sure how to answer that question, but he did also say that he wondered if he would have been able to attend the meetings if he would have observed any self-grouping by students "You know, in other words, were black students kind of creating their own black group inside of that space. You know, was that happening? 46:59" I shared with him that I only remembered seeing that happen twice, once when we were watching a film for fun, and another day when we took a walking fieldtrip to a nearby nature preserve. The grouping happened with the same set of sophomore aged girls who came to the club twice and stayed to themselves. I expressed to the teacher that I was friendly and an Asian American female student who was a junior and a club leader made a special effort to talk with the sophomore girls. The girls however did not attend the club again after these two sessions. I was able to locate one of the girls, now a young woman but she declined to be interviewed for the dissertation.

Malaika's reflection on the racial shifts of the club. As I shared earlier, I did not begin working for the club until after the racial shift occurred. I was recruited to the club before the decision was made to open the club to non-Black students, and found the racial shift jarring as my interest in facilitating the space arose from it being an all-Black space. My previous experiences included creating and working in all Black educational spaces. I felt myself unprepared to facilitate a multi-racial space. My awareness of the need for safe spaces for Black students from racial harm during my facilitation of the club feel somewhere between Verónica 's and Paul's. My own experiences as a Black learner attending mostly White schools in my childhood, and participating in predominately Black educational spaces lead by Black educators as a afro-studies major helped me to understand the value of all Black spaces for Black learners.

However I was not able to identify racial isolation, or the lack of representation of Black STEM roles in STEM high school classrooms as a race-based harm before writing this dissertation and my experience of facilitating the club. I also sometimes felt unable to anticipate when sometime might cause harm to Black young people in the club. I also felt that the multicultural nature of the space would create a different atmosphere for Black students and align less so with the kinds of outcomes I wanted to be a part of creating for Black students. As discussed below, all the adult educators involved eventually came to believe that the club would have better served Black students had it stayed all Black.

Conclusion

In this chapter I analyzed the educational practice of the three main educators who created and or facilitated the club. Verónica, an Afro-Latina AmeriCorps Volunteer, who worked at the high and co-created the club and facilitated the club during the clubs first year. Paul, a white male full time advanced-science teacher at the school, the other co-creator of the club. And myself (Malaika) a Black bi-racial African American and mestiza woman who facilitated the club from the club's second year through its 5th, after Verónica as part of my dissertation research.

I have argued that the educator's protection of the club as a fugitive space was linked to their understanding or lack of understanding of the anti-Black racism which Black students experience in higher level mathematics and science classrooms. As a former high achieving Black science and math learner Verónica who attended mostly white schools, Verónica had the greatest understanding of the racism which Black science and math learners experienced in mostly white classrooms and had the most insight into what skills and experiences students would find most useful. Verónica understood that Black students needed a space to talk about their experiences as being the only or one of only a few Black learners in STEM based spaces,

and develop the ability to feel that they belonged in these spaces despite being the only or one of only a few Black people in these spaces. She also understood that Black students are often positioned as outside of conceptualizations of mathematics and science learners and doers, that Black students sometimes experienced ostracism even from their Black peers about being Black and STEM focused. And that STEM focused Black students would benefit from being in a community of other Black STEM learners where learners could affirm each other in their identities. Furthermore, Verónica understood the club's configuration as an all-Black space as necessity and facilitating the safety and fugitivity of the club which were fundamental to the aforementioned educational experiences Verónica provided for students. Under Verónica 's facilitation students developed broader understandings of Blackness and more positive relationships to their own Blackness and began to feel more comfortable identifying as Black and discussing racism. This second phase of the club was shaped by the goals and practices of the white, male teacher and myself.

Paul's level of awareness of the race-based harm which Black students experience in mathematics and science classrooms was low in comparison to Verónica and he had a lower awareness of the need to protect the fugitivity and racial solidarity of the space by keeping the club all Black. And thus did not advocate for this. He was also misinformed by the administration as to Verónica 's position around opening the space to non-Black students. As Paul lacked the personal experience of being a Black STEM learner in predominantly white spaces which Verónica had, and lacked in-depth education around anti-Blackness and fugitivity which would have also furthered his understanding of Black students experiences of harm he did not have the same depth of understanding around the importance of keeping the club all Black. This kind of education is often not valued within anti-Black educational institutions and in state-

controlled licensing systems. The main goals for Paul were that the club support Black students through the successful completion of higher-level science classes, creating greater representation of Black students within those classes.

Paul's other goal was to gain a greater understanding of how he could better serve Black students within his classes. The club did not achieve Paul's goal of increasing the number of Black students completing his higher-level science classes, however he did feel good about the fact that the club helped prepare students to be successful in college and that students appreciated the programing provided by the club. He also felt that he learned a great deal as an educator from his time creating and advising the club.

As a Black educator who attended schools in the same city in which this study took place, I was familiar with the experiences of Black learners in mostly white classrooms. I was also looking forward to participating in the maintenance of an all-Black space. However, when the club was opened to non-Black learners and became a multi-racial space my confidence and desire to facilitate the club waned, and I felt un-prepared to lead the space. I was also mistaken about the role that I would play in the space, which I first understood as chaperone role, where much of my participation in the club would revolve around just my presence as a legal adult, helping the club by adhering to school policy requiring a approved adult to be present during all student activity on school grounds. My ability to identify anti-Black racism and therefore the need to protect the safety and fugitivity of the club fell somewhere between Verónica and Paul's. While I was developed enough in my understanding to desire to maintain the club as all Black, focusing recruitment efforts on Black students I sometimes was unable to identify the mechanisms through which anti-Blackness was entering the space and causing harm to students. I discussed earlier in this chapter one instance in which I was unmeaningly a part of creating this

harm but contend that this incident would have been less harmful, or possibly not harmful at all had the club still been all Black at the time of this occurrence. I have attempted to use my interview data to further demonstrate that the level at which educators could identify and understand anti-Black harm was reflective of their ability to understand the need for and protect the racial solidarity and fugitivity of the club.

Another important insight which teacher data provided was that the decision to open the club to non-Black students was made by the white administration without consideration for the group's origins as an all-Black space or for how this shift might affect the learning experiences of the Black students who were already attending the club. The opening of the club to non-Black students was done by white administrators despite the refusals of Verónica after Verónica left. As I have shown the effects of opening the club to non-Black students were detrimental to the racial safety of the space, and while students still had some beneficial experiences, this shift disrupted the racial solidarity of the space and I did not observe racial growth of students as Verónica reported. Furthermore, within interviews students expressed a desire to have experienced an all-Black STEM focused club or expressed a sense of loss when the club shifted from Black to multi-racial.

Chapter 4: Student's Perceptions of MSAS, Anti-blackness, and STEM

In this chapter I will summarizing findings for the first research question: What did Black students value about the club? Namely:

- Were the things Black students valued about the club influenced by shifts in the racial composition and structure of the club?
- What did Black students value about the club being an all-Black space?
- How well did the club prepare Black students for future STEM experiences?

This chapter discusses my findings from interviews with former BSAS/MSAS students regarding these research questions. In analyzing these interviews, I identified several interesting themes, including 1) student's desire for pathways to STEM careers, 2) students experiencing pressure to enter STEM fields, 3) students feeling intimidated when discussing STEM topics and 4) students need for support in developing a sophisticated and resistant Black racial identity. These four patterns will receive the most attention in this chapter as they greatly shaped students' experiences within the space and students' ability to utilize the offerings of the club. These themes are also often less examined in research literature despite their impact on Black students' educational outcomes, identification with school, and post-high school experiences and trajectories.

Low-Stakes Space to Explore STEM and Pathways to STEM careers

Students appreciated the opportunity to interact with STEM subjects in a low-stakes environment often contrasting their learning in the club to classroom learning which was made stressful by the pressure to maintain "good grades". Interviews revealed the clubs low-stakes environment allowed students to play and explore, something they had less time for in their high stakes graded science and mathematics classrooms (Naila). In discussing there learning one student made a connection between their affective experience in the club verses the classroom and their ability to learn. Sharing that in the club, where the pressure to learn was lower and they were able to choose what they wanted to learn, due to the lack of standardized testing, they were better able to learn,

> *Well, I think with the club, there was no pressure to learn and memorize and get tested on stuff. And so it automatically made it a little bit [more pleasant]. I could be interested in what I'm interested in. And maybe the stuff that I was less interested in, I can like, space*

> *out, and not have to, feel like I have to force it in my brain and engage with, because there's no pressure of like, you're gonna get tested on this. And I think that's like when you when you get to learn stuff versus when you have to learn stuff. When you get to learn stuff, it's a little bit more pleasant then when you're when you have to learn stuff, in my experience, at least. 21:29"*

When Naila shares "*I could be interested in what I'm interested in…and not have to, feel like I have to force it in my brain and engage….And I think that's like when you when you get to learn stuff versus when you have to learn stuff*," Here Naila is making a important contention about how she is able to best learn . She shares that the low stakes environment actually aided her learning and STEM interest development.

One of the largest themes in the data was student appreciation for opportunity to explore STEM careers which the club provided. A second and less prominent but related theme was students desire that the club provide more individual and group guidance. Two different interviewees student participants expressed this desire, both using using the phrase " a pathway towards STEM careers" to describe the greater level of guidance that they desired but did not gain from the club.

For some students, the club deepened their knowledge of STEM fields and subject influencing their choice of college major. Megan shares what she liked about the club explaining that it deepened her knowledge of what the day to day of STEM careers looked like and credited the club for her decision to pursue engineering as a college major. She pursued this major and graduated with a bachelor's in engineering.

> *"… just getting to explore more STEM careers in depth…even though I had a lot of interests in [STEM] topics, I didn't really have much exposure to what [STEM] careers*

> *could be, I really had only, I think I really only heard of engineering, like, in [a] non-abstract way through the club, which then you know, I ended up choosing as my [college] major. So I just, I gained a lot of information that I probably wouldn't have otherwise."*

Here we see how the club was extremely influential in her decision to choose engineering as a college major. Megan credited the club with helping her to understand what engineering professions entailed, describing her experiences with engineering in the club as the first "*non-abstract*" experiences with engineering that she had, where see got to learn what the day to day of engineering could look like, helping her to see that it was a career and major that would be a good fit for her.

There were a number of engineering guests who visited the club and discussed their jobs in detail and sometimes showed visual artifacts from their work to give students a sense of the kind of work they engaged in. Megan also notes that the club was the only space in which she would have gained this information. *"I gained a lot of information that I probably wouldn't have otherwise*." Likewise, when asked about what she most appreciated about the club, Dayo shares:

> *Just like, exploring my [career and college major] options, especially as a freshman [in high school], like, I'm starting to think of college and I need to like, you don't need to think of your major, but it's good to start thinking about it at a younger age, and, like, I was thinking of being in psychology, psychiatry field for a while, but I felt like [the exploration done in the club] kind of confirmed what I wanted to do more like, in case I wanted to do something else.*

In the above quote we see that what Dayo valued most from what she received in the club was beginning to explore the potential college majors and that the club was able to provide that for

her, "*...I felt like [the exploration done in the club] kind of confirmed what I wanted to do…"* That she chose psychology as a college major suggests that this confirmation was fruitful.

When I asked Dayo how her experience in the club impacted her while she was in high school, she again pointed to the club's role in helping her focus in on psychology as a future college major and career, in addition to other educational programing that she was involved in. "It definitely helped me understand, like, what I wanted to do, like I said before, like, in my senior year, I know I did a little bit of health integration, I took a class, And, like, doing all that stuff [the club in conjunction with the health integration class], in general helped me realize that psychology was definitely for me."

For example, when I asked, "And what did you like about participating in the club?," Naila responded, "I feel like my favorite part was learning about the different science careers. like having graduate students come in and talk about their experience. And also, like, I remember times where we got go to like, somewhere on [the university's campus] and see what a real lab was like and what they did. And that was really cool."

When I asked Naila if she remembered any particular field trip she enjoyed she shared the following reflection:

> *"So I think one that I particularly remember it was the guy who was studying astronomy, not astrology, because astrology is just star science, astronomy. And we saw a really big telescope. And he talked about some of his research…He talked about more about what he did, also exploring some of the building that we were in. And just like, you know, seeing… how he lived and did his day to day research."*

Here we see that Naila valuing experiencing this STEM workplace and seeing the day to day activities of this STEM professional. It provided her with an understanding of "how he lived…"

giving her in depth knowledge of what her daily life might be like if she was to become a researcher in that field. Students appreciated the opportunities that the club provided for them to meet people engaged in various STEM fields, to visit the spaces associated with these fields and see some everyday operations that constitute specific STEM jobs.

It should be noted that many students said the club strongly influenced their decision to choose a STEM major in college. One student shared that they were introduced to the major they choose to study in college through the club. I understood reflections to also be referring to students' classroom experiences with the teacher creator of the club as well as other math or science-based clubs such as math physics club. This is because within interviews students' memories of these various spaces often ran together and they spoke of them interchangeably.

While students described these experiences as useful and elements, they desired from the club they differentiated these STEM based experiences from "a pathway to STEM careers." The experiences provided exposure to various STEM careers and majors for students as well as a chance for students to interact with and ask questions of individuals in those positions. Examination of students' use of the phrase "a pathway to STEM careers" as something not provided by the club but desired suggests that though the generalized information which students gained from the club was useful they were looking for more individualized guidance and support in navigating the various steps leading to a STEM career as well as any arising obstacles. A physical pathway is a defined, previously traveled, usually identifiable route leading to a predetermined location. The guest speakers and field trips provided by the club provided some access to individuals who were farther along on the path towards a STEM career as well as some knowledge about different parts of the path, and support in successfully navigating their current position on the path as high school students taking STEM courses. But the aspects identified by

students when discussing their desire for a "a pathway towards STEM careers" could be referring to a somewhat comprehensive individualized support for students which involves the breaking down of larger steps into smaller steps, helping students to think through decisions around STEM education and career opportunities, and providing support and accountability in helping them to navigate through these smaller steps.

What follows is an analysis of the student quotes and conversations leading to the above conception of kinds of curricular interventions students were desiring when they spoke about the unfulfilled need for "a pathway toward STEM careers." The fact that students discussed this pathway in terms of STEM careers and not majors, suggest students long sighted vision and desire toward a lifelong career based relationship with STEM. It is reasonable to think that supportive financial, emotional and social resources which are necessary for successfully completing this journey are included in this desire.

Space for Academic Support, Leadership Development, & Community

Several students valued the club as a safe space and attributed this safety to being around "like minded" peers. In the quote below, a student characterizes the club as a "safe space" which provided a supportive community that offered a chance to receive and share academic support in the form of specific tools, resources and information about opportunities:

> *Um, in high school, I think just kind of gave me, I learned some extra tips on, like I said, just career options, and those kinds of things. Just, you know, tips for passing classes and being with, like, dealing with certain teachers and stuff, because I was in a lot of those classes…Also just a place to kind of unwind and relax, like in high school, especially for me, like, you're taking all these AP classes, I was playing sports, like full time and working on the weekends…it was just kind of a nice space, where you can unwind and*

just chill. And like you have that hour between school and then I gotta go run and stuff for practice. So it's just a nice place to get a snack and chill… a nice little safe space."

It is clear that the club provided Amir with academic and socio-emotional support as well as an awareness of opportunities related to STEM and chances to be supported and encouraged by like-minded peers.

While comments by other students which position the club as "safe" are clearly referencing safety from racial harm, Amir's use of the term safe here could be referring to safety in terms of safety from racial harm but could also be referring to safety from the temptation to skip athletic practice which followed the club or to give into the kinds of trouble that teenagers sometimes get into after school. My understanding of the safety that Amir is referencing here is to be in an adult supervised space which would keep him on campus and make sure he did not miss practice which occurred right after the club. He does also mention that the space was a place where he could "*unwind and relax,"* suggesting that he is also referring to emotional safety and further suggesting that the club was not a place he experienced racial harm.

The club also provided students with valued opportunities to develop themselves as leaders. A student named Megan was a particularly active leader within the club. Megan explained that the leadership opportunities which the group provided were beneficial to her development, "*I got a lot of value out of the activities we did, and later things that I helped plan...And for my own like, development, it was also really valuable to kind of get to act as, to help come up with like programming ideas and to kind of be a mentor to other students."* After the second year of the club, students, myself, and the teacher creator agreed that it would be beneficial for the club to have student leaders who would play a role in steering the activities of the club including the selection of guest speakers. Megan was one of the first students selected

into this role along with another student, both acting as co-presidents. Megan was active in this role and gave a great deal of valuable input and help organizing the club activities.

At least one student utilized the club mainly to build a strong relationship with the teacher creator of club for the purposes of being successful in his class. Though Zola stated that she valued the career exploration aspect of the club which included guest speakers and field trips, as well as the chance to be in community with other Black students interested in STEM, these aspects were not valued enough for Zola to continue attending the club once she finished her math physics class. "*And I think I only [attended the club] that one year, because I didn't really need it [after finishing the class]. Because physics was, I think the hardest science course out of all four years [of her high school career]. 03:20"* Zola further emphasizes her use of the club mainly for the purposes of building this relationship when she suggests that the club had the potential to be more useful to her as an academic support, and possibly other students, if the club had included more of the school's advanced science teachers:

> *"I think if [the club], had… different science teachers taking turns running [it] that would have maybe kept me engaged with [the club]. For example, I struggled with chemistry.. if the chemistry teacher was involved with that, I probably would have stayed with MSAS. But since it was just a physics teacher running, I didn't really see a benefit."*

Zola's decision to leave the club after she finished her math physics course in combination with her comment that she no longer saw the "benefit" after the course ended suggest that though she discussed valuing several aspects of the club, such as career exploration and guest speakers, these other aspects did not provide great enough benefit for her to continue to attend the club once her class with the teacher creator of the club ended.

Zola's comments demonstrate sophistication in navigating the educational system, when choosing how and where to engage their time and energy in pursuit of educational goals. Similarly to other students discussed within this dissertation, Zola's decisions around when to participate, and stop participating, in the club can be understood as a set of precise and conscious calculations tied to her changing educational needs. Like many students in this study Zola was a sophisticated navigator of the educational system. Zola's decision to leave the club also suggests that the other benefits she received from attending the club were not great enough for her to continue to give her time to the club. It's important to contextualize this statement by noting that time was a sometimes scarce, and always highly valued commodity among interviewed participants especially in the later years of their high school journey.

Zola's primary use of the club to provide her support in the math physics class expands our understanding of the use of the club, from a space that supported students broader future academic goals to learn about and expand upon their knowledge of STEM fields and careers to include the club as a space which supported their current academic achievement especially in classes run by the teacher creator of the club.

Fugitive space from Anti-blackness in STEM classes & in Schools

One of the most valued aspects of the club space for student participants was feeling they could be their full selves as Black STEM learners in the club. When I asked Khabrem what he enjoyed about the space his answer suggested it provided him with the freedom to be a fuller version of himself, in comparison to his other school based experiences:

> "*Oh, um, I mean, I felt like it was a free space to nerd out. And like, I don't know, it's like, sometimes you got to play that double life where it's like, okay, cool. I'm kicking it, you know, I play sports, you know, all that stuff. But at the end of the day, like all of us were*

still there for the common objective to get our education and stuff. So I just appreciated that safe space where we could just geek out type stuff."

Reflected in Khabrem's comments are the pressures that students sometimes feel to hide an academic or school focused identity. The need that Khabrem discusses to engage in non-academic activities which are thought of as "cool" such as playing sports and not seeming to overly eager to please educational authorities "I'm kicking it" are pressures that Black students contend with. Multicultural navigators like Khabrem are able to successfully navigate these demands and fit in socially with their peers and also excel academically (Carter, 2006). But as Khabrem described this sometimes required him to *"play that double life,"* or shift between demonstrating cultural competency in the middle-class culture which dominates schools and the Black youth culture of his peers which includes some resisting school authorities' attempts to control and punish Black bodies. In his reflection Khabrem positions the club as a space of "freedom" where he can exist without worrying about having to adhere to these cultural standards. Khabrem positions the club as providing a "safe space" where he is "free" to express his full excitement towards learning within a community of his peers without the fear of ridicule or rejection from student peers or control and punishment from school authorities.

Despite the shifts in racial demographics many students who attended the club still reported experiencing the club as a fugitive space in some aspect of their experience. When I asked Megan about what she liked about the club, her response framed the club as a fugitive space that functioned as a reprieve from the racial isolation she felt in other STEM spaces. She frames the club as a fugitive space where she was able to interact with other Black students,

> *"it felt really important for me to have [that] experience [of being Black] identified. You know that I was a minority in most of the classes I was taking, and to be given a space to kind of acknowledge that and to be more supported felt really important to me.*

Megan contrasts her experiences in the club to those of the classroom. She describes her classes as places where her racial identity was not acknowledged, whereas it was supported and acknowledged in the club and that this was *"important"* for her. This may suggest that the club functioned for her as a fugitive space by reaffirming her racial identity through a sense of inter-racial solidarity that may have been fostered by the presence of other Black students.

Megan again underlined the importance of the club as a place where she felt her racial identity was supported when she responded to a question about whether she ever considered not attending the club anymore during her high school career.

> *"I don't remember ever kind of choosing not to go. I think I kept going because for me, there weren't many other places where I had the opportunity to interact with students of color especially in the first couple years of high school, most of my friends were white. And I think that was mostly because, as a high schooler a lot of the friends you make are through the classes or the extracurriculars that you do. And so since I was taking almost entirely honors classes, or AP classes, I didn't have the opportunity to make a lot of friends that were not white… so I think that [attending a space with other students of color] felt really important to me."*

In the above quote Megan again puts forth that one of the most important contributions that the club made to her life was to provide an opportunity for her to have relationships with other students of color and to be in spaces with other students of color. Megan's reflection suggests

that racial harm in the form of racial isolation can be especially intense for Black high school students taking higher level or advanced classes.

Student reflections also seem to suggest that Black students who take high level or advanced classes are also more likely to experience racial harm in the form of discrimination from peers. In the quote below Amir reflects on his experiences of anti-Black racism in STEM classes in the form of peers not wanting to be his partner in group work because they ascribe to anti-Black notions of Black students being less intelligent:

> *But you know, there's, like I said, it was kind of the same thing with high school where, like, me and E* [another Black male student] *went to the same school, and we had the same major. So it was like me and E sitting in the back of the class somewhere with like, you know, other kids that we've met there, and then everybody else off to the side or like, you know, there's a project and everybody's buddies up, you know, you're the last person that has to get assigned to a group by a teacher or whatever. So there's, still that kind of stuff but like that's America that's life"*

These experiences must have been humiliating and discouraging for Amir. Sadly, they are common experiences articulated by Black students in STEM literature (Morris, 2018; Shange, 2018). Megan and Amir's experiences of racial isolation and direct anti-Black racism in STEM classrooms provide context to understand why they valued the all-Black space of the club during its first year and the racial diversity of the space in the following years. These findings suggest that Black students' experiences in STEM educational spaces are different than those of their peers of other races. Megan and Amir's reflections about the importance of the club for them, in the context sharing experiences of harm suggest that the club may have provided a fugitive space for these students where they could 'hide away' from these experiences of racial harm.

Another aspect of the club which was important to students was the racially specific ability to see themselves in the club speakers who some student participants viewed as role models and mentors. For example, Zola saw guest speakers as mentors and older versions of herself, helping her to imagine herself as a successful STEM professional in the future:

> *the guest speakers kept it interesting because in that phase I was interested in medical school. So it was really helpful just to hear from different science professionals, because I can see them as mentors and like, they just were like, older versions of like, the field I wanted to be [in]. And so that was super helpful just to have that. Because like in the science courses, we didn't really have guest speakers. So that was a good thing.*

In framing guest speakers as "super helpful" to her, Zola's comments suggest these role models provided inspiration in helping her to progress in her academic path. The importance of Black mentors within the STEM fields is increased in the context of the lack of representation of Black STEM professionals. The failure of school curriculums and mainstream media to depict Black people and Black societies in roles of STEM authority and brilliance, despite the existence of such Black individuals and societies can be understood as a form of anti-Black racism.

When I asked Zola if participating in MSAS changed how she thought about STEM, her response was again to discuss the importance of the diversity of MSAS to how she felt about moving forward to pursue a STEM career, "*I was like a die hard, like, I'm going to be a doctor, pre-med. So like, it was great to be around that environment. To see diverse speakers, it got me more excited about the industry. I think a part of it too, like was grades, I was incentivized to improve my grades, so that's probably why I joined it as well, that's the it factor*." Again, Zola's comments suggest that her experience with the club provided her with a sense of belonging in the STEM professional world by providing a space to experience Black STEM professionals. Zola's

emotional state of "excited" is important to note. This affective experience presents a large contrast to the affective experiences of STEM classrooms reported by students and suggests the club may have functioned as a fugitive space for students.

Racialized Shifts & Black Push Out in MSAS

The racial shifts in the club space were likely fueled by anti-Black logics. Between the end of the first year of the club and the beginning of the second year, an adult facilitated feedback session occurred as part of a club meeting. This meeting resulted in the opening up of the club to non-Black students. This decision was made prior to my work with the club and the data I have collected around this decision is conflicting.

Paul reported he was not in attendance for this meeting, but thought the decision came about as a result of student feedback during an end of the year meeting run by the AmeriCorps volunteer. However, Verónica reported she would never had made such a decision. She experienced pressure from the leadership of the school's recreational department throughout her year at the school to open the club to non-Black students, yet she was adamant in her refusal to do so. When the Verónica was questioned about this, she shared that she suspected that this leadership took the opportunity of her leaving to open the club to non-Black students.

Student interviews reported the decision as a group decision resulting from end of the year student feedback and fueled by a desire to enlarge the club. Students' interviews did not include the identity of the adult who led the meeting. No one interviewed was certain of the identity of the adult facilitator who ran the club meeting resulting in the opening of the club to students of all faces was made. Since it was not Verónica nor Paul, and the club was under the district's recreational department, it was most likely a recreational department staffer. This meeting resulted in the opening of the group to non-Black students, a directive that was pushed by recreational department leadership.

While there is a lack of clarity around who facilitated the discussion resulting in opening the club to non-Black students, we do know anti-Black logics were used by white recreational district staff leadership in their decision to continually pressure Verónica to open the group to non-Black students despite her refusal and articulation of the club need for the club to stay all Black. It seems the club was singled out for integration while other affinity spaces created for non-Black students from specific ethnic groups, religions, or other identities at the school were allowed to exist without having to continually justify their existence as safe spaces set aside for intra-group members only. In the quote below Verónica suggests that the club was targeted for disassembly because the space was serving Black students,

> "*We hold spaces for men, we hold spaces for women, we hold spaces for a variety of minority identities, you know, we hold spaces for our Jewish students. When I lived in [the city], there was a really specific space held for our Hmong students, since [the city] had such a large population of former Hmong refugees. And so we have spaces held, for really specific groups of people. And for some reason, there's always this discussion when we hold spaces for Black students, especially when we hold spaces for Black children, then suddenly it's illegal. And no, I would have argued that forever if we hold spaces for men, and we hold spaces for women, and we hold spaces for Christians, and we have spaces for people who are Jewish, we can also hold spaces for our Black students and create safe spaces for them."*

In the above quote Verónica discusses that the school was willing to hold spaces for a variety of different kinds of students including, "*Jewish students*" and "*Hmong students*." She also lists women, men and Christians as generally allowed to have spaces which are specifically for them. However as the AC points out, when affinity spaces seek to serve Black students, those spaces

are targeted for disassembly, in this example this is done by questioning their legality, "*...when we hold spaces for Black children, then suddenly it's illegal."* To be clear, Verónica did not state that this specific argument was used to pressure her to open the club to non-Black students, However, to her broader point, in the surrounding city and in the school she experienced the targeting of all Black spaces in general for disassembly, and the club specifically is an example of the anti-Black logics which led to the destruction of the club.

Anti-Black logics can be seen in white recreational district staff leadership's pursuit of shifting the club from all Black to multi-racial, despite pushback from the AC. The recreational district staff leadership's disregard for the Black Latino AmeriCorp creator's strong opposition to opening up the club to non-Black students can be understood as an anti-Black logic. We see the administration choosing to disregard the AmeriCorps volunteer's opinion the inter-racial makeup of the space was key for Black students' learning and development, despite the volunteer's lived experience as a Black person, and a Black learner who took advanced level classes as part of her high school trajectory. The administrator's choice to disregarded and devalue the wisdom gained from Verónica's lived experience in favor of their own opinion situated within a lived experience of Whiteness, is form of anti-Blackness which was experienced first by Verónica as a disregarding of her opinion, and then again by Black students experiencing the dissembling of the all-Black space that was serving their needs.

If the desire to open the club to students of other races stems from a desire for non-Black students to access the resources of the club that can be understood as another kind form of anti-Black logic. Here the anti-Black logic is evident in the administrations valuing non-Black students access to the resources of the space, more so than the positive learning experiences of Black students who were currently benefiting from the racial solidarity and sense of community

resulting from the all -lack composition of the space. Anti-Black logics are evident in the decision to cater to the needs of white, Brown and Asian students to the detriment of the Black students whom the club was created to serve.

From the perspective of the Verónica, the existence of the club as an all-Black space which Black students had positive associations with, functioned to disrupt Black students internalized racism and create a more positive relationship with their Blackness. In this light, the dismantling of this fugitive, all Black, space can be understood as an anti-Black act in that it caused harm to these students by disrupting their healing from internalized anti-Black racism. The below quote describing this transformation comes from my interview with Verónica:

> *"And the students had actually a fair amount of bias about spaces that were predominantly Black, being for students who were frequently in trouble. That the spaces that [the school] had that were predominantly Black, were for students who had behavior issues…detention was a space that was predominantly Black. And so I pushed back with [students in the club] about that idea. Saying, 'Well, this space is also predominantly Black. None of you are here because you're in trouble…What leads us to make different choices? Because the students also…held a fair amount of bias and internalized racism themselves. And so I pushed back...They are Black students in advanced science, but they're not in advanced science, despite being Black. They are just Black, and they're advanced science students. And those two things didn't need to be in conflict."*

In the above quote Verónica articulates how she was able to leverage the existence of the club as a positive all Black space, to help students disrupt their own internalized anti-Black racist beliefs. She discusses that she used the club specifically to push back against students notes that "*predominantly Black [spaces], were for students who had behavior issues."* By pointing out to

students that the very space they were in, the club, was all Black and positive, Verónica felt she helped students disrupt their negative mental associations with Black school spaces and thus their negative associations with Blackness. From her point of view, the students' experience with the club as a positive all Black space, further helped students to regard such spaces with positivity, and thus Blackness with positivity. In this quote Verónica also discussed how she felt the intra-racial configuration of the club also helped students to reconcile their Black and STEM learner identities. She shared, "*They are just Black, and they're advanced science students. And those two things didn't need to be in conflict."* From her perspective the club helped students to form positive Black identities in multiple ways, including acting as a fugitive space. The intentional dismantling of such a space is a form of anti-Black racist action.

MSAS as A Multi-racial Space

Student interview data suggests that the racial shift in the club from all Black to multi-racial introduced inter-racial, race-based harm thereby disrupting the racial solidarity of the club. While some students continued to benefit from the club in its new inter-racial configuration, other groups of students were no longer able to access the club. In this dissertation my access was limited mainly to students who continued to find the club useful after the racial shift. However, some of the students who continued to find the club useful also experienced harm in the club after the racial shift and shared their experiences. Some experiences of harm were shared as secondhand accounts, representing the experiences of friends of interviewed students.

Data also show a complexity of experience pertaining to benefit versus harm for Black attendees of the club. Interviews revealed instances of Black students describing the club as welcoming or a safe space sometimes in tandem with describing instances of racial harm or pushout in the club. The ability of the space to hold multiple and contradictory experiences for students, sometimes within a single student's experience, shows the complexity of the ways in

which anti-Black logics can appear within a space and remain somewhat hidden underneath the positive benefits that student experienced. For example, one interviewee discussed feeling welcomed into the club and simultaneously intimidated and that they did not belong.

Significantly, feelings of intimidation and not belonging were reported by students during the club's multi-racial configuration seemingly as the result of the presence of non-Black students. No anti-Black comment or action from non-Black students were reported. Harm seems to have occurred because of anti-Black ideologies which frame White and Asian students as ideal math and science learners and Black learners as non-math and non-science learners. Black learners' internalization of these ideologies and awareness of others internalization of these anti-Black ideologies created a sense of stress, non-belonging and harm for some Black students in the multi-racial configuration of the club.

Race-based discussions that had been a valued aspect for students during the all-Black, first year of the club according to Verónica, were much less prevalent in the following years. This change may be partially attributed to Verónica having had formal training in facilitating race-based discussions which I did not, but may also be due to the club's shift from an all-Black space to a multi-racial one. All Black spaces in which every person has experienced or has the potential to experience all anti-Black racism are often more conducive for race-based discussions, as anti-Blackness affects all participants. This is further suggested a shift in race-based discussions in club. As Verónica reported, race-based discussions were encouraged by her, but also occurred organically through peer mentorship such as students asking other students for advice around how to handle teachers who were known to be racist towards Black students. After the club became multi-racial and I became the facilitator, my attempts to have discussions about anti-Black racism in the space sometimes felt less than welcome.

Some students' affective experiences of the club shifted negatively over time as the space became less Black and lost members. In this quote we see Naila highlighting the all-Black racial composition of the club and how this composition helped her to feel recognized and understood:

> *I know when I joined the club, it kind of felt nice because I was like, it was like Black people interested in science and advanced science. And I was like, hey, that's me. So I started to like feel seen in that way. And then when I left I think I was neutral about it…*"

Naila's feeling about the club shifted over time alongside the racial shifts in the club. The space was meaningful to her as a space of "Black people interested in science and advanced science" which led her to feel "seen" as a Black person interested in science. Naila's describing the experience of having her identity, specifically as a Black person and a science learner, affirmed by being in community with others who share those identities. As the club continued and became multi-racial, we see her feelings about the club shift from "*nice"* to "*neutral*."

For some students the shifts in racial composition did not prevent them from benefiting from the club. This is demonstrated in the comment from Amir when asked, *"Did what you receive from the club change when the club became inter-racial?"*

> *I don't think so necessarily, because I think you still, like I said, [other racial minorities] are still people that face challenges in [STEM] fields and still face, other issues… So it's like, you still are able to relate to [other racial minorities]. But it is like a little different…just related to experiences and like talking about like, real, like every day, hardcore experiences, like if I'm talking about the experience of being Black… a Latino person can't understand my situation, just like, I can't understand that energy, because I'm not Latino, they're not Black. So while we both may experience like discrimination, discrimination is different and on different levels...*'

Amir asserted that minorities of any race have some experience of discrimination and that because of this minorities of different racial groups have some understanding of other groups experiences, "*...these [non-Black minorities]are still people that face challenges in these fields…So it's like, you still are able to relate to them."* He also specifies that experiences of discrimination are specific enough to create a lack of understanding of the lived experiences of other groups. *"But it is like a little different…" like if I'm talking about the experience of being Black…a Latino person can't understand my situation, just like, I can't understand that energy, because I'm not Latino, they're not Black…"* Amir also suggests that the complexity of stereotypes across different racial groups and context means discrimination is experienced differently for different racial groups. "*So while we both may experience like discrimination, discrimination is different and on different levels*..." If we understand shared experiences of discrimination or racism as part of the basis for creating race-based solidarity, we can see from Amir's comments how a shift in the racial composition of this group may have disrupted the specifically Black race-based solidarity which previously existed.

Amir's interview also suggests that he experienced a sense of inter-racial solidarity after the club shifted to inter-racial making it possible for him to continue to use the club as a space to process anti-Black trauma. Amir's comments might lead one to believe that Amir was happy with the shift in the racial demographics of the club. However, it is important to note that when Amir discusses the club being opened to students of other races, he states that the choice was made from a desire to increase the size of the club not one about changing its racial composition:

> *Um, I feel like I remember it being brought up, because there just wasn't, like, just simply from like a numbers standpoint…there weren't that many black students in these advanced science classes at [the high school]…if you have a club with five people in it is*

> *still beneficial, but not as beneficial [as a club with more]. And I do think like other races, and or like demographics do need that kind of support and feel like excluded in these spaces as well.*

In the quote above, Amir suggests that the group was opened to non-Black students to increase the size of the group, because the pool of Black advanced STEM learners was not large enough to sustain the club at a size which was most beneficial. In this quote Amir also puts forth that he feels that participating in the club may have been useful to other minority students but does not say that having students of other races would be useful to members of the club outside of the collective benefit he feels will come from having a club large with more members.

The below recollection from a female student, Megan, about the decision to open the club to students of other races, provides similar themes from Amir's recounting and suggests there was consideration given for how the shift might change the experience for Black students:

> *"I think I can recall having a conversation about it…we didn't have many participants. And because there are so few students of color in those STEM advanced classes to begin with… it felt like why not…include more students...if you're one of two Black students in your AP Bio class and there's two Asian students or two Hispanic students or whatever, then it, I guess, felt kind of natural to include them. And also…help grow the number of people in the club. But I don't think at the time, we really thought about how that might change, you know, how we were able to stick to the original intention, which was to support Black students. And I think that was definitely a need that we still somewhat struggled to achieve and kind of continue as the club went on, so yeah… I'm not sure.*"

Here Megan reflects on the decision to open the club to non-Black students. Saying the decision made sense at the time and seemed "*natural*" serving the purpose of helping to "*grow the*

number of people in the club." She then states that she felt this decision was done without considering how the opening of the club might affect the original intention of the club to "*support black students"* and that after the shift, "*[the club] still somewhat struggled"* to support Black students. These reflections are in line my previous analysis which suggested that part of how anti-Black logics led to the destruction of the fugitivity of was a lack of regard for how opening the club to non-Black students might affect the club's ability to serve Black students.

Even while there was an increase in the number of participants in the club that first school year, eventually the club's numbers fell again in the successive years to a smaller number than the club had begun with ultimately leading to the club's end. In the long term, the opening up the club to students of other races did not serve the intended purpose of expanding the size of the club or ensuring the clubs future. When taken as a whole, Amir's comments suggest he would have preferred the space to stay all Black, as was the trend among interview participants.

When I asked Amir to compare his experience in the club with other educational spaces, his reflection suggested that for him the club was a fugitive space in which; he experienced a sense of community, felt safe, and processed race-based harm. The below quote suggests that Amir felt sheltered from the racial harm in the club. And that in club he was able to build supportive community with other school identified minoritized students interested in STEM subjects. This community helped Amir to navigate some of the anti-Black racism he encountered,

> *You can be a lot more open (in the club). And people were a lot more understanding of some of the struggles that you face. I would say sometimes in other spaces, you feel like you're kind of having to prove yourself, sometimes to people to kind of get past their initial, like reaction to your outer kind of appearance almost. Especially with like*

> *teachers and stuff, that like don't know you, you kind of get that, where you like, you see that epiphany where they're like, oh, okay, you're like, not like that. And you like prove yourself to them. Yeah, just that level of comfort I feel that I think comes from being in a more intimate space and dealing with people that are similar to you.*

In this quote we can see evidence of the club as a place of supportive community, "*And people were a lot more understanding of some of the struggles that you face."* Amir's comment suggests a sense of community created partially around shared experiences of racism. Amir's previous comment that he felt comfortable sharing the Anti-Black racism he faced in classes in the club suggests that the club was a shelter from racial harm and safe place and a place he felt safe to process experiences of racial harm in a supportive community.

This reflection frames the club as a safe space where Amir did not have to justify his existence or prove his worthiness as a Black person. He explains this by contrasting the club to spaces in which he did have to "*prove himself*" to others and get "*past their initial, like reaction to your outer kind of appearance almost."* He continued to share, "*Especially with like teachers and stuff, that like don't know you…you see that epiphany where they're like, oh, okay, you're like, not like that. And you like prove yourself to them."* When Amir refers his outer appearance here he is referring to his identity as a Black male, and the "*initial, like reaction*" he refers to are teachers anti-Black perceptions of Black males which position Black males as unintelligent and uninterested in learning. When he discussed teacher realizing that he is "*not like that*" the teachers are realizing he does not conform to their anti-Black perceptions, ant that he is both intelligent and interested in learning. This reflection is an example of the kinds of anti-Black racism and trauma that Black students are often subjected to in classrooms of all subject matters but even more so in mathematics and science classrooms.

In contrast to the racial harm discussed above Amir describes the club as a safe space in which he felt comfortable. He goes back to talking about the club by contrasting the club to classrooms by saying he feels a level of comfort in the club which he identifies as coming from being around other minoritized students "*Yeah, just that level of comfort I feel that I think comes from being in a more intimate space and dealing with people that are similar to you."* Here we see Amir making a connection to the racialized makeup of the space and his ability to be comfortable within the space. It is important to note that Amir did not identify whether he was talking about the club in it's all Black state or it's multi-racial state, I would suggest that he was talking about a general feeling of the club which seemed to stay consistent for him throughout the duration of the club. In this light, the shift in the club from all Black to multi-racial did not seem to affect Isi's experience of the club as a safe space. The club seems to have functioned for Amir as a shelter from racial harm in both its intra-racial and inter-racial configurations:

> *Um, but I definitely do think that it does change the dynamic a little bit, because different races, and different people experience different challenges. Like, I know, like, in my social justice class, for example, they talk about like, how, like, Asian American, a lot of times are like model minorities. And so they are, like, accepted a lot more in white spaces, because, you know, like, their culture is like, coincide with them or line up more or whatever, have you. And so I definitely do think that like, having, you know, different demographics does change, the connection, and the relationships between people because like, you know, if I'm talking to like, I don't know, you like you're a person of color, you see, how you interact with a person of color is different than how you interact with a white person just based off of like face value, and how you first meet them. And, like, you know, it's natural, everybody's like that. So I definitely do think it does, it did*

> *change something. But I don't necessarily think it was a bad thing, just because of, like, the numbers and everything. Like, I definitely think it was kind of needed. But I think it does change the dynamic.*

In the above quote, Amir suggests that shifting the club from an all-Black to a multiracial space changed the dynamic of the club. Amir identifies differences in the kinds of stereotyping that minority groups experience. Amir argues here that Asian Americans are positioned as model minorities whose culture is imagined to be more similar to White culture creating an experience for Asian students in which they are "*accepted a lot more in white spaces*". This experience is in vast contrast to Amir's experiences of isolation and humiliation previously discussed. From Amir's point of view, this difference means that students can't fully relate to the racialized experiences of students of other racial groups. He makes a distinction between the intra-racial solidarity and the inter-racial solidarity examined in previous quotes. Amir does this by discussing the distinction between the lived experiences of Asian Americans who are positioned as model minorities and closer to whiteness and the lived experiences of African Americans. If we go back to Amir's quotes about experiencing isolation in STEM classrooms when other students did not want to work with him, we can imagine that an Asian student may not have had this experience as other students would assume student was a strong academically.

Like other students, Megan articulates the specificity of Black student's experiences, in relation to other minority students, particularly Asian students. Megan describes the Black experiences in educational spaces as "*very different*" from Asian student experiences in educational spaces. Megan connects this difference to Black push out in the club when she says she realizes now that the needs of Black students were being "*unmet,"* which led to "*fewer black students over time, or proportionately fewer"* attending the club. Here Megan is framing Black

pushout in the club as a result of a lack of understanding that Black students and Asian students have different needs because they have "*very different*" educational experiences.

Naila articulated the need for Black STEM learners to have all Black STEM spaces of fugitivity, to hide away from (Givens, 2021) and process experiences of anti-Black harm. Naila shared that she understood the strategy of opening up the club to other races but that she would have rather focused on recruiting Black students instead:

> *"I think I have sort of.. mixed feelings about that. Because like…I do remember it being like not many Black students that were still in the club. And I definitely appreciate having more voices, more opinions, more insights…. But also I understand and I think [it] was sort of necessary [to have] a situation where it was just Black students in STEM [in the club] and what they sort of need because I do remember [Black students] being very underrepresented in my school, and especially in terms of like, at least the science classes that I was in…there weren't many Black students in [those classes]. And I think it would have been nice to…encourage more Black students [to join the club instead of opening the space up to non-Black students]… I just sort of have mixed feelings about that, because I appreciate having… like funding, like we could do more, because there are more people in it …But I also understand the value of having a Black only space because there's like some specific like stuff and opinions and experiences that you can only get or only relate to with other Black students, you know."*

Naila's response is reflective of other students in that she had "*mixed feelings*" about the club being opened to non-Black students." She acknowledged the decision was to make the club larger which she though was important but wished a different approach had been taken. Like other students Naila contends that the isolation which Black students experience in science

classrooms means that Black advanced science learners have different needs than students of other races. She suggests that the club staying all Black would have necessitated the addressing of Black students' needs in a way that it was unable to when the club was opened to non-Black students. She may also be suggesting that the club in it's all Black formation may have help more Black students to take advanced level science courses.

When I asked Naila to specify what experiences she had that only other Black STEM learners could relate to she shared, could only relate to she replied,

> *I think just like lack of representation, or people around you interested or pushing for people to take science classes or more advanced science classes. I think it's just been, you know, like, I remember being in like, physics classes, or AP, or like, honors physics or like, honors chemistry or whatever and just Being like maybe one of two Black students in the class. Um, and I hope I'm not like bleeding my college experience into it either from what I remember, because I went to [the University], so it's pretty much the same, if not a little bit worse, demographically, and I think it can be a little un-encouraging…when like, all your teachers are also white, in science classes, and all your peers are white or not Black. And then like, [you only hear] about Black people doing crazy [stuff]…in the news. And you're like, Whoa, look at this. "*

Here Naila shares the experiences which make all Black STEM spaces like the club necessary and impactful for Black learners. Those experiences included feeling isolated in mostly white upper -level STEM classes, not being expected or encouraged to take upper-level STEM classes. She describes experiencing a lack of Black representation in the area of STEM professionals in media and popular cultural depictions and an over emphasis of representation of Black people being shown in a negative light. She explains that these experiences are ones she had in high

school, and that they were so like her PWI college STEM experiences that she is having difficulty differentiating the two experiences.

Some Black students were able to continue to benefit from the club after the club became multi-racial. Dayo, in answering a question about what she liked about the club, discusses valuing the opportunity the club provided for her to socialize with other minority students around the topic of STEM*, "I liked the different activities we got to do. And I know in my sophomore year, we weren't as active but I did like watching the movies and getting to know everybody. And it was nice being around people of color who were interested in similar things as me.*" Another female student, Chi, expressed that she would have preferred an all-Black club yet still gained value from the club as a multi-racial space. I asked her if she felt her experience of the club was changed at all going from a mostly Black space to a space of students of other races:

> *Um, no, not really. I feel like I probably would have liked to be in that like environment more [an all Black environment] but I also really liked the diversity of [the club] I feel like we have like people of all races and one thing I liked about the club was how welcoming it was, like they always like let people know like hey, you're welcome here regardless…I feel like it would have been a lot different, like experience, I would have had [if the club been all Black] but, I still appreciated my time there."*

Here we see Chi articulating a preference for an all-Black club, although she benefited from the club as a multi-racial space and enjoyed the diversity that she experienced. She specifically comments on the welcoming feeling of the club in the club's multi-racial configuration, an aspect many students referenced in their interviews.

In the response below a Black multi-racial student, Megan, shares her experience of Black pushout. Though Megan was not among the students pushed out of the club, she did

experience harm from the pushing out of other Black students in the form of experiencing the destruction of fugitive space. As the club became less Black the aspect of the club which most drew Megan to the space, the presence of other Black students with whom she felt she could relate dissipated. What brings a layer of complexity to Megan's experience is that while it is clear she wanted the club to have stayed all-Black, she was still able to benefit from the club in its multi-racial through her leadership activities and connections with non-Black peers. When asked what she liked about participating in the club, Megan responded:

> "*...I do think that it would have been nice for myself to have more students with a similar identity to me and closer to my age because by the time I was like a senior there were only a couple other seniors, or like upperclassmen and not that many like Black students in the club at that point. [] although I think [] everyone who was in the club added a lot of value it was beginning to be a space where I felt more like I was, I didn't fit into the demographic as much and I was more like acting as like a leader I guess, which was real great too. But you know if I just wanted to talk to someone about you know, starting college or something, I didn't necessarily have that peer. I think Naila [another Black female student one grade below Megan] was almost always there. And I don't want to disregard her. But other than that, I don't remember there being a lot of other people."*

In the above quote Megan makes the point that as the racial demographic of the club shifted to less Black she started to feel that she did not belong, "*it was beginning to be a space where I felt more like I was, I didn't fit into the demographic as much."* Megan contends that despite experiencing isolation within the club she felt that, "*I was more like acting as like a leader I guess, which was real great too."* Megan found value in the multi-racial club in the form or

leadership experience, yet she also experienced isolation and discomfort to the point of her no longer feeling she belonged in the space.

Students feeling intimidated when discussing STEM topics

Black students discussed feeling welcomed by the atmosphere of the club but being intimidated by the topic of STEM after the club opened to non-Black students. They stated that they would have benefited from more direct discussion of STEM topics. This intimidation is not surprising given how Western thinking around mathematics and science are influenced by platonic views of mathematics as the most intellectually rigorous activity. This view of mathematics and science can intersect in educators' minds with anti-Black ideologies which position Black students as unintelligent resulting in teachers viewing black students as outside the realm of mathematics and science learners. Students having experienced discrimination and violence from teachers because of these beliefs or other anti-Black ideologies which position Black people as less than human and deserving of pain and suffering, or both may have experienced trauma in mathematics or science classrooms. Black students themselves may have also absorbed these messages from the media or other sources and internalized them. All of these factors can lead to intimidation in the area of mathematics and science learning and STEM fields in which mathematics and science are foundational. Such feelings can shut down students' ability or willingness to ask questions or start clarifying dialogue in STEM spaces.

The student quote below begins by the student discussing assumptions she held about her peers as very intelligent, while she does not discuss the race of the peers, the peers she mentioned are all Southeast Asian and or White. *"[I] honestly felt at first, I'll say a little bit intimidated because I felt like the people there were like very smart like out of this world smart but then like, once you like get to know them. They're very opening and welcoming…"* It is possible that racial stereotypes which position southeast Asian students as mathematics and

science achievers may have been part of what intimated this student (Steele, 1997). After discussing a general feeling of intimation around being in the space which at this time was predominated by Asian and White peers despite the friendliness and welcoming atmosphere created by these peers, she discusses her willingness to continue to attend the club despite these feelings and specific moments of discomfort when she felt the STEM discourse was at a level above her current comprehension. I would suppose that other students in the group felt the same way but were also silent. While the administration pushed out students towards creating a racially integrated group, black students themselves went to a racially integrated group and were okay with it, students like Chi describe how they also wanted a Black space.

> *"Yeah. I'll say like, Elii, Erica and Alex and all them. Like, they're very, very smart, like intelligent people, like I love them so much. But I feel like from an outsider looking in, like going into a club, like even I was intimidated a little bit. Like, I remember there was like this one field trip we had, there was like a research field trip, and everyone was just so like, into it. And I was just like, Oh, my God, I do not know what this is. But like, I kind of know how to, like, hold my own. Like, if I don't know something, like I'm willing to learn. And I'm, like, fine in this situation. But I feel like someone might feel like, Oh, I'm not meant to be here, or I'm not smart enough to be here. So I feel like just letting that be known. Like, it doesn't matter. Like what you see or how like advanced people are in certain subjects. It's just all about, like, learning and not like feeling intimidated by them. Like, or like the content you're about to learn."*

Chi also discussed how feelings of intimation may have made the club inaccessible to friends she invited to the club who briefly attended but did not stay for multiple meetings.

> *...I'm used to like those types of people. Like, they're amazing. But like, I'm used to, like, knowing that, like, certain people will be like, more advanced and certain things. So for me, it's just more about like learning. But I remember like, one of my friends, like, she didn't want to go there anymore. Because she's like, Oh, I like just felt dumb being in there. And I remember, like, I wanted to, like, keep bringing her back, but she just didn't feel comfortable being in there. So like, that was one of her reasonings. And I could kind of see like, where she was coming from, but like, like I said, for me, it was fine. But I feel like that's something like that would be helpful for like future people who want to join."*

We see in the previous quote that while this student choose to continue in the club despite intimidation, viewing others as having a more advanced skill level or understanding of STEM topics but being okay with this perceived distance between herself and her peers, and willing to continue to engage in the club through these feelings in exchange for the possibility of what she described in the pervious quote as the opportunity to "*experience what the club has to offer."* Though she stayed in the club and was able to adopt a non-harmful view of the seeming distance she perceived between her level of STEM comprehension and skills and those of other students, she was also aware that the same feelings of intimidation, discomfort and non-belonging may have been experienced by her friends creating a barrier to participation for them. And potentially even creating harm as she describes a friend telling her that they *"felt dumb being there."* Quotes like these suggest that racially based harm may have been occurring in the space and may have resulted in the space being inaccessible for some students and led to continued the decline in Black student participation. In this example we see how a lack of preparation as to how this club would be intentionally integrated in a way that would facilitate Black students continuing to have access and be served by the club created an experience of harm for a Black student. These

findings suggest the need to preserve all Black spaces. And that the very presence of non-Black students may have created harm for Black students.

Adult Facilitators, especially Black facilitators, Shaped Students' MSAS Experiences

Students' experiences in the club were also shaped by the adult leadership and facilitation of the space. Megan responded to what she found useful about me as a facilitator by naming my identity and how it shaped how she and other students related to me:

> *I think what was useful was the fact that you, I guess, you're kind of the way you related to us and your identity that I don't know, it felt, like interacting with you felt different than interacting with teachers at school. I don't think there were any Black female teachers at [the high school] at the time, but also, you know, you're a bit closer to our age than like, the average teacher. And you're relating to us as being a student, be it like a graduate student, but still, with a kind of a different mindset.*

Megan's response suggests that my racial and gender identity as a Black woman was important to her and that this identity along with my identity as a student and as someone closer to her age than teachers made it feel "*different than interacting with teachers*" and more relatable to students. Framing the question as a comparison between the club and her high school students could suggest that the space of the club felt significantly different than that of classrooms.

Megan continued her response by discussing my interactional style and desire to co-create the space as different than what she experienced in classrooms with teachers,

> *And if felt like you were, like, interested in collaborating and hearing ideas, not only for myself, but from anyone and that you didn't always know, like, what the right, you know, what should we do, and two months from now, or whatever it was, it didn't feel like you're coming in with, you know, this set prescription in mind, and we were supposed to follow it. It [the curriculum of the club] felt like something that could be developed together.*

> *And I think that was really great. And you always had a lot of passion. And it was clear that this was important to you, and that supporting all the students was important to you to, you know it just felt very genuine, which was good."*

Megan viewed the co-creation of the space as "…*something that could be developed together* and as positive aspect of the facilitation of the space. Megan's view that I had "*a lot of passion"* about working with the club and that it was clear to her that it was "*important to [me]"* were also useful aspects to Megan. An aspect of my facilitation practice which Megan discusses which aligns with my conception of fugitive spaces is identified by Megan when she says "…*that supporting all the students was important to you to, you know it just felt very genuine, which was good"* As shown in the analysis of Amir's interview, Black children often feel the need to prove to teachers that they are interested in learning and do not fit into anti-Black stereotypes which position them as unintellectual. Megan's description of my teaching provides a contrast to this when she positions me as "*supporting all students*" in a manner that felt "genuine." This description suggests that I treated and viewed students with humanity by supporting them and not making them prove their worth, which is a foundational aspect of fugitive spaces.

When I asked Chi what encouraged her to participate in the club she mentioned the content and fieldtrips. She was positively impacted by her experience in the club thru having a facilitator with whom she shared a racial and gender identity.

> *Also, I would say definitely, like, the content we discussed in the club, like the field trips we had. And I also think having you there was very helpful because like, regardless, like, how, like, how many people were there for the week, like knowing like, you know, like, there's another black woman here, like it honestly, like, made me feel very empowered.*

Chi discusses here that my presence in the club as a Black woman made her feel empowered. She further says that the consistency of my presence, each session was a motivation for her to keep attending the club each week, despite weekly changes in guest speakers and activities, framing the experience of having a Black female facilitator as empowering.

Chi reiterated the importance of Black adults and role models when I asked her toward the end of the interview if there was anything else she would like to share with me about her experience of the club.

> *I would say just to have like, more diversity in terms of speakers. Like, for example, like I said, I don't remember if it was when we went to [the University] the guy that we talked to, like, although like, I had no idea, like what he was talking about, like just knowing that he was like a Black person. And he was in that space. It made me like more intrigued to like, listen to him know about what he was doing. And I felt like if it was someone else from another race, I probably wouldn't be interested but not as interested as I was. So I found that like, really fascinating. So I felt like if more like black speakers were to come in, or like people from like, other races, like I felt like that would be really cool. And like inspiring to other people.*
>
> In the first part of the quote Chi explains the importance of Black role models by giving an example of listening to a speaker in the club whose presentation to the group was at a level above her current comprehension. Chi explains however that she still received something of value from the interaction because his race matched hers. Her ending comment indicates that she desired for the club to have more Black guest speakers and speakers from diverse backgrounds because they might be "inspiring to other people"

because of the racial identity of the speaker, even if they don't understand everything a presenter is sharing.

Students' Need for Support in Developing a Resistant Black Racial Identity

Student interviews suggest that a more critical and nuanced understanding of Blackness would have been useful for students and that they would have benefited from explicit discussions about Black identity. Explicit discussions of race and racism could have been a useful vehicle for helping students form a more critical understandings of Blackness that would have served them in their college experiences. While race centered discussions were a key component when the club was facilitated by Verónica, the co-creator of the club, these discussions fell by the wayside when the club was opened to students of various races and shifted facilitation to myself. While I desired more racially based discussions within the club, the club was framed for me by students and the facilitator as a place to focus on STEM based group activities and STEM guest speakers and less so on the discussions. I also lacked the formal training which Verónica had to facilitate race-based discussions and was unaware of the race-based curriculum Verónica had previously used to lead the group.

While a great deal of the literature examining Black students' experiences in STEM classrooms, and classrooms in general, documents Black student experiencing various forms of anti-Black racism and lowered student expectations, comments from students here were 100% positive about the club and the educators. Students' comments like, *"Mr. Ricker was one of the most supportive teachers I ever had, honestly, like, I felt the love and support from him fully… I think that like if he continues to support black students the way he did me then like, he'll make a big impact,"* are demonstrative of the way this teacher was described across student interviews.

Chi's interview may have been the interview which provided the greatest information on how the decision to open the club to non-Black students led to Black pushout. Chi's interview

provides the foundation to understand this decision as undeniably anti-Black and leading to the destruction of the fugitivity of the club. We see the anti-Blackness of the space as evidenced by Black students' feelings of intimidation. Intimidation was one of the most repeated themes found in Chi's interviews and was experienced by Chi and her friends.

Learning is deeply connected to students' affective experience. Feeling intimidated can shut down students' ability or willingness to ask questions or start clarifying dialogue in STEM spaces. In the student quote below the student discusses being intimidated by the assumed intelligence of Southeast Asian and White peers within the group. *"[I] honestly felt at first I'll say a little bit intimidated because I felt like the people there were like very smart like out of this world smart but then like, once you like get to know them. They're very opening and welcoming…"* It is possible that racial stereotypes which position southeast Asian students as mathematics and science achievers may have created this intimidation (Steele, 1997). After discussing a general feeling of intimation Chi discussed her willingness to continue to attend the club despite these feelings and moments of discomfort. Chi's reflection on the intimidation she felt when entering the then predominately white and Asian space, helps us to understand how the school administration's decision to open up the space to non-Black students directly led to Black pushout.

The level to which Black students were impeded from participating in the club as a result of the decision to open the club to non-Black students varied greatly from student to student. Some Black students were okay with the racially integrated space, however some felt prevented from learning within this environment. While there were variations in students' abilities to learn in the racially integrated space, almost all Black students interviewed desired that the club would

have remained an all-Black space and felt that they and other Black students would have recieved the greast benefit had the space remained all Black:

> *Yeah. I'll say like, Elii, Erica and Alex and all them [three asian students]. Like, they're very, very smart, like intelligent people, like I love them so much. But I feel like from an outsider looking in, like going into a club, like even I was intimidated a little bit. Like, I remember there was like this one field trip we had, there was like a research field trip, and everyone was just so like, into it. And I was just like, Oh, my God, I do not know what this is. But like, I kind of know how to, like, hold my own. Like, if I don't know something, like I'm willing to learn. And I'm, like, fine in this situation. But I feel like someone might feel like, Oh, I'm not meant to be here, or I'm not smart enough to be here. So I feel like just letting that be known. Like, it doesn't matter. Like what you see or how like advanced people are in certain subjects. It's just all about, like, learning and not like feeling intimidated by them. Like, or like the content you're about to learn.*

In this passage we see that Chi's feeling of intimidation came from entering the club and encountering three southeastern Asian students who by definition are stereotyped as academically achieving model minorities. We see with her use of the phrase "even I was intimidated," her acknowledging that the intimidation she felt would have been experienced by other Black students enter the club, likely to an even greater degree. Chi further expanded upon how this intimidation might create a barrier for other Black students wanting to join the club when she shared "*And I'm, like, fine in this situation. But I feel like someone might feel like, Oh, I'm not meant to be here, or I'm not smart enough to be here."* Chi may have experienced pressure to perform well as a representation of her race as the only, or one of very few Black

students in the club. These anti-Black beliefs place Black people outside of the realm of STEM learners and STEM knowledge holders.

The interviewee also discussed how feelings of intimation may have made the club inaccessible to friends she invited to the club who briefly attended the club but did not stay for multiple meetings:

> *I'm used to like those types of people. Like, they're amazing. But like, I'm used to, like, knowing that, like, certain people will be like, more advanced and certain things. So for me, it's just more about like learning. But I remember like, one of my friends, like, she didn't want to go there anymore. Because she's like, Oh, I like just felt dumb being in there. And I remember, like, I wanted to, like, keep bringing her back, but she just didn't feel comfortable being in there. So like, that was one of her reasonings. And I could kind of see like, where she was coming from, but like, like I said, for me, it was fine. But I feel like that's something like that would be helpful for like future people who want to join.*

We see here that Chi chooses to continue in the club despite intimidation, viewing others as having a more advanced skill level or understanding of STEM topics but being okay with this perceived distance between herself and her peers, and willing to continue to engage in the club through these feelings in exchange for the possibility of what she described in the previous quote as the opportunity to "*experience what the club has to offer."* Though she stayed in the club and was able to adopt a non-harmful view of the seeming distance she perceived between her level of STEM comprehension and that of other students, she was also aware that the same feelings of intimidation, discomfort and non-belonging created a barrier for other students who experienced the club as harmful, and *"felt dumb being there."* Quotes like these suggest that racially based

harm may have been occurring in the space and may have resulted in it being inaccessible for some students and led to a continued decline in Black student participation in the club.

When asked what discouraged her from attending the club, Chi again discussed her experience of feeling intimidated. Explaining that these feelings sometimes prevented her from wanting to attend the club, she does not state that these feelings prevented her from attending. Nonetheless, her response speaks to the emotional violence that she experienced as a Black student who felt less intelligent than White and Asian peers within the space:

> *Like I said, certain times, like certain topics, I just did not feel like I was strongly suited to be like discussing or to, like, be a part of the club. So certain times, like, I just would not feel like coming there. Like when it came to like, certain things I knew about. I was like, yeah, like, I'm all for it. But like, certain times, I'll be like, Oh, my God, these people are way too smart for me, like, I cannot do this. So that made me feel a little bit discouraged. But then afterwards, like, I kind of just like, had to look at myself. And I'm like, it's really not that serious. Just go experience things. So I'll definitely say like, just feeling like I wasn't informed on certain topics, and just having everyone be so immersed in it. That made me feel discouraged. So I'll kind of go into like my shell. But like, if not, I'll say, I really liked pretty much everything except that part.*

In the first sentence Chi is expressing that because she felt she lacked information about certain topics which were being discussed in the club that she did not feel as though she belonged in the club. Chi goes on to say that at "certain times" this prevented her from wanting to come to the club. She further goes on to talk about how this experience made her feel that these other students were more intelligent than her and that she might not be successful. We see here that Chi is expressing that these experiences in the club gave her the perception of others being

smarter than her and that this diminished her own thinking about her abilities thus making her feel unsuited to participate in STEM discussions or activities. If Chi had chosen to stop attending at that time, this experience might have negatively framed her own perception of herself as STEM learner and doer. She acknowledges he emotional effect this space had on her, and how it made her feel discouraged.

When asked how she felt about the club when she joined and then again when she left Chi again expressed that she found the club intimidating but that the more she attended the more comfortable she felt and that she learned something new each time she attended the club and found enjoyment in this,

> *Um, when I joined, I was a little nervous, because it's something I've never done before. Like I was in a bunch of other clubs. But this was something that was new to me. It felt like at first like I was on the spot in terms of like, How smart are you? How intelligent Are you? Like, how well do you know this topic, but then I felt like as I started going, I felt a little bit more comfortable. There were times when I was a little bit uncomfortable based on like what we were talking about, but I just enjoyed like how every day like I was coming in, like I was learning something new."*

Chi describes her peers and adult facilitators behavior toward her in the club as warm and welcoming throughout the interview, but here the language she used to describe how she felt in the club is intimidating and was assessing her smartness and knowledge. This contrast is analytically important as it shows that even if students and educators did not necessarily do or say anything to make the space intimidating for Black students, the very demographics of the space being a multi-racial and heavily white and Asian space created a space of hostility where sharing STEM information sometimes felt intimidating to Black students who were very much

aware of negative stereotypes which positioned them outside of the definition of STEM learner. It is not surprising that Black students who are likely to have experienced anti-Black violence in science and math classrooms would feel a sense of dread and intimidation within multicultural STEM learning spaces. While it is possible that Black students can experience anti-Black violence from other Black students or Black educators, it is much less likely. From this standpoint we can see why the affective experience of exclusively Black spaces STEM spaces can be so beneficial for Black learners. Chi also shared that her friends experienced this intimidation as well. When I asked Chi if she told her friends about the club, she shared,

> *I had one of my friends here who's actually my friend still but we went there together and she just felt like it just was not the club for her. She felt like she was out of place and she was intimidated by it basically she just felt like you know, like these people are way too smart. Like they just know too much about this. So she was just like, I'm just here for you like I'll come to like one or two meetings just because of you. But like after that, like, this is not my thing. But yeah, I do see her perspectives now that I'm outside looking in.*

While the race of the student is not given in the quote, the emphasis on recruitment for the club was Black and the students which Chi mostly likely would have invited would have been Black. Our conversation through the interview also focused on the experiences of Blacks students. For these reasons I have assumed the friend Chi refers to in this quote is Black. Similarly to Chi, these friends felt they were being compared to others in the club and compared themselves to other students in the club. Again, as the other students in the club at this time were primarily White and Asian students, the other students whom the Black students compared themselves to and felt compared to were Asian and White students.

Students wanted and would have benefited from Keeping MSAS all Black

Data suggests that the club was operating as a space of fugitivity for Black students during its initial configuration as an all-Black space but that this fugitive was disrupted with the racial shifts in the space brought about by opening the club to non-Black students. This is suggested by the introduction of inter-racial race-based harm into the space leading to the departure of beneficial race-based discussions which were fostered by a sense of race-based safety. For example, when examined as whole Amir's interview suggests that he valued MSAS as a affirming safe space where his academic aspirations and interest in STEM fields could be held and encouraged by like-minded peers. Amir's interview suggests that while Amir valued the inter-racial relationships made in MSAS and his experiences in the club after the club opened to non-Black students, he also desired an all-Black space of fugitivity where he could explore his interest in STEM subjects with students who had experienced the same kind of race based discrimination and isolation that he did where he understood that he would be unlikely to experience Anti-Blackness.

While Amir did not report experiencing anti-Blackness within the club space, and made several comments suggesting sense of emotional safety within the club, he puts forth several times that he desired an all Black space in which to explore STEM.

> *I think you and Mr. Ricker did a really good job of making people feel comfortable. I think we had like very real conversations, I think everybody in the group was very nice and welcoming. You were there, there weren't a lot of people of color in those [upper-level science]classes. And a lot of times like we kind of all stuck together. Like I don't know how much you remember. But like I remember in my class it was like me Miky [another Black male student], Julius [another Black male student] kinda just like sitting together and then there's like everybody else.*

In the above quote Amir discusses the isolation that he and other Black peers experienced in upper-level STEM courses. This can be understood as a result of anti-Black racism because research shows that Black students are one of, or only one of a few Black students in their upper-level STEM courses. In the above quote Amir expands upon the experiences of isolation he experienced in STEM classrooms. Several times, including in this quote, Amir discusses moving through his classes in high school and college with these other Black male students. While in his quote he doesn't say anything about being a Black specifically, he keeps referring to two other Black male students and himself as "us" and other non-Black and/or non-male students as "others" when he talks and refers to moving through both the educational spaces of high school and college. He emphases his experiences in moving through school and college with these other Black male students suggesting a specificity to the Black male STEM student experience.

He further described saying hello to a member of MSAS when he described the ability to say hello as "really good." We can understand the pleasure that Amir takes in these interactions as a positive feeling about collective achievement and a sense of camaraderie he feels around his and other students' academic achievement in going from high school students to current college students. The student that Amir references here is an Asian non-Black student. This fact suggests that Amir also valued and benefited from the sense of community he was able to build with other non-Black minority students, and possibly White students. While Amir valued and saw a need for all Black STEM spaces, he was also open to the idea of participating and in multi-racial spaces and found encouragement, comfort and a type of solidarity with non-Black minority students as well as Black students. While the above analysis suggests that Amir valued the inter-racial connections made in MSAS his characterization of his movement through his STEM high school and college experiences with the same group of Black male students also suggests the

importance of intra-racial/ intra-gender relationships to Amir's experience and suggests the potential benefits of all Black spaces dedicated to STEM exploration for this population.

> *...Also will say though, it, it is nice being, because like, at [the high school], there is a lot of like, other distractions and stuff that are going on. And I think it's very easy to get caught up in a lot of the other drama that goes there and a lot of other stuff that goes on. So it is nice being in a space where I really was kind of like, focused and dedicated to the same thing and like in the same classes that you were, and, you know, having the same issue. So I'd sit there and like, complain about the teacher, and then, one of my friends and they're like I've never had them because I never took an honors class. So that definitely was nice [being in a space with other minority students who took honors classes]. Having that space where everybody's kind of like minded and had similar goals.*

One of the most valued aspects of the club for Zola was the opportunity the club offered to explore STEM related topics and careers with a group of Black students. When I asked Zola what she liked about participating in the club she replied,

> *For me, because like, I was in a lot of honors courses, but like, the courses lacked diversity. So it was great to have at least one space that was like STEM related, where it was all diverse people, so it just felt like a safe place to me, because there really wasn't another place [of STEM learning that was diverse] I was a part of HOSA (Organization of Future Health professionals) but it just wasn't as diverse. I just didn't feel included as much compared to like when I was a part of MSA.*

For Zola the presence of other Black students created a space of safety " where it was all diverse people, so it just felt like a safe place to me…" While Zola uses the term "racially diverse" her interview revealed that the club was a Black only space at the time of her attendance, "*I*

remember [the club] being like all black ,one person was like, I can't remember if she was like Asian or like Native American. I'll say like 90% Black, 10% Other minority." Zola also speaks to the uniqueness of the opportunity provided by the club to explore STEM in a diverse and safe feeling space when she compares it to her honors courses that she describes as "lack[ing] diversity" and when she plainly states "because there really wasn't another place [of STEM learning that was diverse]." She reiterates this point by giving the example of HOSA as a STEM space which she participated in but lacked diversity.

When I asked Zola how her club experience differed from her school experiences, she again discussed valuing the racial diversity of the club, which at the time of her attendance included only Black students. *"So for me, I was very, like a very academic person. So like, I was involved in different clubs, right. Like I was involved in sports, but it's also great to be a part of a club that was diverse but also tackled my academic interest."* Here Zola is again articulating the lack of spaces available to her where she was able to reconcile her racial identity and her student identity as a high academically achieving student. She labels her experience in the club again as positive and valuable in this quote saying it was "great" to be a part of a space in which these two identities could exist and simultaneously be supported.

When asked about how she felt about the club when first joining the club and then when leaving the club Zola touched on the importance of the space as a Black space:

> *I think when I left there just wasn't much of a use for me anymore, because it just wasn't related to like my next science course. I stayed on because like the field trips, community was great to have outside of just sports, and Black Student Union. HOSA which is like the health occupations club but doesn't have much diversity."*

Here Zola changes her narrative around leaving the club slightly to say that she did stay on with the club after she had completed her science course with the teacher creator of the club. Zola cites the community she experienced in the club as her reasons for staying in club after the ending of the course. While she does not specify Black community as the community she is discussing, she does mention BSU (Black Student Union) as a comparison. The club would have also been predominantly Black at the time of her attendance as she stated in the beginning of her interview. Though Zola uses broader terms for the club such as “racially diverse” she is indeed talking about the space as an all-Black space given that she remembered the club as all Black during the time she attended.

Zola reflected on her positive experience in the club and implied that the club recognized and spoke to the entirety of her experience as a Black learner and student interested in STEM. And that it was a place in which she felt that all of her identities were recognized and welcomed. The result of this recognition for Zola was joy. She stated twice that she felt happier as a result of the club, immediately following the club meetings, and that she generally felt happier to be a part of a diverse, in this case Black, club. Lastly when asked “Did your experience in the club impact any of your future decisions or experiences?” Zola reflected that she felt safe in the club and that she valued the space as place where she could connect with other students who she describes as like-minded,

> *I think within the club there was like, access to like, to get work done, it was a safe environment…I would still do MSAS again, because just for that environment to write, it's good to be around like minded people within a subject matter that you're interested in, which may change over time. But it's also important for a person to be holistic and know things about different subject matters, too..going backwards, I would do it again.*

Zola's use of the term holistic varies from her previous uses. She is not describing the acceptance of her various identities but using the term to describe a desire to have familiarity with a large various amount of STEM careers. While much of Zola's quote hits again upon the importance to Zola of having her Black identity and her academic identity recognized and reinforced within a group of peers. This quote also shows a new theme for Zola's interview which was that she valued, that the club introduced her to and or deepened her knowledge about a broad range of STEM based careers. And that she felt this knowledge was "important for a person."

Benefits of Black space/ Black STEM space

During Chi's time in the club, the club was predominately Asian American with a few White participants. Similarly to other students interviewed, Chi's interview showed that while Chi found usefulness in the club in it's multiracial configuration, she would have preferred and felt she would have benefit more had the club been all Black:

> *I'll definitely say if I knew it was [an] all Black, like club, I feel like I would have joined earlier. Like, I think someone who used to go to the club was also Dija [African American student]. And I feel like being around people, like, who look like you, like I love like [named two non-Black students] and everyone else. But I feel like just people who look like you just inspires you to a different level. So I feel like that probably would have made me want to go more, and seeing how other Black students are, like succeeding or the things they're into. I feel like it would kind of inspire other Black students to be like, 'You know what, like, it's okay to not be like one size fits all.' Like it's going to bring a close knit community. I feel like I honestly would have liked that more a little bit.*

In Chi's above response, we see her saying that she desired an all-Black STEM space and felt it would have been able to provide her with a sense of racial solidarity and job which she did not

experience in multi-racial configuration of the club. We Chi referencing the positive effects of racial solidarity created which often exists in all Black spaces in her comments. Chi's comments suggest that racial solidarity creates inspiration and motivation for Black students. Chi also spoke to how solidarity can help Black students to feel comfortable in their interested in STEM, the potential of an all-Black STEM space to help Black students reconcile their Black and STEM identities. Finally, she reflected on the closeness which is possible in all Black spaces:

> *Yeah, you know, it was really interesting because it so it was started by a black woman, the club like Mr. Ricker, but in this Black woman, and they both wanted it to stay Black or saw value in that. But I guess the, the administration really wanted the club to be opened up to students of other races. And so and so they did that, like between the time now the other black woman who was leading it left, and when I started in the club, like I think it's like a couple of months into the next fall.*

Chi provided the following reflection in my discussion about the clubs shift from all Black to multi-racial. Here Chi puts forth that Black students would have liked MSAS more as an all-Black spaces, as all Black spaces were essential in helping Black students to be successful in high school:

> *I feel like I probably would have liked [the club being all Black] that way more [than the club being multi-racial], because I feel like I don't know if you're aware, but they have like a BSU, which was a Black student union and a lot of the students in that club were very successful. Chi suggested that in general Black students who attend the high school do not receive the support they need to be successful, but that all Black spaces such as the Black student Union provided this support and that had MSAS also been an all-Black space it could have better functioned as a space of support for Black high school*

> *students. So I feel like just having especially [at the high school], like a lot of the Black students there. I feel like they aren't supported as they are.*

Chi also went on to state that had the club been all Black, the club could have helped more Black students realize their interest in STEM and find STEM opportunities.

> *And some of the students might have interest in like science and other things, but like, they don't know like, where to start. So I feel like putting like more black students in that space will not only like raise their interest, but also give them like opportunities that they probably would have never like heard about or knew about if they were just in like regular clubs or never even knew about the club.*

When asked if there were aspects that should be changed for future iterations of the club, Chi drew a connection between the comfort of the space and the racial makeup of the space, sharing that she believed the club would have functioned best as a diverse and predominately Black space and that the club would benefit Black students. She also discussed the importance of helping students to feel welcome in the space, making sure that everyone's voice is heard, and making the club feel less intimidating.

Chapter 5: Discussion

This dissertation is a cautionary tale about Black pushout and the fragility of fugitive spaces for Black students, particularly in the context of a specific high school Science Technology Engineering and Mathematics (STEM) club. I argue that the Afro-Latina female educator and the white male teacher began a club with the specific purpose to create an educational space serving Black youth, and that this fugitive space was taken apart by anti-Black

actions on the part of white administrators and educators in the school and park district. At its core, this dissertation answers the following questions:

1) How did educators and students' goals for the space shape the experiences of Black students? Did these goals shift as the space became multi-racial?
2) What did Black students value about the club? Were these aspects influenced by shifts in the racial composition and structure of the club?

In my literature review I argued that schools fail to serve Black youth and are often sites of anti-Black harm for these youth. This violence includes overt physical and psychological violence as well as more insidious forms of violence such as experiencing stereotyping and hyper-control/vigilance of their bodies. Black students also have their opportunities to learn restricted, rarely experiencing the same level of access to advanced level and AP classes as white peers. Black children are often forced to choose between the anti-Black racism of school opting out of schools which would lead to navigating our anti-Black carceral economy with low formal educational attainment. These inequalities and experiences of harm for Black youth exist across subject areas but take on special importance in STEM related subjects, where anti-Black logics construct Black learners as outside the realm of STEM learning. This dissertation builds on this literature and offer insight into what Black youth experience in STEM learning spaces, even those that are school-adjacent-like an afterschool program—and may have been initially designed for Black STEM learners by Black educators.

To analyze Black students' experiences in a STEM afterschool program, I utilized the theoretical framework of Afro-pessimism. I chose this framework to understand how Black students' experiences in this program operate within a broader pattern and social death and gratuitous violence which Black people are subjected to for the purposes of cementing the

antagonistic ontological relationship between Blackness and humanity to uphold white supremacy. This theory grounds is grounding in the understanding that since the time enslaved-Africans were first brought to this land, Black communities have found ways to resist their dehumanization by creating spaces of fugitivity to educate, celebrate, and love themselves and sustain their culture. As the research cited in the literature review and theory sections shows, Black educators are still creating these spaces of fugitivity from anti-Black harm, often within the margins of anti-Black institutions.

This dissertation's findings demonstrate the need to preserve all Black spaces for Black learners, including Black STEM learners. It also suggests that the presence of non-Black students in a space created for Black students may have created harm for Black students in ways that made them feel unwelcome, uninterested in participating in the space, and, ultimately, led to Black students being "pushed out" of the space entirely. I use student data to argue that the club benefited students by providing a chance to explore STEM fields, participate in a community of STEM-interested students–including other Black students, and develop their leadership skills. I argue that the club was sometimes harmful to Black youth after becoming a multi-racial space.

In Chapter 3, I begin with offering insight into why this afterschool club was created and the intentions behind its creation as expressed by the students who asked for the club and the two educators that created it. As a Black person who had attended advanced level mathematics and science classes herself in high school, Verónica, the Afro-Latina AmeriCorps volunteer, had the greatest understanding of students' experiences of anti-Black harm in these classrooms as well as the desires of these youth and what they would find most useful. Verónica understood that Black youth interested in STEM subjects needed a space of safety where they could express and develop both their Black and STEM identities. She also understood that to be successful in the

STEM field Black students needed specific skills that were not required of white and Asian students, such as the ability to navigate being the only, or one of only a few Black people in a space. Verónica also understood that the intra-racial make-up of the space was key to creating the safety of the club and vital to ensuring that students would be supported in these multiple and sometimes conflicting identities.

Verónica was strongly opposed to opening the club to students of other races because she understood that opening the club to non-Black students would disrupt the racial solidarity within the space which she saw as vital to supporting her goals for students. Verónica's considered the needs of Black students, including the harm these students experienced in other educational spaces. These understandings led her to protect the safety and racial solidarity of the club which supported the fugitivity of the club, by refusing to allow the club to be opened to non-Black students despite pressure to do so from white administrators and teachers. I argue that educators' understanding of the need to sustain the club as a fugitive space and their ability to do so was directly connected to their understanding of students' experiences of anti-Black harm in schools.

Unlike Verónica, Paul, the white science teacher, had never experienced being a Black learner in higher level math and science classes and had less of an understanding of Black students' experiences of harm in these spaces and thus less of an understanding of fugitive spaces and the need for them. As a teacher, Paul was able to identify that Black students in his upper level science classes were experiencing isolation, but like myself he was unable to identify various aspects of Black students experiences in these classrooms as harmful. For example, the lack of Black representation in curriculums, the comparison of Black students test scores to white students test scores. Paul no doubt found these aspects problematic as well as the lack of representation of Black students in these higher-level classes a problem, and actively took steps

to increase the number of Black students in these classes. However, there is a significant ideological difference between Paul understanding these experiences as a urgent and important problems and understanding Blacks students experiences in classrooms as harmful to the point of Black students needing a space of shelter from anti-Black harm.

The difference between these two points of view is demonstrated in Paul's reaction to the opening of the club to non-Black students. Paul understood the decision as student-led and facilitated by Verónica, and was not concerned that this decision might disrupt the learning of the Black learners of the space or the solidarity or safety of the space. He did not fully see the harm that Black students were already being subjected to in school and in STEM classes and therefore did not understand what they needed shelter from. Paul was not aware of the ways that STEM Black learners held a space of ideological non-existence, as anti-Blackness positions Black youth as non-mathematic and non-science learners. Paul did not understand as Verónica did that Black mathematic and science learners needed to develop specific skill sets, such as the ability to navigate being the only, or one of only a few Black people in a space, which white learners did not need. Ultimately, because Paul did not conceptualize the space as a shelter from anti-Black violence as Verónica did, he did not understand the necessity of preserving the club as an all-Black space.

As discussed in Chapter 4, my understanding of the need for fugitive spaces fell somewhere between Verónica and Paul's. Verónica reported that during her facilitation of the club she experienced students beginning discussions around being the only Black person in the space, and that she also saw a change in the way students related their own Black identities, going from being reluctant to identifying as Black to being comfortable identifying as Black. Those race-based discussions that were a valued aspect for students during the all-Black,

first year of the club, were much less prevalent in the following years. This change may be partially attributed to the AmeriCorps volunteer having formal training in facilitating race-based discussions, but is also the result in the clubs shift from an all-Black space to a multi-racial club. In all Black spaces in every person has experienced or has the potential to experience all anti-Black racism, making these spaces more conducive to race based discussions, as anti-Blackness affects all participants. As Verónica reported, she encouraged race-based discussions, and they occurred organically through peer mentorship during the clubs all Black phase. For example, Verónica shared that students would ask each other for advice around how to handle teachers who were known to be racist towards Black students.

As the facilitator of the group who taught after Verónica, I did try to initiate conversations about race, however these conversations were often unsuccessful. In one instance I experienced a student getting frustrated by me discussing how I found a film we were discussing somewhat racist. One exception to this were comments made by guest speakers, whom I tried to ensure were Black, when these speakers would sometimes discuss what it was like to be in a predominately white college majority or field. After the club became multi-racial and I became the facilitator, my attempts to have discussions about anti-Black racism in the space sometimes felt less than welcome. I cannot report, as Verónica did, that students experienced a positive change in relationship to their Blackness.

Lastly, in Chapter 4, I argue that anti-Black logics were used by white teachers and administrators to disassemble the fugitive space created by Verónica. Paul's recounting of how the club was opened to non-Black students stands in contrast to Verónica's. In the teachers recounting the decision was a student-led decision made at the end of the first year from a session facilitated by Verónica in which she facilitated student feedback. Verónica's recounting

of this shift positioned the decision to open the group to non-Black students as an administration led decision which she strongly opposed and which took place after she stopped working for the school. Both Paul and Verónica stated that they were not present or leading the club session during which this decision was made. Because of school policies we know an adult was required to be present whenever the club meet. The pressure which Verónica received from her recreational district supervisor and other administrators and teachers to open the group up to non-Black students, and her belief that the administration took the opportunity of her leaving to do so, suggests that Verónica's supervisor, or another member of the district recreational staff, lead the club that day with the agenda of opening up the club to non-Black students and was successful in doing so. Paul's response frame him as understanding this shift as approved by Verónica and as a result of the desires of students, the latter of which student interviews confirm. Their main motivation for opening up the club to non-Black students was to increase the size of the group even though they saw benefit in the club as an all-Black. Reflecting on the all-Black version and the multi-racial version of that space, they now say they would have preferred to find other ways to expand the size without opening the club to non-Black students.

It is significant and curious that over the course of these interviews when asking students what they valued about the space, every student I interviewed who experienced the club as-all Black said that they valued having an all-Black space in which to explore STEM topics in. Participants who did not experience the club as all Black discussed desiring to have experienced the club, or another STEM focused space as an all-Black space. Students across interviews discussed the important of Black high school students having access to all Black STEM spaces. Considering these findings, it is curious that the decision to open the space to non-Black students was framed by both Paul, the science teachers, and the students interviewed as

arising from student feedback which indicated they wished to expand the number of participants in the club. That students repeatedly reported valuing the all-Black demographics of the space yet choosing to open the space to students of other races seems contradictory even in context of students desiring to expand the space. This contradiction suggests to me that perhaps students may have been persuaded to address the issue of low club attendance by opening the group to students of other races with little discussion of how low club attendance could be addressed in other ways. And that perhaps the adult leading the discussion during which this decision was made came in with the agenda of opening the club to other races, or at least did not attend to what the space might have been specifically providing Black students as an all-Black space.

To be clear, MSAS was useful to Black students in a number of ways. Students valued the club as a community of Black or racially minoritized learners interested in STEM. Some students reported that this community extended beyond high school into their college experience and created a sense of comfort and pride. Students also appreciated the leadership opportunities that the club provided expressing that they experienced a lot of personal growth from their experience in the club and that they continued to look for opportunities to build upon their leadership skills in college. The club also expanded students' knowledge about the types of STEM careers that existed and what those jobs entailed. Students commonly reported that their experiences in the club influenced the major they chose in college. A couple students said they felt their experience in the club helped to facilitate their success in college because it gave them a sense of confidence in their ability to be successful in math and science-based fields.

The students who expressed these sentiments also took classes with Paul and it is my opinion that these comments referred as much to their experience with Paul as a classroom teacher as to their experiences in the club. Mentoring was another aspect of the club appreciated

by students. While students did not use the term mentor in discussing their experience with the teacher, students discussed him as an important and positive encouraging presence in their learning experiences, suggesting a mentor like aspect in their relationship to him. Several students appreciated the one on one mentoring they experienced with me and Verónica, one female student discussed looking up to me as a Black woman and were encouraged by my presence in the club on the basis of these shared identities, explaining that the school lacked Black women teachers.

Another finding was that anti-Black racism did not enter the club in expected ways but occurred from the affective experience created by the multi-racial environment in the absence of anti-Black action and discourse. Black students experienced harm as the result of the racial shift within the space, as data suggested anti-Black racism entered the space once it shifted from being all-Black to multi-racial. This harm was located in students' affective experience of the space, which shifted from feelings of safety and feeling seen to feelings of isolation, intimidation, and that they did not belong in the space. The way in which anti-Blackness entered this space offers an important insight—that opening all Black educational spaces to non-Black youth can have detrimental results for Black youth by negatively impacting the affective experience of Black youth, even when no explicit anti-Black discourse or action has taken place. As anti-Blackness has positioned Black youth as non-human they have been conceptualized as incapable or less capable learners in comparison to other racial groups, particularly in STEM learning spaces.

Analyses in Chapter 4 also suggest that the racial shift in the club led to a disruption of the Black racial solidarity in the space. For example, Black students discussed feeling welcomed by the atmosphere of the club but being intimidated by the topic of STEM, particularly when white students and "model minority" students were in the club who they viewed as "smarter"

than them. One student shared that she invited a friend to participate in the club but that the friend did not return saying that the club made them feel "dumb" because they were having difficulty following a group conversation around a science topic. This student understood why her friend did not want to attend the club after this experience, as do I. Students should not have to experience the harm of feeling dumb in a space to access educational experiences. However, when spaces of fugitivity are intentionally disassembled, this is what Black students are forced to experience.

The inclusion of non-Black students in the club resulted in the racial demographic of the club resembling that of high-level mathematics and science classrooms, spaces in which these Black students already experienced significant harm and isolation which lead to the creation of this very club. Rather than the club being a safe-haven, it became more like the high-level mathematics and science classrooms these Black students were trying to find reprieve from. The specificity of white and Asian students as the main racial groups entering the club likely exacerbated Black pushout from the club given the racialized stereotypes about these groups as "natural" math and science learners.

This intimidation, and how it played out in the club MSAS, is not surprising given how western thinking around mathematics and science are influenced by platonic views of mathematics as the most intellectually rigorous activity, how Black students have experienced schools especially math and science classrooms, and how Asian and white learners have been positioned by educators and policies (e.g. No Child Left Behind, Every Student Succeeds Act) vis a vis Black learners within schools. Indeed, this view of mathematics and science is widely known to influence educators' implicit biases in ways that draw upon anti-Black ideologies and, through interactions within classrooms and schools, plays out through pedagogical practices, that

position Black students as unintelligent and often as "the problem." Within STEM fields, this can manifest as teachers viewing Black students as outside the realm of mathematics and science learning, or not positioning Black students as capable and willing STEM learners.

Students having experienced discrimination and violence from teachers because of these beliefs or teachers holding other anti-Black ideologies which position Black people as less than human and deserving of pain and suffering, have increasingly led to Black students' experiences of trauma in mathematics or science classrooms. Black students themselves may have also absorbed these messages from the media or other sources and internalized them. All of these factors can lead to intimidation in the area of mathematics and science learning and STEM fields in which mathematics and science are foundational. These experiences or perceptions can cause students to feel intimidated or ashamed if they are feeling lost in a STEM based conversation.

Although some Black students continued on in or joined the club after the racial shift, many reported feelings anti-Black harm in the form of intimidation and lack of a sense of belonging in the space. One student framed their ability to continue in the club as the result of having developed the skill of participating in programming despite feelings of intimidation and non-belonged. That this student developed this skill suggests a lack of access to educational spaces in which Black students can and feel celebrated and safe from harm. This suggests that Black students are often faced with sacrificing a feeling of safety and belonging in order to participate in the available educational programming. One student articulated that as the club became increasingly less Black she began to experience racial isolation which mirrored her experiences in her mathematics and science classes. Though this student continued to attend the club and benefit, she experienced the racial shift as a loss of the only all Black space she had access to. She expressed that part of the reason she initially joined the club was because it

provided the chance to be in a predominately Black or racially minoritized space, and that her high school classes and extracurricular activities were predominately white, non-Black spaces.

As discussed earlier, we must understand this club's trajectory, and the Black students' experiences within it, relative to the context of how anti-Blackness in U.S. society positions Black people as an antagonism to whiteness and thus outside the realm of science and math learners and doers for the purposes of holding up white supremacy. Black students' awareness of anti-Black stereotypes may have created stereotype threat for Black students. The experience of stereotype threat combined with past experiences of educational trauma may have led to Black students' affective experiences—including feelings of intimidation, not feeling that they belonged or being made to feel "stupid"—with the club in ways that facilitated Black pushout. These racial shifts also led to Black pushout through the disruption of the Black racial solidarity of the space. Student interviews identified racial solidarity as an aspect of the club that was important to them but was disrupted by the introduction of non-Black youth to the space.

That spaces of Black solidarity are a rarity for Black advanced STEM learners further highlights the importance of preserving the racial solidarity of these spaces and the anti-Blackness of disassembling them, as was the case with the club. Students expressed valuing the space as an all-Black space and often expressed desiring to have an all-Black space in which to explore STEM subjects and/or discussed the importance of all Black STEM spaces.

It is important that the above conversation around how anti-Blackness occurred and entered the space be informed by all the data, even data which contradicts my findings. Within interviews students did not report any instances of racism arising before or after the racial shift in club sharing that they felt welcomed by members of the club which might suggest a lack of anti-Black discourse of action in the club. I only identified two instances of explicit anti-Blackness in

the club while I was a lead educator for 5 years. The first instance was that of a Black student making a disparaging comment about African Americans in-relation to educational aspirations, suggesting that other Black ethnic groups were more school and achievement oriented. The second incident occurred when Paul and I insensitively used a graph which compared the test scores of the high schools' white students and Black students as a teaching tool.

The discrepancy between my identification of anti-Black racism in the club and the absence of student reports of anti-Black racism in the club could be understood in a few ways. This discrepancy could be caused by me not directly asking students if they experienced racism in the club. I instead asked a series of questions around their experience and view on the racial shift. It is possible that students did have experiences of anti-racism that they recalled but did not share them because they were not asked directly. Another possibility is that students did experience racism in words or action during their time in the club and simply did not recall those instances during the interview. A third possibility is that students were working with a different definition of racism than I was. For example, in Chapter Three, Verónica shared in her interview that she experienced racism as an employee at the school. It seems likely to me that the cause of this discrepancy may be different depending on the interviewee and often a combination of more than one reason. I do not view this discrepancy as conflicting with my assertion that anti-Blackness entered the club primarily through students' affective experiences because of the racial shifts or as counter to my framing of the isolation, intimidation and a feeling of un-belonging as anti-Black harm. As this dissertation sought to understand students' experiences in the club primarily from their perspectives and meaning making of their experiences, my findings around anti-Black racism need only to reflect students' perspective and not my own experiences or understandings of anti-Blackness in the space.

Limitations

In this dissertation my access was limited mainly to students who made themselves available as alumni of the school and the club. For some alumni, these interviews were happening several years after graduation making it hard to track down contact information for students. Likewise, my sample consists mainly of those former students who continued to find the club useful after the racial shift rather than those who left soon after or just before the racialized shifts in the club. Some of the students who continued to find the club useful also experienced harm in the club after the racial shift and shared their experiences. Some experiences of harm were shared as secondhand accounts, representing the experiences of students who left the club, but whose friends were interviewed for this study. I also interviewed three students who attended the club only briefly but did not report incidents of harm.

I also discussed that it was important to note that student interviews were void of recollections of overt anti-Black discourse or action, further suggesting that though I recalled moments of anti-Black racism in the club those recollections may not have been shared. Indeed, while student interviews did not show anti-Black racism or anti-Black discourse, I observed these things. I do not have data that points to why I observed anti-Black acts or anti-Black discourse in the space, but student interviews showed a complete lack of either anti-Black action or discourse. It could be that students had a narrower definition of anti-Black racism. Verónica shared that some students expressed to her they had never experienced anti-Black racism, contrasting the anti-Black racism that Verónica experienced while working at the school. Suggesting that students may have had a different definition of anti-Black racism than myself and Veronica. Finally, my own definition of anti-Black racism has been broadened as a result of

writing this dissertation. On the whole, data from students suggests that anti-Blackness did not enter the space as a result of anti-Black comments or actions but as a result in the shift in racial composition of the space from all-Black to Black, white and southeast Asian.

Implications

Interview data suggests that for Black students taking higher level STEM courses is inseparable from experiencing racial harm in the form of racial isolation. When considering decisions about inclusivity and affinity spaces it is important to remember the intent of these spades and the push for inclusivity, legal and otherwise, were meant to provide greater access to vulnerable populations. Laws which protect vulnerable groups against race-based discrimination were intended to prevent these groups from experiencing discrimination and exclusion at the hands of groups in positions of power and privilege. We must ask, 'Who has access? and 'Which groups are most vulnerable?'

In the context of the club, students who formed this group were members of a vulnerable group. Data on the experience of Black students shows that they experience acts of violence and harm in STEM spaces because of their Black identity. Data in this dissertation in which students discuss the racism they experience at the hands of teachers and non-Black peers, as well as media reports and research documenting the abuse of Black children in STEM classes, further support this assertion. This context might not have been considered when school administration made the decision to open the group up to students of other races, a decision that might have been motivated by a desire to be in accordance with district policy created with inclusionary laws in mind. If this is the case, the school district's attempt to follow these policies without a deeper examination of the intent of these laws, functioned to privilege groups who already had the most

access to education; White and Asian students. Giving these groups access without a clear plan of how to continue to preserve the fugitivity of the space led to the disassembling of that fugitivity and the pushout of Black students disrupting Black students access to educational opportunities in the area of STEM. To use inclusion as a reason to open the club to non-Black students worked to impede Black students' access to a safe STEM learning space providing the opposite effect for which civil rights laws and resulting policies were created.

This dissertation highlights the complexity of experiences Black STEM students have in all-Black spaces and all-Black spaces that become multi-racial —from the benefits to the harms. Feelings of intimidation and non-belonging were reported experiences during the club's multi-racial configuration often in conjunction with feeling welcomed and sometimes safe. The ability of the space to hold multiple and contradictory experiences for students, often within a single student's experience, shows the ways in which anti-Black harm can co-exist with positive affective experiences. This is a reminder of the fluidity of affective experiences and suggests that students could be having positive and useful experiences in an educational space and at the same time experiencing anti-Black harm that could lead to their eventual pushout. This is a crucial and important understanding for educators working with Black children to understand as it suggests the necessity of not assuming an understanding of a student's broad range of affective experience based upon a moment of positivity or utilization of a space.

This dissertation illuminates the challenges Black youth, Black youth workers, and educators face in sustaining educational programs that serve the needs and desires of Black students in the context of all Black educational spaces. It also illuminates the challenges of integrating educational spaces without regard for why these spaces are all-Black and the fugitivity they may provide for Black students who may feel under siege, isolated,

misunderstood, or “unsmart” in other STEM and non-STEM learning spaces within schools. This dissertation may provide insights and ways of thinking towards addressing these challenges and more fully protecting and supporting Black STEM learners, and Black learners in and out of schools.

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Appendix A: Student Interviews

1. What did you feel was the purpose of the club?*
2. Who lead the club when you were a member?
3. How did you feel about the club when you joined?*
4. What was the racial composition of the group while you were a member of the club?
5. How did the club become multi-racial? How was the decision made and by whom?
6. How was the decision to make the club multiracial implemented?
7. How did the goals of the club change when the club became multi-racial?
8. How were you expecting the club to change when it became multi-racial?
9. How did the club change once the club became multiracial?
10. Were there changes in the club you were not anticipating?
11. What did you like about participating in the club?
12. What did you dislike about participating in the club?
13. What hindered or discouraged you from attending the club?
14. What has most affected your participation in the club?
15. What enabled or encouraged you to attend the club?
16. Did you see any changes to the club during your participation? If so how did you feel about these changes?
17. What shifts did you see occurring in the club over your time in the club?
18. How was your experience of the club different from your school experience?
19. If it was different, why do you think it was different?
20. If you could change something about the club what would it be?

21. What were the aspects of the club that were most useful to you?

22. How did you feel about the club when you joined?*

23. How did you feel about the club when you left?*

24. If your feelings changed or remained the same, why?

25. Are there any particular moments that you distinctly remember from MSAS? If so what about these moments sticks out to you?

26. Did you tell your friends about the group or encourage them to come? Why or why not?

27. How did your experience in the club impacted you while you were in high school?

28. Did your experience in the club impact any of your future decisions or experiences?

29. Is there anything else you would like to share about your experience in the club?

30. Is there you would like Paul or I to know about your experience with MSAS that might help us to create better clubs for kids in the future?

31. How was the experience of this discussion for you?

32. Is there anything you would like to share about this experience?

Questions for student Leaders only, not included in Focus Group

33. How was being a student leader in MSAS different than being a member?

34. What did you like about being a student leader?

35. What did you dislike?

36. What challenges did you face as a student leader?

37. What did you gain from your experiences as a student leader?

38. Is there anything you wish you had done differently as a student leader?

39. Did you feel you were supported as a student leader?

40. Is there anything you think other student leaders should know before taking on a student leadership role?

41. Is there anything you think that Paul and I should know about working with student leaders? Or students in general?

Appendix B: Teacher Protocol

1. Why did support students in creating MSAS/ How was it created?
2. What was the purpose of MSAS?
3. What did you hope the club would provide for students?
4. What did you hope the club would provide for you?
5. How did you feel about MSAS when you started the club?
6. Did you have specific learning goals/goals for the club?
7. What was the racial composition of the group when you started the club?
8. How did the club become multi-racial? How was the decision made and by whom?
9. How was the decision to make the club multiracial implemented?
10. How did the learning goals shift when the club became multi-racial?
11. How were you expecting the club to change from the shift in racial composition? Did it change in those ways?
12. Were there changes or outcomes from the inclusion of non-Black students that you were not anticipating? If so what were they and how did you respond?
13. Could you talk about the impact of student leaders on the club?
14. Were there any other changes in the club over the course of the time you worked with the club?
15. How did you feel about the changes in the club over the course of the time you worked with the club?
16. What did you like about starting and working with the club?
17. What did you dislike about starting and working with the club?
18. What shifts did you see occurring in the club over time?

19. In what ways did you feel the club was successful?

20. If you could change something about your experience with the club, or about the club what would it have been?

21. What did you value about your experience creating and helping the club?

22. Are there any particular moments that you distinctly remember from MSAS? If so what about these moments sticks out to you?

23. How did you feel about the club when the club ended? Why?

24. What did you gain from your experiences with MSAS?

25. Is there anything else you would like to share about your experience creating and helping plan the club?

26. How was the experience of this discussion for you?

27. Is there anything you would like to share about this experience?

Appendix C: Adult Facilitator Protocol

1. How did you hear about MSAS?
2. What did you feel was the purpose of the MSAS?
3. What function did you hope the club would serve for students?
4. What did you hope to gain from facilitating MSAS?
5. Did you gain from facilitating MSAS?
6. Who lead the group when you were a facilitator of the club?
7. How did you feel about the group when you started participating in it?*
8. Did you have specific learning goals/goals for the club?
9. What was the racial composition of the group while you were a facilitator?
10. How did the club become multi-racial? How as the decision made and by whom?
11. How was the decision to make the club multiracial implemented?
12. How did the learning goals shift when the club became multi-racial?
13. How were you expecting the club to change from the shift in racial composition? Did it change in those ways?
14. Were there changes or outcomes from the inclusion of other students of color that you were not anticipating? If so what were they and how did you respond?
15. How did you feel about the changes in the club over the course of the time you worked with the club?
16. What did you like about facilitating the group?
17. What did you dislike about facilitating the group?
18. What shifts did you see occurring in the group over your time within the group?
19. If you could change something about your experience in the club what would it be?

20. What did you value about your experience with the club?
21. How did you feel about the club when you started your work with the club?
22. How did you feel about the club when you finished your work with the club?
23. If your feelings changed or remained the same, why?
24. Is there anything else you would like to share about your experience facilitating the club?
25. How was the experience of this discussion for you?
26. Is there anything you would like to share about this experience?