The Impact of the Southern Initiative of the Algebra Project (SIAP) Training on Mentor Self-
Regulation, Mindfulness, Efficacy, and Mentee Relations

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Abstract

African Americans and youth of color, especially those from socioeconomically disadvantaged families and communities, experience exposure to less than favorable learning environments. These conditions often negatively affect their academic performance and attitudes towards learning. The Southern Initiative Algebra Project (SIAP) has developed a comprehensive intervention designed to address the challenges associated with learning math for many African American students in many of the nation's under-resourced school districts. The use of trained mentors or tutors in the Algebra Project methodology is a major component of its intervention program. The current study evaluates the impact of the mentoring aspect of SIAP's intervention program on characteristics associated with effective mentors (e.g., self-regulation, mindfulness, self-efficacy, etc.) and the ability of trained mentors to build trusting and supportive mentoring relationships. The study utilized Spencer's PVEST model as a framework for understanding the importance and potential impact of the mentoring component of SIAP's Pre-K-16 intervention model for teaching and learning math. A total sample of 60 African American college students was trained to serve as mentors, and 419 elementary and middle school students served as mentees in this study. Trained mentors completed a battery of psychosocial measures before and after training and one year post training. Both mentors and mentees completed a mentor-mentee evaluation survey at the end of the school year. Findings indicate that both mentors and mentees were able to build trusting and supportive mentorship over the academic year. Mentors reported that the training they received was adequate in enhancing the characteristics they needed to be effective mentors. However, only self-regulation emerged as the only characteristic of effective

mentoring impacted by the SIAP training. Results are discussed in light of PVEST's predictions of the potential impact of the trusting-supportive mentor-mentee relations on adaptive coping, self-efficacy, and academic identity. Limitations of this study and future research are also included in the discussion.

Key words: mentoring, culturally relevant pedagogy, math education, cognitive characteristics, PVEST, learning

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List of Abbreviations

CAMM	The Child and Adolescent Mindfulness Measure
PALS-AE	Patterns of Adaptive Learning Scale-Academic Efficacy
PVEST	Phenomenological Variant of Ecological Systems Theory
SIAP	Southern Initiative of the Algebra Project
SSRQ-GS	Short Self-Regulation Questionnaire-Goal Setting
SSRQ-IC	Short Self-Regulation Questionnaire-Impulse Control
ZTPI	Zimbardo’s Time Perspective Inventory

Chapter One

Introduction

In an attempt to address the needs of students from underrepresented communities, researchers have long since argued that changes in educational approaches are needed (Boykin 1995). There need to be conceptual shifts in the delivery of knowledge to facilitate learning and methods, processes, and contexts essential for engendering identities and coping strategies that will facilitate learning. In the context of school and education, teachers, mentors, peers, and others in their environment are critical sources of learning. Are there traits or characteristics of the teacher, mentor, and contexts that enhance learning? The idea is that learning should not be a matter of what students know, but rather who students become as a result of the learning process (Borgo, 2007).

Through intervention programs that encourage mentorship, students' perception of learning can be transformed to develop an appreciation for learning. When students develop a liking for learning, they can better identify with the information taught and apply the new knowledge to different areas of their lives. As a result, this will further enable students to gain a renewed and improved sense of efficacy in their potential to learn.

Mentorship

Research considering different risk factors has indicated that notable aspects such as character traits and social conditions enable vulnerable youth to display resiliency by achieving

positive outcomes despite their circumstances (Masten, 2001). For this reason, mentoring can be viewed as a modestly effective intervention for youth who are already coping relatively well under challenging circumstances (Rhodes & Lowe, 2008). Masten & Coatworth (1998) identified three clusters of protective factors as fostering resiliency in vulnerable youth. These factors include intelligence and potential, family and close relationships, and community with positive role models.

The early educational journey is an educational and developmental stage when many students experience or struggle with different social and emotional changes that may impact interpersonal relationships and academic success. Teachers and mentors must help students during this time to amass coping skills and nurture temperaments such as resilience, perseverance, and determination. These skills will enable students to problem-solve and work through different challenges and risk factors they encounter as they become actively involved in their learning process (Lindt & Blair, 2017). Mentoring programs are vital to providing students with these essential skills and a sense of liking and efficacy in learning.

The current study evaluates the impact of the Southern Initiative of the Algebra Project (SIAP) intervention on characteristics associated with influential mentors (tutors, assistants, and teachers). The study also evaluates trained mentors' ability to build trust and rapport with their students/mentees. The Phenomenological Variant of Ecological Systems Theory (PVEST) is used as a framework to support the argument that these characteristics are essential. PVEST is also used to emphasize that the SIAP model/approach is appropriate because its method inculcates those traits in teachers and mentors critical for creating the type of environment and supports minority students (mentees) need. As a result, teachers and mentors will enable students

to overcome the risk and challenges they encounter in many schools and classrooms at all levels of education.

This study will enhance our understanding of the experiences of African American students along their learning process, facilitated by mentor interactions. This study will also address the role/influence of self-regulation and mindfulness as essential characteristics in fostering a supportive and trusting relationship with a mentee. Studies suggest that effective mentor-mentee (or tutor-student) relations should promote confidence, self-efficacy, and support in students. Instead of drawing attention to risk factors, the study will explore aspects that may undergird learning and academic efficacy nurtured through the tutor-student (or mentor-mentee) relations. Toward this end, this study will evaluate the extent to which three personality and cognitive traits of trained tutors (Mindfulness, Self-regulation, and social justice) impact mentee/student's trust/rapport, engagement, and liking for math. The study will also assess the impact of mentor-tutor training on a trained mentor's perceptions and critical mentoring behavioral characteristics.

Role of Mentors in Facilitating Learning

STEM education experiences are made available in schools and community organizations to foster a diverse STEM workforce. STEM education typically includes educational activities across all grade levels from pre-school to post-doctorate in formal classroom settings and informal settings, such as afterschool programs. In the 2012 report, *Science, Technology, Engineering, and Mathematics (STEM Education: A Primer)*, different factors, including parental involvement and support, culturally relevant pedagogy, early exposure to STEM fields, self-efficacy in STEM subjects, and STEM-related educational opportunities and support program were identified as positively influencing the success of minority students in STEM.

Additionally, the authors identified school-based factors such as a lack of resources and less qualified teachers serving minority students, limited access to challenging courses, disproportionate tracking of minority students into remedial education, teachers' low expectations, stereotype threat, racial oppression, and oppositional culture as contributing to minority under-preparedness in STEM education (Gonzalez and Kuenzi, 2012).

Helping students experience success in a STEM classroom and simultaneously providing them with positive role models can lead to an increase in self-efficacy (Bandura, 1977) and, therefore, a reduction in the impact of risk factors. Clarke (1977) suggested that some students act out because they lack self-esteem. However, research that is more current suggests that Blacks have the highest self-esteem among students at all levels (Graham, 1994; Spencer, 2006 & 2008). Clarke (1977) also asserted that a mentoring relationship could nurture students' need to feel important and their need to tap into their uniqueness and academic potential. One way that this might be done would be by helping students to gain an appreciation for learning and enhancing their academic self-efficacy through a student-centered pedagogical approach which will facilitate their academic success (Clarke, 1977; Gonzalez and Kuenzi, 2012). Designing education and learning environments within the parameters of an ecological systems theory approach could become quite beneficial in this regard (Spencer, 1995, 2006, 2011)

The PVEST Framework: An Ecological Systems Approach to learning

An ecological or systems approach to learning involves a pedagogical orientation in which knowledge is a significant component of a more extensive process or system. Knowledge cannot be separated from the dynamic process of learning and application of said knowledge. From an ecological perspective, knowledge is mutually formed by the student involved in the learning process, the environment within which learning occurs, and the different activities

students participate in which facilitate the learning process (Borgo, 2007, Spencer 1995).

Learning involves the attainment of knowledge, which embodies the mind and the body's physiological responses to the material. Since knowledge is situational, it is part of the outcome of the activity, context, and culture in which it develops. Furthermore, knowledge is distributed; it does not simply exist only in the mind, but it is received and shared with others in interactive social contexts (Borgo, 2007).

PVEST as a framework provides an identity-focused, culturally ecological perspective of viewing human development while remaining mindful of the vulnerability, risk, and resilience of Black youth (Talley, 2018). Research has highlighted historical and social events, which contribute to the existing gap in educational outcomes affecting African American students (Harper 2008, 2012; Palmer, 2009). In addition to identity development, PVEST provides cultural perspectives to emotion regulation, social development, and cognitive development through interactive engagement, all of which are incorporated in culturally relevant pedagogical approaches. With academic interventions such as mentoring and SIAP's Pre-K-16 model, the PVEST framework is used to facilitate our understanding of the potential impact of those interventions.

Purpose of the Study

Given the limited research examining the effectiveness of culturally responsive mathematic intervention programs for minority, middle-school students, this study will bring insight into some of the critical factors related to SIAP's influence on essential mentoring characteristics and the ability of the trained mentors to develop trusting, supportive relations with mentees. Results from this study will add to the available scholarship on the importance of a culturally relevant pedagogical approach in bridging the academic gap between Black and White

students. Therefore, the purpose of this study is to determine whether the mentor training implemented by the SIAP intervention was successful in enhancing skills that have been identified as essential characteristics of effective teachers and mentors. The study will also assess the ability of SIAP-trained mentors to improve student engagement and build a trusting, supportive relationship with their mentees. Toward these ends, several research questions and hypotheses undergird the purpose of this study.

Research Questions and Hypotheses:

1. Is there a correlation between mentor cognitive characteristics of mindfulness, self-regulation (impulse control and goal), and sense of efficacy? Given the fact that SIAP mentors are high-achieving and high-performing STEM majors, with GPAs of 3.0 and above, we hypothesize that mentors who are high in self-regulation impulse control and goal setting will also be high in mindfulness and sense of efficacy.
2. Does mentor training improve/change mentor's opinions of the mentoring process? One goal of the SIAP intervention with student tutors/mentors is to prepare them to be influential mentors by providing information and strategies for facilitating student engagement and learning. Hence, we hypothesize that mentors' perceived efficacy as mentors and understanding of the mentoring process will be enhanced after training.
3. Is there a difference before and after the training on reactive coping strategies and characteristics of successful mentors such as self-regulation, mindfulness, time-perspective, and sense of efficacy? Given the benefit of these characteristics to facilitating rapport and effective mentoring/tutoring relationships (Brown and Ryan, 2004; Moore, 2018; Ahern, Kiehl, Sole, & Byers, 2006), we hypothesize that SIAP

interventions would either strengthen or maintain high levels of these characteristics in trained mentors.

4. Did mentors build a trusting, supportive relationship with their mentees? PVEST predicts that increased levels of support facilitate resiliency, adaptive coping, and academically solid identities. Given the potential of mentors/tutors to provide additional unbiased perceived support to students in a school setting, it is hypothesized that mentees will perceive this support favorably and consequently evaluate the mentoring relationship as positive and trustworthy.
5. Did mentors help mentees to improve their liking and self-efficacy for math? After engaging in the mentoring/tutoring process with students for one academic year, we anticipate that both mentors and mentees, who remained, will have a favorable view of its impact on creating an appreciation and liking for learning math.

Chapter Two

Literature Review

Risks, Vulnerability, and African American Youth

Historical Challenges to Educational Attainment

The African American community's historical difficulties and challenges continue to persist into today. Significant research indicates that African American youth, especially those from socioeconomically disadvantaged families and communities, experience exposure to less than favorable learning environments that engender behavioral and academic problems and concerns (Boykin & Noguera, 2011). In spite of these challenges, research suggests that students' attitudes towards learning have been significant contributors to their own academic success (Walberg, Fraser & Welch, 1986).

The landmark decision of *Brown vs. Board of Education* in 1954 was a significant turning point in the US education system. This ruling shed light on the fact that separate but equal education was, in fact, not comparable at all. After the verdict, many fought against the decision; desegregation of the school systems was not easily achieved because several resisted this ruling. The civil rights movement made many opportunities available for the African American community. Unfortunately, the resistance against the decision of the *Brown vs. Board of Education* contributed to the long-standing inequality gaps that persist today, more than 60 years after the decision. Today, the conversation on curbing racial inequalities in the school

system continues. After all these years, many Black youths continue to be disadvantaged by the education system that the Brown ruling was designed to eliminate.

Risk, Vulnerability, and Resilience

It is important to note that a variety of different factors contribute to the development of and process of risk and vulnerability. As discussed earlier, African Americans have been and remain exposed to a significant number of risks and challenges. A framework adopted from James Anthony's work on risk and vulnerability undergirds the approach to risk and vulnerability used in this study.

When we consider the concept of risk, no one is immune to it, and no one can be singularly exposed to it. We all have to face it and share in its effect. We are all exposed to some type of risk, be it social injustice or systemic racism. Because of individuals' exposure to risk, they perceive stressful events and risk factors differently, either consciously or unconsciously. No matter how individuals perceive risks, everyone navigates through similar processes where these risks are concerned. Risks evoke either internal or external responses, which can be either subjective or objective, and our responses to these risks may be either conscious responses or unconscious responses. It is for this reason educators need to spend time acknowledging the risk factors African American students face in and out of the classroom. In an attempt to address the effects of exposure to traumatic risk factors, educators need to develop an environment where students can feel safe to process the impact of risks together as a group as well as individually. A need for this type of environment highlights the importance of culturally responsive approaches when working with African American students. An environment where one is not adequately understood can transform into another layer of risk, further intensifying students' stress responses in processing risks (Anthony, 1987, Rutter, 1987).

When students are approached from culturally responsive lenses, they are provided an environment where their social context and psychosocial factors are understood. Students can genuinely embrace, interact with, and confront cultural differences with newfound knowledge of self in this environment. School settings that provide African American students with specialized culturally relevant pedagogical approaches can function as protective factors against stressors and subsequently generate the development of resilience (Anthony, 1987).

According to James Anthony (1987), when we consider the characteristics of vulnerability, we should focus on cultural differences. For instance, we should consider the differences that exist between different cultural groups, the different perceptions of risk factors, and the different experiences of each cultural group, from both a historical point of view and even a current social vantage point. James Anthony's conceptualization of vulnerability came about from his work on animal research. This framework has been applied to better understand risk and resilience in individuals (Anthony, 1987) and was later incorporated into PVEST (Spencer et al., 1995) to illustrate how cultural sensitivity and support facilitate resiliency. See Figure 3 for a fuller representation of the dynamics of this interaction.

Cultural Sensitivity, African American Youth and Resiliency in Education

Our society has socialized us not to raise critical questions about topics of race and injustice. However, some forms of oppression are still a major contributing factor to the academic underperformance of many students of color and poor students in this country. The educational gap, which disproportionately hinders Black students, still exists today (Levine & Levine, 2014). Statistics from the *National Center for Education Statistics* (NCES) report on trends in education for racial and ethnic minorities reveal that in 2016 the majority of children in the United States lived with married parents except for African American children (NCES,

2018). Data was highest for African American children living at home with one parent, as 56% of Black children lived at home with only a mother figure. Additionally, African American children, in 2016, were among the most impoverished children in the United States (Brey et al., 2019).

According to the National Assessment of Educational Progress (The Nation's Report Card), the average math scores for 8th graders in the United States have increased modestly from 1990 to 2019. The average score for African American students was just above the basic level, whereas White students scored near and above the proficient level by 2013. For example, in 2013, 86% of Black middle school students scored at the basic or below the basic level in Math; only 16% were at the proficient to advanced level. On the other hand, 55% of White students were at the basic or below basic level, and 45% performed at the proficient to advanced level (National Science Foundation, 2019).

In terms of school enrollment among different cultural groups, data revealed that Whites had a 21% chance of being enrolled at school with peers of the same ethnic background, the highest of any ethnic group. Data also revealed that only 15% of Black students across the United States, in 2016, were enrolled at school where 90% or more of their peers were also Black. Additionally, between 2000 and 2016, the rates of Black students completing high school with a diploma or GED increased slightly from 82% to 92%. Further, the gap between Blacks & Whites completing high school declined to 2% from 8% in 2000. This data tells us that the Black/White education gap narrowed from 8 points in 2000 to 2 points in 2016. In addition, data has favorably indicated that the high school dropout rates have declined over the years. Additional data from the NCES reveal the high school dropout rates among Black students aged 16 to 24 years of age declined from 13% to 6% in 2016 (McFarland et al., 2018).

One thing that hinders the closure of the access and opportunity gaps could be a sense of discomfort in discussing power issues as fundamental to the racial and cultural divide in this country. When we began to examine power as part of this equation, we understand how racism, oppression, and issues of cultural bias work to undermine Black and impoverished youth's academic performance, particularly in under-resourced schools and communities. In order for these achievement gaps in education to be closed, these issues of racial and cultural inequality must be addressed. This could be achieved with mentors who can establish trusting, supportive relations with their mentees.

Let's take, for example, the story of John, a bright middle school student whose mother spends time helping him with homework, encouraging him to read, and helping him gain an appreciation for learning. In school, John is in the 5th grade; he is already familiar with the concepts being taught, so he is bored in class; thus, he acts up. Depending on the teacher's teaching education or professional development program, John's teacher may or may not be equipped to handle the energy of such a student. As a result, John may be labeled as needing academic remediation when he could be in need of intellectual stimulation or academic challenge. In situations like these, teachers need to have very high levels of critical awareness to discern the needs of students and, precisely, the needs of Black students. These issues of race and culture can hinder teaching and learning, thus depriving Black students of the resources they may need. A culturally relevant pedagogical approach to teaching and learning, utilizing teachers and mentors of similar culture, has been shown to increase teacher critical awareness on issues related to race, culture, and power and its impact on student learning (Rosa & Orey, 2010; Gay, 2000; Ladson-Billings, 1995; Lipka & Adams, 2001; Irvine & Armento 2001).

Despite evidence of the impact of culturally relevant pedagogical approaches (Gay 2000; Ladson-Billings 1995, 2001; Rosa & Orey 2003), it can be difficult for teachers and mentors to voice their opinions on issues of racial and socioeconomic differences within the education system, specifically with the students within their classrooms. As Vavrus (2002) stated, not all teaching education programs include discussions on the issues surrounding race, cultural diversity, and social justice as part of classroom instructions. Teachers may be concerned with unwelcomed consequences including, being written up, receiving negative evaluations, or be viewed stereotypically. Programs that practice culturally relevant approaches encourage teachers and mentors to engage in critical self-reflection (Gay & Kirkland, 2003). It is through self-reflection that educators come to understand the importance of their interactions with students. Self-reflection can illuminate consciousness about these power issues concerning race and enable the realization of the need for equity in the education system. It is this equity that will bridge the education gap (Irvine & Armento, 2001). Critical self-reflection is a skill that can be taught and encouraged through culturally relevant professional development programs and pedagogical approaches. It can enable educators to ponder on and navigate these complex, sensitive topics of race and culture. The consciousness of these issues will allow educators to meet the needs of their students and the Black communities by and large (Gay, 2000; Ladson-Billing, 2001)

Culturally relevant pedagogical programs are embedded in the professional development of educators to enable the continued practice of critical self-reflection. Gay & Kirkland (2003) stated that self-reflection among educators involves closely observing one's personal beliefs and instructional behaviors. Self-reflection, in this sense, should concern the value of cultural diversity and the most beneficial ways to teach students of different ethnic backgrounds to produce more favorable outcomes. To begin developing this critical skill of self-reflection,

educators need to be cognizant of the obstacles specific to race, ethnic, or social background, which may interfere. Self-reflection and critical cultural consciousness can create a bridge between educators, students, and the communities (Rosa & Orey, 2010). Interactions with students will enable teachers and mentors to consider how their race, culture, gender, and social standing can shape their views on teaching and mentoring. Teachers and mentors should also consider other ways to learn about the students they interact with and how best they can serve them, including race, culture, and social standing. Teachers and mentors should remain cognizant of the socio-economic needs of the Black communities and be readily available to address these needs as they relate to teaching and learning (Ladson-Billings, 1995; Ogbu & Simons, 1998).

Professional development programs geared towards introducing culturally relevant approaches within the classrooms must remain focused on the importance of equity in the education system. Equal opportunities and equal resources do not work. Teachers and mentors need to realize that students from under-resourced schools and communities have different circumstances than those from more privileged communities. Hence, there needs to be a genuine desire for culturally informed educators to do whatever they can to provide Black students, from under-resourced schools, with the tools they need to perform at the level of, or even better than those from more resourced communities. In this way, educators recognize and hone in on the strengths and resilience of the students and guide them to gain awareness of their full potential. Gay (2000) and Nieto (2000) credited that this severe concern for the academic performance gap, which disadvantaged minority students and those of low socioeconomic status, for fueling the development of culturally relevant education.

Teachers and mentors, who are culturally conscious, need to be reminded that W.E. B. DuBois once said a system cannot fail those it was never meant to protect. Yet, they continue to

put forth an effort to educate students in a system that inherently was never designed to serve all of them (Vavrus, 2002). Those teachers and mentors who want to change their mindset and work towards closing this racial gap in the education systems by introducing equity into the classroom must feel safe and be provided with space and professional development to do so. This equity approach to learning is one in which teachers are committed to helping culturally diverse youth learn how to navigate the system and change it to make it more humane (Banks & Banks 1995).

Academic Resiliency and African American Youth

Resilience is a developmental process that functions as a protective factor that can be taught through different psychological interventions (Keye & Pidgeon, 2013). Through the lenses of Flach's theory of resilience (Flach, 1989), resilience is defined as one's ability to recover from complex and challenging life events. It encourages learned, adaptive knowledge to cope with similar recurring situations. According to Flach (1989), resilience encompasses psychological strengths that are acquired through experiencing adverse conditions. These psychological strengths are essential to process change effectively. In order to develop resilience, one has to experience distress brought on by change. It is only through adverse experiences one successfully learns to cope with the complex life changes. As reiterated by the "Laws of Disruption and Re-integration," falling apart is necessary to understand difficulties and successfully learn to rebuild oneself. The reintegration process has to be developed; teachers and mentors adopting a culturally relevant approach to teaching and learning can facilitate the reintegration of at-risk students. By allowing these students to view their experiences from cultural lenses, educators enable reintegration, thus fostering resilient characteristics (Flach, 1989).

The experiences that lead to the development of resilience within African American students can be understood through Flach's theory. African Americans have experienced generations of racial discrimination and oppression; these challenging life events continue to cause disruptions in individual personal homeostasis (Bordere, 2019). The effect of adverse events varies from individual to individual. Therefore, the level of support needed to help one do introspection and adapt to new changes and challenges is unique to each person. As can be understood from Flach's theory, the challenges experienced by African American students can be viewed as opportunities to help them deal with generational hurt, thus allowing them to discover their potential for new coping mechanisms. As a result, African American students will be better able to reevaluate their perspectives on the challenges and risk factors they face.

Flach (1989) also referred to this reorganizing of perspective as reintegration, as it encompasses changing one's worldview based on different adverse circumstances. It is essential to understand that engendering resilience is a uniquely individualized process when providing academic support to students through mentoring. One should not only consider the severity of the challenges individuals have faced but of equal importance; one should consider the different character traits that can facilitate reintegration and the development of resilience. Research has found that mindfulness, self-regulation of attention, and academic self-efficacy significantly influence resilience (Keye & Pideon, 2013; Thompson, Arnkoff & Glass, 2011).

Increasing Resilience through Teaching and Learning

Research, over the years, has shown that through culturally relevant teaching, teachers and administrators can increase Black student resilience. Rist (1970) pointed out clearly that the kind of teacher a student spends time with is very important. In his study, there were ethnic minority teachers who assumed the values and expectations of the White middle-class society.

Teachers who shared this outlook had, and continue to have, detrimental effects on ethnic minority students, as these students were reduced to lower quality instructional approaches. In today's social climate, teachers who are more culturally aware adopt a culturally relevant approach and attend to the needs of their students (Gay, 2000; Ladson-Billings, 2005).

Cohen (1976) found that the type of instructional approach used is vital to fostering academic growth and resilience to minority students. In his study, he found that minority students preferred having a relational style of instructional approach versus the standard analytical approach set forth by schools. Culturally, African American youth view teachers as extensions of the family or community; relational bonds are crucial. Instructional practices that incorporate culturally relevant materials are tailored to cater to the needs of African American students to optimize their chances for academic success (Ogby & Simons, 1998, Boykin & Bailey, 2000; Boykin & Noguera, 2011; Hale, 1981). African American students can better identify with and relate to teachers who affirm their experiences and identity.

Through culturally relevant teaching, one can break the cycle of the education gap (Gay, 2000; Nieto, 2000). This approach adopts a relational conceptual style and focuses on the kind of education minority students need. It is a reflection of the inequalities of society (Ladson-Billings 1995). It has long been recognized that in order for African American students to be mentally liberated and revolutionized, their educators, specifically minority educators, must also be mentally liberated and revolutionized as well. Therefore, educators' cultural consciousness must also be reflected in their pedagogical approach (King, 1987; Mclean, 1989, Rosa & Orey, 2003).

Ladson- Billings (1995) asserted that in keeping with the focus on empowering minority youth, schools should be viewed as agents for cultural transformation, hence the need for culturally tailored pedagogy. This approach will enable African American youth to feel validated

and accepted for whom they are and what they bring to the classroom. In addition, a cultural approach to teaching will empower teachers to tailor their teaching styles to accommodate students' cultural norms and values. This practice attempts to make the experience of learning and teaching more accommodating and relationally orientated (Gay, 2000; Nieto, 2000).

Building rapport and healthy student-teacher relations are one of the intended outcomes of culturally responsive teaching. SIAP attempts to achieve this with its training focused on experiential learning, linguistic, structural expressions, and social justice training. Mentors (and teachers) are trained to appreciate these dynamics through SIAP's five-step curricular process and cooperative-learning training, and professional development listed below:

1. *Physical Event* – The class has a shared experience, but the individual has his/her own perception within the learning experience.
2. *Pictorial Representation* – Each person draws a picture of their experience.
3. *Intuitive Language* (People Talk) – Each person writes a story about their experience. The picture and story are shared in teams.
4. *Structured Language* (Feature Talk) – Teams identify key features across stories and pictures. The team features are shared with the whole class, and critical components are agreed upon by the entire class. (e.g., one apple plus (or and) a second apple combined would equal two apples in total)
5. *Symbolic Representation* – Creating symbols to express the structured language (key features) to form an expression (e.g., $1 + 1 = 2$, $1 < 2$, etc.)
6. *Social Justice* – Racial and cultural oppression, freedom struggles, and civil rights

Culturally tailored teaching serves to empower not only the teacher or mentors but also the students. Those involved are encouraged to the point where they become mobilized to examine the educational content and process critically. Thus, they become awoken to then inquire about the role of their education in creating a genuinely democratic and multicultural society (Ladson-Billings, 1995). As such, students' culture can be viewed as a guide to enable them to have a deeper appreciation for learning, thus, better understanding the world around them. A teacher or mentor who is culturally attuned should be able to build trust, motivation, and appreciation of the content or subject matter being taught. Perhaps this is because the teacher will be better able to identify the socio-political, historical, and economic factors associated with student needs (Ladson-Billings, 1992). These factors are beyond the purview of the focus of school or education system.

Ladson-Billings (1992) presented the example of the First & Crichlow (1989) study, which asserted that in order to educate minority students successfully, teachers needed to involve students in educational decision-making about what should be included in the curriculum. This way, students become empowered in their learning. The study found that teachers' view of the students affected teacher interaction and approach to the student. Teachers who were deemed ineffective saw their students as victims who were in predetermined and unavoidable situations. These teachers accepted their students as unable to comprehend the challenge of the academic information taught. They did not view their students as having any potential simply because of their situation. On the other hand, the teachers identified as effective acknowledged the social justice system to which students were exposed while simultaneously emphasizing students' strengths and resilience to overcome by empowering students through relevant academic challenges.

Successful black teachers, according to Ladson-Billings (1989), approach teaching with an understanding of social justice and a drive to affirm students' strength and potential. Their goals are to enhance academic perceptions of self and others, enhance social interaction within the classrooms and enhance student perception of knowledge acquisition. According to Ladson-Billings, a culturally relevant teacher approaches teaching as an art form rather than a science with steps or formulas. From a systems theory perspective, these teachers can be viewed as part of the wider community, the mesosystem (Bronfenbrenner, 1979). The methods adopted by culturally relevant teachers are considered vehicles to elevate students and bridge students with the black community and their ethnic backgrounds globally. These teachers build student resilience by identifying and accentuating students' strengths, further developing a love and thirst for knowledge and self-discovery.

Systems Theory, PVEST, and Academic Development

An ecological systems approach can help us better understand the interaction of lived experiences and social factors in the lives of African American students and the influence on their academic achievement. Bronfenbrenner's Ecological Systems approach emphasizes the importance of the sociocultural context of development. At the core of this approach is the active role that youth play in their development. From Bronfenbrenner's perspective, our environment is made up of different structures, one within the other. Each environmental or social system plays a part in contributing to development. In addition to various levels contributing to growth and maturation, there is also interconnectedness among the groups. Together, some levels have increased influence on social identity formation or function as protective factors for troubled youth (Spencer, 2006). Bronfenbrenner refers to these social levels as systems; each system plays a role in social development. The Ecological systems approach highlights the notion that a

developing individual is embedded in a more extensive social system with five interconnected systems: microsystem, mesosystem, exosystem, macrosystem, and chronosystem (See Figure 1; Bronfenbrenner, 1979).

Figure 1: *Bronfenbrenner's Ecological Systems Theory*

As seen in Figure 1, the Ecological system comprises five layers, each nestled within the others. It involves different aspects of the environment, beginning with the child at the core, the immediate family that interacts with the community, and then branches out to include the broader social environment. Bronfenbrenner identifies the system closest to the developing child as the microsystem; it encompasses the social and the environmental milieu in which the child exists with the family. Settings within the microsystem include the home or the school, where the child interacts with family members, caregivers, teachers, and other essential stakeholders in the neighborhood. There is a reciprocal interaction between the child and the immediate

environmental settings. The mesosystem functions as a bridge connecting individuals central to the child's microsystem. This bridge involves the formation of a relationship between the child and parents or caregivers and other family members, between the parents and teachers, and health care providers.

The exosystem involves the broader social environment in which the child exists; however, having no direct interactions. Nonetheless, there is indirect interaction with the different environmental structures in the child's microsystem and mesosystem. That is, parents' occupations or connections to health care professionals all impact the child's development. Lastly, the macrosystem encompasses the culture, history, governing system, judicial system, values, and customs that influence the other systems surrounding the child's social environment. That is, the cultural values and norms that guide development also governs perception and decisions. For instance, resources available to schools in particular districts will determine the child's access to proper education and resources (Bronfenbrenner, 1979).

PVEST and Academic Development

Among the different system approaches, the most prominent is Urie Bronfenbrenner's Ecological Systems Theory (1979, 1989, 1993) of human development and socialization. It is from this Ecological Systems Theory that Margaret Spencer (1995) developed the Phenomenological Variant of Ecological Systems Theory (PVEST). PVEST is a framework to examine variants of identity development and resilience among minority populations, especially during the process of identity formation during adolescence. It provides a firm foundation for highlighting the difficulties faced by African American students and the learning process (American Psychological Association, 2008). The PVEST framework incorporates identity development and emotion regulation, social development, and cognitive development through

mindfulness, active engagement, flexibility to change, and communalism (Spencer, 2006).

Additionally, PVEST addresses the social, historical, and cultural context in which young African Americans develop as individuals and as students. The model addresses the perceptions and self-appraisals used by students as they form their own identities (Spencer, 1995).

The PVEST model builds on the foundations of Bronfenbrenner's ecological systems approach by incorporating a cultural component to identity development. PVEST addresses limitations to Bronfenbrenner's model, which assumes that every developing child goes through the same experiences and, as such, is influenced similarly. The PVEST model argues that in many instances, this is not necessarily the case for African Americans and other minority groups, including women. As illustrated in Figure 1, PVEST points out that culture and social biases permeate the multiple levels of ecological systems interactions that affect minority and African American youth differently. These different interactions produce differences in the level of risk and vulnerability faced by African American youth. It highlights the cultural variations in stress, coping methods, the emergence of stable identities, and adverse or productive life outcomes specific to this group.

To date, there is an abundance of scholarship addressing the relevance of racial, ethnic, and cultural factors, nuances, and competencies, specifically as they relate to the resilience and strength of African American youth (American Psychological Association, 2008; Spencer, Harpalani, Cassidy, Jacobs, Donde, Goss, et al., 2006; Masten, 2001). Several factors, namely economic, social, and political or judicial, have influenced African American youth's behaviors and attitude and, as a result, contributed to building their strength and resilience. It should be noted that both the strengths and protective aspects of the resilient African American student are rooted in their rich cultural integrity and heritage (Bordere, 2019; Butler-Barnes et al., 2018).

The APA Task Force on Resilience and Strength in Black Children and Adolescents describes Spencer's PVEST theory as "a seminal and important contribution to the study of resilience among African American children and youth" (p. 34) for being one of the only theories taking into account the "ecological contextual circumstances unique to youths of color in the United States" (p. 23) (American Psychological Association, 2008). According to the APA Taskforce on Resilience, the PVEST provides a strong foundation for addressing the difficulties African American students face in college (American Psychological Association, 2008) and throughout the educational pipeline, particularly K-12. The PVEST model provides a framework that incorporates identity development, emotion regulation, social development, and cognitive development in the context of critical mindedness, active engagement, flexibility to change, and communalism (Spencer, 2006).

PVEST as a Conceptual Framework for SIAP

Figure 2: *PVEST as a Conceptual Framework for SIAP*. Phenomenological Variant of Ecological Systems Theory (PVEST). *Source:* From “Old Issues and New Theorizing about African American Youth: A Phenomenological Variant of Ecological Systems Theory” (pp. 37–70), by M. B. Spencer, in R. L. Taylor (Ed.), *Black Youth: Perspectives on Their Status in the United States*, 1995, Westport, CT: Praeger.

The PVEST framework is used in the current study to support the argument that self-regulation, self-efficacy, and mindfulness are effective characteristics of a mentoring relationship. Key components of the framework help to appreciate the potential contributions of

SIAP mentor interventions in the developmental cycle of students and how key mentoring behavioral characteristics should foster the development of trust and rapport between mentors and their mentees. PVEST provided a guide for understanding where SIAP's intervention should be most impactful in the development cycle and why.

As a systems theory, PVEST comprises five key factors connected bi-directionally to form the vibrant developmental framework, which describes the process of identity development as it occurs (see figure 2). Each component of the PVEST framework identifies different aspects critical for healthy cognitive and emotional development, particularly in the life of young people of color, which is linked to societal inequalities and biases that influence the process of identity development. The different components of the PVEST framework include a development set of behaviors and contingencies that impact identity and competence (Spencer, 1995, 2006). These developmental conditions revolve around five developmental contexts and support that impact risk and coping: level 1: risk contributors or net vulnerability, level 2: stress engagement or net stress, level 3: reactive coping methods, level 4: stable coping responses or emerging identities, and level 5: stages specific coping outcomes. Thus, at every level of the PVEST framework, the different experiences youth face coupled with the availability of support and protective factors is linked to the development of stages of resilience and vulnerability, all of which contribute to identity development and positive outcomes (See Figure 3).

Risk contributors, level 1, focus on personal characteristics that can lead to challenging experiences at different cognitive, social, and emotional development stages. Under-resourced communities and school districts, unfavorable living situations, social factors such as stereotypical racial and gender expectations, generational racial oppression, and discrimination are just some factors posing risks of stress to youth of color. In addition to levels of risks within

the environment, there are also environmental factors that protect developing youth from these risks. The difference or net impact of the protective factors and stressors/risks represents an individual's net vulnerability level. Interventions designed to reduce net vulnerability could focus on strengthening various microsystems like the family and neighborhood resources. At this level, the interaction between risks and protection contributes to identity development (Spencer et al., 2015).

Figure 3: *Risk and Vulnerability*

The second component of the PVEST framework, stress engagement, level 2, focuses on the immediate experiences of stress that challenge marginalized youth's lived experiences, such as community dangers and daily hassles. At this level, the support of mentors can mitigate the effect of these stresses and function as protective factors. Youth of color face challenges associated with racism, sexism, poverty, and the social stressors and consequences resulting from

them, both overtly and covertly, in all social interactions and settings. For youth, these problems are exacerbated in the school system, particularly in high-poverty communities. Resources within the schools, role models, and family can provide the support that marginalized youth need to navigate daily stressful experiences. The current study addresses whether the SIAP mentor training equips the college mentors with the adequate skills and qualities they require to function as support to the middle school mentees. In addition, the study evaluates whether the mentors believe that the training they receive with SIAP improved or changed their opinion of the mentoring process (See Figure 4)

Figure 4: SIAP Training Effect

The support provided by mentors to the mentees, within a mentoring relationship, like SIAP, should positively impact students, both the college student mentors and the middle school student (Derrick, 2009). Students from under-resourced school districts and low-income families are provided with support from caring mentors and teachers. Role models such as teachers and mentors represent protective factors in that they provide unconditional support that helps

transform students' perceptions of risk and stresses. These role models also help students transform their ability to cope with or overcome those challenges, which serve as the building blocks for positive self-images and productive academic outcomes (Spencer, 2006, 2008; Spencer et al., 2015). In her study of mentor-mentee relations, Rhodes and colleagues (2006) found that mentors and mentees viewed the formal mentoring programs as more beneficial in providing resources, knowledge, and shared experiences. In this light, she also found that same-race mentors function as supportive and protective factors for mentees. In addition to the structure provided by mentoring programs, same-race mentors offer friendship, guidance and serve as role models for youth of color (Eanes & Mansarray, 2007).

In their study exploring how first-year African American students experienced a year-long mentoring program, Brooker and Brevard (2017) found that mentoring programs, which emphasize interpersonal reinforcement through mentorship, were focused on engendering protective factors. The researchers found that allowing the mentees to view the mentoring relationship as worthwhile and supportive can buffer the effects of low belongingness and the disconnection mentees experience from the school environment (Brooker & Brevard, 2017). The concept of support from Brooker and Brevard is in line with SIAP's vision. These researchers argue that African American mentees need support geared more towards structured and academically focused mentoring/tutoring and less on socialization and interactions.

Stress engagement, the actual tension and discomfort experienced by mentees, level 2 of the PVEST model, also address the critical idea of trust, which is a focus of SIAP mentorship. The current study evaluates the mentees' perspective and whether they felt the mentors were able to build a trusting, supportive relationship (See figure 5)

Figure 5: Trusting within SIAP Mentorship

A trusting mentorship begins by first evaluating trust from the mentor's perspective. When mentors believe that a trusting relationship will generate benefits such as approval and respect from their mentees, mentors are more likely to actively build relationships to help and support their mentees (Wang, Tomlinson, & Noe, 2010). Trusting relationships within mentoring programs can be created in different ways. Mentoring can provide student mentees with relational outlets to help them adjust to the school environment or any institution. Mentees' perception of the mentoring relationship depends on the level of trust generated throughout the interaction. Booker and Brevard's study revealed that receiving interpersonal support and guidance from mentors leads student mentees to perceive their mentors as supportive of their growth and maturation. These mentees considered academic mentorship as valuable and beneficial to them (Booker & Brevard, 2017). SIAP's social justice framework is critical for building trust and rapport with African American students.

Colvin and Ashman (2010) found that the predominant role of a mentor is to function as a resource person and a trusting friend. The mentors saw their mentoring role as necessary as they

provided support and acknowledgment to their mentees. Their effort and contribution were viewed as links between the mentees and their new school learning environment (Colvin & Ashman, 2010). Trust is significant, especially to youth of color, as mentoring can function as a particular type of surrogate family member for African American youth (Guiffrida, 2005).

The third component of the PVEST framework is reactive coping methods, level 3. Reactive coping is a response to the stressors faced and the supports available. Reactive coping strategies involve various problem-solving techniques used to offset the conflicts and ambivalence from stressors. Depending on the cognitive maturation of youth at this stage and their repertoire of support and experiences with overcoming challenges, their coping techniques may be maladaptive or adaptive. While effective mentor interventions are beneficial at every stage of development, it is especially critical for individuals with a history of high risks and low supports (Spencer, 1995, 2006). The current study assesses whether SIAP training impacts the key mentor variables associated with effective mentoring, namely self-regulation, mindfulness, and self-efficacy. This study also explores the impact of mentor-mentee relations in terms of rapport and trust. A successful mentorship can enable adaptive coping as such programs involve reciprocity, mutual respect, clear expectations, personal connections, and shared values (Straus et al., 2013).

Figure 6: *Enhanced Mentor Characteristics*

Influential mentors' personal and relational characteristics, which enable adaptive coping, include altruism, honesty, trustworthiness, and being an active listener. Mentors with these characteristics are accessible and able to identify and aid in the development of potential strengths and skills in their mentees. The mentors can also use these characteristics to build trusting relationships with mentees. In order for the mentoring relationship to be successful, both the mentor and mentees must demonstrate shared mutual goals, respect, trust, and commitment to the relationship (Straus et al., 2013). These shared characteristics help youth of color develop coping patterns that they can learn to recognize and adapt to different social contexts and across settings (Spencer et al., 2015).

The ability of youth of color to utilize learned coping skills and available supportive, dependable, and trusting relationships can enable identities to emerge in response to lived challenges. The fourth component of the PVEST framework, stable coping responses: emergent identities, level 4, deals with youth perceptions of themselves within different social contexts,

including family, school, and community. At this developmental stage, youth aim to gain a sense of belonging through self-appraisal and exploration of their beliefs and values (Erickson, 1982). The process of identity development emerges with interaction across different contexts such as culture/ethnicity, gender, sex, and race (Spencer et al., 2015). PVEST also provides a framework for understanding how mentoring would facilitate enhanced liking and self-efficacy for math (See Figure 7).

Mentorship programs equip mentees with the tools they need to confront stressful situations and daily challenging experiences. A study assessing the benefits of mentoring as an adaptive coping strategy found that students perceived their mentoring program as an effective tool in managing stressful experiences related to the school environment (Lopez, Johnson & Black, 2010). Mentorship functioned as a trusting and supportive resource to cope with the anxiety of school. In that study, the mentoring program was viewed as an effective adaptive coping strategy since students' mentees were able to identify with their mentors (Lopez, Johnson & Black, 2010). The challenges and tools used to cope are constantly changing at this development stage, enabling identities to evolve. Interactions with family, school, peers, and community allow for the development of cultural/ethnic identity, sex-role identity, self-efficacy, and personal identity (Spencer et al., 2015). SIAP mentoring program, through mentor interactions, peer interaction, community interaction, provides mentees with the academic and cultural support they need to counter different challenges and stresses in order to gain a sense of belonging. Clarke-Midura et al. (2018) found that mentor relatability is a significant predictor of mentee self-efficacy and interest in education. The current study will explore mentor relatability in terms of mentee and mentor's rapport and perceived trust of each other.

Figure 7: *Self-efficacy of Mentors relative to perceived trust*

The fifth component of the PVEST framework, coping outcomes, level 5, involves the different coping strategies regularly used as a result of one's established identity. The ability to develop coping responses and developed identities leads to behavioral stability resulting in productive or unproductive life stage outcomes. With the SIAP program, mentors are equipped to build effective outcomes such as high self-esteem, self-efficacy, and positive relationships with families, community members, teachers, and mentors. Mentees who embrace adaptive coping responses can achieve productive outcomes when faced with stressors, which ultimately leads to the develop resilience (Spencer et al. 2015). Therefore, the purpose of this study is to determine whether the mentor training implemented by the SIAP intervention was successful in enhancing skills that have been identified as essential characteristics of effective teachers and mentors. This study will also evaluate the effectiveness of SIAP-trained mentors' ability to improve student engagement and to build a trusting, supportive relationship with their mentees.

Mindfulness, Self-Regulation, and Resilience

The ancient Buddhist philosophical approach expresses the importance of nurturing mindfulness. Central to this belief is the idea that mindfulness is necessary to improve overall wellbeing (Baer, 2003). Mindfulness is generally defined as “a quality of consciousness” (p. 277; Brown et al., 2007). It involves an awareness of the present moment and includes a non-judgmental approach to one’s internal and external experiences (Hayes et al., 2011; Kabat-Zinn et al., 1985). Mindfulness can be viewed as a skill of self-regulating one’s attention to the present, immediate experiences. It involves an acceptance of these experiences as they occur; as such, mindfulness can increase one’s adaptive coping skills as one faces complex events (Bishop et al. 2004). There is limited research on mindfulness as an effective characteristic to facilitate a trusting and supportive mentoring relationship. However, the available evidence suggests, it aids in emotion regulation (Creswell, Way, Eisenberger & Lieberman, 2007).

Effective Mentoring Traits: Mindfulness and Self-regulations

According to Bishop and colleagues (2004), mindful self-awareness not only encompasses a state of mindfulness, but it involves the ability to self-regulate one's attention and nonjudgmental awareness. Mentors with higher levels of mindfulness are better able to be observant and attentive not only to themselves but with the present moment with their interaction with mentees (Brown & Ryan, 2003). These mentors are more conscious of student behaviors and are more cognitively and emotionally responsive to student needs. Brown and his colleague stressed the idea that mindfulness enables mentors to focus on all dimensions of the present interaction (2003). As such, it can be concluded that mentors who are more in tune with mentees' cognitive and emotional needs are better able to form trusting supportive relationships. Mentors can actively participate in mindfulness with their mentees by being observant and being active

participants during mentor/mentee interaction. Mentors tend to (or are more likely to) approach the mentoring relationship in a non-judgmental and open manner.

Mentors who help mentees focus on the ‘moment-to-moment awareness’ of their experiences, in and out of the classroom, in a nonjudgmental manner (Rhodes et al., 2006) are better able to build more trusting relationships. This type of mentoring relationship fosters reduced rumination, or the tendency to think repetitively about the causes, situational factors, and consequences of negative emotional experiences from daily stressors. The mentoring relationships can also help mentees to have increased self-regulation and reductions in anxiety levels. A mentoring relationship that is cultivated from mindfulness generates trust and support, as these mentors are less likely to face behavioral sanctions. Kang and colleagues (2017) found that high levels of dispositional mindfulness increase motivation and reduces negative affect. That is, mentors who can foster motivation and reduce shame in their mentees are better able to connect with mentees. Mentees from under-resourced school districts may face several issues that decrease their motivation and increase their shame. A mentoring relationship that can reverse these feelings can create a strong bond between the mentor and mentee. In addition, research has found that mindfulness and academic efficacy are positively associated with resilience. Some positive outcomes of this association include the alleviation of the adverse effects of stress, the promotion of adaptation, and the development of efficient coping skills to deal with change and adversity (Ahern, Kiehl, Sole, & Byers, 2006; Keyes & Pidgeon, 2013). African American students in underserved communities are faced with many different forms of hardship and adversity.

Benefits of Mindfulness in the Mentoring Relationship

The majority of research on the effectiveness of mindfulness revolves around clinical populations. This research highlights the importance of mindfulness for teaching and classroom management. As science advances, research continues to make waves with findings in neuroscience that reveal the effect of mindfulness on the brain. Mindfulness has been shown to result in changes to the chemical disposition of the brain, which can strengthen the ability to regulate their emotions. Research using functional Magnetic Resonance Imaging (fMRI) found revealed that individuals with high levels of mindfulness tend to be less reactive to threatening emotional stimuli as measured by amygdala activation (Creswell, Way, Eisenberger & Lieberman, 2007). Further, results from a meta-analysis evaluating the efficiency of Mindfulness-Based Stress Reduction (MBSR), a mindfulness-based training program, found that the program is potentially linked to stress reduction.

Mindfulness has also been linked to mood and personality characteristics. Research has shown that focusing one's attention on the present is related to increased extroversion and heightened levels of openness (Brown, Ryan, Creswell, 2007). Further, individuals who are better able to remain aware of occurrences within and outside of their bodies are more inclined to have lower levels of anxiety and depression (Brown and Ryan, 2004). This research provides some evidence of the importance of mindfulness in the mentoring relationship. Mentors who are better able to remain present during the mentoring relationship are more in tune with their internal and external responses. Thus, they can be more effective at being aware of themselves. These mentors can be more open in the mentoring relationship and to what they bring to that relationship. This level of self-awareness and openness is a good foundation for developing a trusting and supportive relationship with mentees. Research also highlights the importance of

mindfulness within the classroom when practices such as focusing on the present and using visualization are adopted (Talley, Scherer & Hill, 2021). When teachers (and mentors) use mindful practices, they are more equipped to recognize the impact of the “hold of the past” and the anxiety of the future on students’ ability to pay attention and focus on classroom activities (Moore, 2018). Education, using mindfulness practices, can attend to student worries to enable effective teaching and learning.

Mentoring as a Mitigation of Risk and Vulnerability

Peer mentoring focuses on a more experienced student helping a less experienced student improve overall academic performance, encourages mentors’ personal growth (Falchikov, 2001; Kram & Isabella, 1985), and provides advice, support, and knowledge to the mentee (University of South Australia, 2003). When using mentors, it is essential to clarify the roles of teachers, mentors, and students; this is when a structured mentor-training program is necessary. Utilizing peer mentors requires a whole system of training and support concerning the socialization of students, teachers, and instructors. Through a training program, this role clarification is essential for the success of a successful mentoring relationship (Storrs, Putsche, and Taylor, 2008). Further, a clear sense of responsibility between mentor and mentee will facilitate understanding self-efficacy among the students (Hall, Draper, Smith, & Bullough, 2008).

The early educational journey is a period when many students experience and struggle with different social and emotional changes that may impact interpersonal relationships and academic success (Pastorino & Doyle-Portillo, 2016). During this time, it is vital for teachers and mentors to help students develop skills and nurture temperaments such as resilience, perseverance, and determination. These skills will enable students to problem-solve and work through different challenges and risk factors they encounter as they become actively involved in

their learning process (Lindt & Blair, 2017). Mentoring programs are crucial to providing students with these vital skills and a sense of efficacy in learning.

There are many different ways to conceptualize the mentoring process. Generally, mentoring refers to a relational process in which a more experienced individual assists in the development of a student. This process can be achieved by providing either psychosocial support in the form of counseling or friendship; they may offer career-related support as in coaching or sponsorship; and they may be role models (Burke, 1984; Kram & Isabelle, 1985; Scandura). Because mentoring relationships involve a more knowledgeable person with a younger, less experienced person, peers can also provide helpful mentoring support. Colvin and Ashman (2010) stated, "Peer mentoring focuses on a more experienced student helping a less experienced student improve overall academic performance, encourages mentors' personal growth" (p. 122). The mentor provides advice, support, and knowledge to the mentee. Mentoring can also focus on providing students with relational outlets, which is essential for adjustment to new surroundings (Booker & Brevard, 2017).

Mentoring and African American Youth

Historically, African American students have been disproportionately labeled as low achieving for several reasons. The inherent racism in schools has been deemed a chief culprit for this mislabeling (Jones, 2002). This intrinsic racism may lead schools to view and treat African American students undesirably, leading to a self-fulfilling prophecy of low achievement over time. The inferred discrimination in school, reported by students daily, is another contributing factor (Crutcher, 2007). This treatment and unfavorable view of young African American students is indicative of an education system that does not necessarily cater to the needs of African American students. Research has found that mentorship plays an important role in

helping African American students succeed (Dawes & Dawes, 2005) and learn to develop positive self-images. Consistent with the PVEST model, research shows that having a same-race mentor is vital to African American students, as it aids in academic success (Booker & Brevard, 2017). Academic support can be achieved by providing students with the psychosocial support they need, such as camaraderie and guidance (Eanes & Mansarray, 2007).

The inherent and inferred racism and discrimination within the social and school climate may hinder minority students' academic performance, especially African American students, due to the lack of perceived or actual support they need. In addition, their emotions surrounding new school environments and new encounters within schools may be a hindrance to their academic success and psychological development. As such, different mentoring programs, emphasizing and reinforcing interpersonal connections, can buffer the effects of low belongingness and disconnection from the community (Booker & Brevard, 2017).

It has been found that different academic mentoring programs vary in their focus and approach; as such, students respond to them differently based on their own experiences and needs (Ishiyama, 2007; Strayhorn & Saddler, 2009). As a result, in order for African American students to flourish academically, they need support that promotes more structured and academically focused mentoring rather than mentoring, which focuses on social interaction and interpersonal bond (Booker, & Brevard, 2017). SIAP mentorship provides just that; it focuses on providing African American youth with a deeper understanding of algebra concepts while equally developing an understanding of self and connections to the broader community.

SIAP Intervention as a Mitigation of Risk and Vulnerability

Employing a culturally responsive approach to learning involves teachers and mentors who are skilled in pedagogy that recognizes students' potential, empowers students intellectually,

socially, emotionally, and politically by using cultural subject matter, influencing student knowledge, skills, and attitudes (Ladson-Billings, 1994). In keeping with the PVEST model, mentors must be trained to convey information to the students through culturally familiar approaches such as language, prior knowledge, and recognizable student activities. SIAP training is designed to minimize the potential impact biased individuals have toward minority students. By making students aware of biases and exposing them to the unfounded, unjustifiable, and discriminatory nature of those biases, mentors would become more mindful and conscientious when working with minority students. This cultural knowledge should provide mentors with an expanded knowledge base from which to utilize when evaluating the academic potential of minority students and in building rapport and enhance the belief and confidence of minority students.

This expanded knowledge about minority students and their sociopolitical predicament, in turn, should enhance mentor's sense of self-regulation and control when working with minority students. Similarly, expanded knowledge about Math and the new pedagogical methods acquired through the SIAP mentor training should enhance mentors' sense of efficacy as a tutor or mentor. All of these factors (i.e., increased cultural and social justice knowledge, mindfulness, and self-regulation), incorporated in training, should converge in the mentoring relationship and undergird the mentors' ability to build a supportive, trusting, and understanding relationship with mentees. These factors are the building blocks of adaptive coping, self-efficacy, and adaptive academic identities, essential to promote learning through cultural lenses (Spencer, 1997, 2006, 2011, Mosses & Cobb, 2010). Such factors will allow mentees to become comfortable and more focused to gain an appreciation for learning (Rajagopal, 2011).

The mentoring program under study involves four large Historically Black Universities in southern states of the United States. It is part of a culturally relevant pedagogical approach to Math education, involving the Southern Initiative of the Algebra Project (SIAP). SIAP encourages the development of teachers who want to continue to grow in the field; specifically, SIAP stresses the interaction between Math teachers, mentors, and students (mentees). SIAP exists because many students in under-served schools perform in the lowest quartile on standardized tests. As a result, these students lack equitable access to a high-quality education that is necessary to prepare them to succeed in the workforce, in college, and beyond. Solid and broad-based partnerships across sectors are required to achieve this goal.

The SIAP recruits interested students from advanced Math courses specifically to be mentors. These students become part of the SIAP M-square mentors' team; together with SIAP teachers, they participate in a mandatory two-week SIAP training program. They learn the theory of peer mentoring, including understanding the roles of a mentor, developing cultural sensitivity, enhancing communication skills, developing and maintaining relationships, managing time, and facilitating learning. One approach used by SIAP to increase mentee learning and interest in Math is to provide the mentees with role models or mentors who are relatable and who resonate with their identities as African American students. Bandura (1977) stated that observing others like oneself being successful may increase one's belief in their potential and capacity to complete tasks and master them. Thus, witnessing someone who looks like you succeed enhances one's self-efficacy. Young people are more likely to imitate those who they perceive as similar to them. SIAP mentors operate in a social space between the authority of the teacher and the warmth of a friend. This space makes them ideal role models to guide young African American students. According to Bandura (1977), the social relationship, similarities, and the modeling

effect between the mentor and mentees, directly impact mentees' belief in themselves and their potential for success (Clarke-Midura et al., 2018).

SIAP models what culturally relevant mentoring resembles. The use of structured activities during the mentoring process such as culturally appropriate games, incorporating trips around the campus and community as fun ways of learning Math concepts. Games such as sort shapes, sort lines, and running the structure made learning fun. Topics such as Social Justice and the Arts, Imposter Syndrome and Support within The Black Community and Education, and Breaking the Colonial Model allowed students to learn about their culture connect with the broader community. Most importantly, the manner in which mentors are trained has a direct impact on their mentoring practice.

Southern Initiative of the Algebra Project (SIAP)

Figure 8: *SIAP Model*

The SIAP approach began in 1994 as a program of Algebra Project, Inc., following the same expectation and conviction that virtually all middle school students can learn algebra (Moses & Cobb, 2002). Like the Algebra Project, SIAP stresses several vital components. SIAP addresses students' learning transition from arithmetic to algebra and having a curriculum that links students' physical experiences to abstract Mathematics. It also focuses on reinforcing the expectation for academic achievement not only by the teachers and mentors but also by the students themselves, parents, and school administrators. Lastly, SIAP engages teachers and mentors in ongoing training, follow-ups, networking, and support (Moses & Cobb, 2002; Silva et al., 1990; Wynne & Moses, 2008). The SIAP approach, just as the Algebra Project, is a response to the problems which has been and still do surround Mathematics education among African American students across the United States. The focus is specifically geared towards the needs of students in under-resourced school districts.

The SIAP approach to educational intervention is a multipronged, broad-based school-community engagement model for teachers, mentors, and students. The process is designed to facilitate student and teacher development throughout the PreK-16 educational pipeline. Through the development of committed educators and a strong, community-based support network, the protections and supports students need to excel academically become readily available. The AP pedagogy is designed to facilitate, through the professional development of teachers and mentors, the development of proficient math and algebra students, regardless of their socio-economic background and prior academic performance. By Building on experiential, linguistic, and cultural features of the children they serve, teachers and mentors are trained to utilize the

Algebra Project pedagogy to capitalize on those experiences to help with the learning of Math and algebra (Watkins, Kendall-Brooks, JohnFinn, Clemons, Talley, & Hopkins, 2020).

In keeping with its key component of facilitating ongoing training, follow-ups, networking, and support, SIAP has developed a relatively comprehensive PreK-16 Model, which includes an intensive, year-round professional development process for educators (both teachers & administrators). Additionally, SIAP continues to maintain an intensive two-week training and year-round support for student mentors. After implementing the teacher-mentor professional development process, SIAP continues to advocate for students of color by developing a coalition with community partnerships to include parents, churches, local businesses, and universities. This broad-based network is referred to as the design team.

The local design team can be viewed as a continued effort and collaboration for change. The goal is to create learning environments where teachers, mentors, and students understand that learning results from effort and motivation rather than merely an innate ability (Silva et al., 1990). SIAP works to engender community support, to form partnerships in the fight for quality of education for inner-city students who have been historically underserved in the public-school system. The current study represents an analysis of the Impact of SIAP Training on Mentors' Self-Regulation, Mindfulness, Efficacy, and mentor-mentee Relations.

Characteristics of Successful Mentors

Goal setting is an essential component of a mentoring relationship (Sorrentino, 2006), as it enables the ability of the mentoring relationship to build trust and motivation. The process of setting goals can help mentees boost their self-confidence and make vital steps towards academic success. Goal setting with middle school students can pose some difficulty as students at that age are not developmentally equipped to grasp the concept of looking past the present experiences to

plan for the future. It is imperative that mentors come to the realization that the desire for a goal must not be forced onto the mentee but that it has to be an internal response from the mentee. The mentor must facilitate the achievement of said goals. This approach encourages the development of a positive mentor/mentee relationship and promotes effective self-regulation.

Mentors can encourage goal-setting behaviors by modeling the behavior; they can demonstrate rather than tell. A significant part of incorporating a culturally appropriate and culturally responsive intervention is utilizing the learner's language, culture, and experiences to facilitate learning new information (Moses & Cobb, 2002). This can be achieved through modeling learning behavior. The mentors are to model effective learning behaviors and perform practice exercises with the guidance of the teacher. Such practice allows the mentees to engage in social learning in the classroom by modeling the behaviors of their mentors. Bandura (1977) wrote that "seeing or visualizing people similar to oneself perform successfully, typically raises self-efficacy beliefs in observers that they themselves possess the capabilities to master comparable activities" (p.87). Effective listening is another important factor in the mentoring relationship. A mentor provides a mentee the opportunity to think through problems and generate solutions by being non-judgmental or not feeding them resolutions. This guidance through active listening allows the mentee to engender self-efficacy in their abilities and recognize their own potential.

Trust and the Mentoring Relationship

In a mentoring relationship, trust has been shown to be critical for developing high-quality relationships. Wang, Tomlinson, & Noe (2010) study highlights the importance of examining trust from the mentor's perspective. Findings of their study indicate that mentor affective-based and cognitive-based trust were positively associated with mentees benefiting

from the mentoring relationship. Therefore, the goal of any mentoring program should be to facilitate various learning experiences which demonstrate specific characteristics that promote the development of trust and support (Chan, 2018).

The mentoring relationship referred to in the current study comprises a caring and supportive relationship between a middle school youth and a college student. Rhodes and colleagues (2008) proposed that the quality of the mentoring relationship can affect the mentees in three different ways. That is, a mentor relationship based on trust and support can enhance the mentee's social relationships and emotional wellbeing, improve their cognitive skills through instruction and conversation, and promote positive identity development by having mentors as role models (2008). Through the SIAP mentor training, mentors are provided with the tools and teachings to engender trust with their mentees.

Trust and support are at the forefront of the mentoring relationship, and every interaction between mentor and mentee should focus on strengthening trust. According to Oluwabunmi and Julita (2016), there are different types of trust within mentoring relationships. However, interpersonal trust has a more positive impact on behavior ratings or roles assumed by peers in the mentoring relationship rather than other types of trust. Interpersonal trust is an indication of mentee's tendency to trust their mentor. SIAP mentors are taught to build solid interpersonal, trusting relationships with their mentees. A healthy mentoring relationship can make learning fun and mutually pleasurable for all involved. Through the SIAP initiative, mentors and teacher incorporate fun learning activities which provide opportunities for respite and joyous experiences for youth who are otherwise faced with complex and challenging circumstances. Engagement in meaningful interactions with mentors in the classroom is an aspect of a supportive mentoring relationship for SIAP. Research by Sarason and Sarason (2001) highlights the importance of

incorporating fun and interactive activities into the mentoring relationship, which is a catalyst for supportive relationships, which they refer to as companionship.

Companionship is generated by a strong desire to engage in fun interactions that involve leisure activities (Rooks, 1995). SIAP teaching of Math incorporates fun and exciting teaching methods and a fun way of learning (SIAP Mentor Training 2018, 2019). Making learning fun and interactive enhances the relationship between the mentor and the mentee and improves other relationships for the mentees (Rhodes et al., 2006). The care and support mentees receive can help them view themselves more positively by correcting negative self-images instilled in them from the challenging life experiences and estranged relationships. Mentees who are exposed to such positive relationships come to view their mentors as helpful (Coble, Gantt, & Mallinckrodt, 1996). Thus, it is conceivable that a mentorship based on a close and supportive relationship can validate a mentee's emotional and intellectual interest, which can motivate them to develop a liking for learning and engage in adaptive coping behaviors (e.g., doing homework).

Trust in the mentoring relationship refers to the extent to which a mentor and mentee become involved in reciprocal interaction and mentorship. Trust enables the mentees involved to be vulnerable to the mentors and to assume positive outcomes when they take a leap of faith. By trusting the mentors, the mentees expect some level of confidence that their mentor embodies benevolence, competence, care, honesty, openness, reliability, hope, and wisdom (Kutsyuruba, Walker & Noonan, 2011). For example, SIAP mentors are able to build trusting relationships by connecting on a cultural and communal level. Mentees build trust when they can identify with their mentor in a reciprocal and shared experience.

Kutsyuruba, Walker & Noonan, (2008) study analyzed the role of trust in developing successful mentoring relationships within a teacher induction program. They focused on trust

between the new teacher and mentor (experienced teacher), between the school administrator and mentor, and between the new teacher and the school administrator. The results revealed that trust allowed the mentees to seek advice, be attentive to mentors, and choose to act on the mentor's advice without fear of rejection within the mentoring relationship. Smith (2004) echoed that a supportive and trusting relationship between an experienced teacher (mentor) and a new teacher (mentee) is essential to allow the new teacher to adjust to their requirements as teachers. In this light, SIAP mentors are trained to respect and understand the culture and needs of African American and minority population. The training is designed to build a trusting and supportive relationship with mentees to help them adjust to new materials taught. This study is designed to assess the extent to which trust occurred with a sample of SIAP-trained college tutors/mentors.

Chapter 3

Methodology

Participants

Archival data were used to evaluate two categories or types of participants used in this study: 1) college student mentors and 2) middle school student mentees. The college student participants were African American students from five HBCUs (list the HBCUs). The college student sample consisted of two different types of SIAP training interventions (described below). The impact of SIAP interventions involved the data evaluation from two separate time frames (immediately after training and one year after training). The sample size for middle school students included a sample of ($n = 419$) students from under-resourced school districts in the south. Only complete cases with scores on all the study variables were included in the study.

Two different data points were combined for this study. The SIAP mentor training in 2018 was the traditional SIAP training which encompassed a 2-week Youth Development Institute. The training covered the fundamentals of mentoring and the teaching of math concepts using culturally relevant approaches. An overall total of 183 college mentors completed pre, and post-training surveys; 123 mentors completed the pre-training surveys, while 60 completed post-training surveys. Of the total number of mentors, 71 were males, and 112 were females. For data analysis purposes, participants needed to be paired with a completing pre, and post-training; thus, a total of 60 participants were used.

The 2019 training was a 4-day modified version of the SIAP training, which did not involve only SIAP mentors but all university mentors. The training in 2019 focused on mentoring and general student support with a brief introduction of SIAP concepts; it was not focused on teaching or learning Math concepts. A total of ($N = 34$) mentors completed the mentor evaluations questionnaire ($n = 28$) in 2018 and ($n = 6$) in 2019.

Overall, a sample of 60 pairs of college mentors who completed both SIAP mentor trainings (2018 and 2019) was selected to assess the impact of SIAP mentor training. Of the total number of chosen mentors, 21 were males, and 39 were females. College mentors were between the ages of 17 to 26 years old ($M = 20.28$; $SD = 1.56$), while middle school mentees ranged from age 11 to 15 years old. Mentors were recruited from 5 different HBCUs as an essential component of the culturally relevant pedagogical initiative. Approximately 63% of college students were recruited as M-squared mentors from Virginia State University, 11% from Virginia Union University, 8% from Xavier University, 11% from Dillard University, and 7% from Lincoln University. The mentors worked with middle school students (mentees) in preparation for standardized testing and as part of different education programs included STEM camps, Upward Bound, and Educational Talent Search (ETS).

Mentees worked with elementary and middle school students from under-resourced school districts in a southern state. There was a total of $N = 419$ from five different schools ranging in grade level from 4th to 8th grade. Missing cases analysis revealed that 326 data gave consent by signing in to participate in this study. One hundred and forty-three participants were deleted from the data set for different reasons, including not completing any questions, only answering the demographics surveys, or not answering the surveys that pertained to the current study. As a result, we were only able to use 60 pairs of data.

Mentor Training

Mentors completed a two-week professional development similar to that of teacher training. The training is designed to provide teachers, counselors, and student mentors with an introduction to a culturally responsive, social justice approach to teaching based on the SIAP/AP approach to teaching and learning math. The goal of the two-week mentor training is to help student mentors understand and practice how to:

- Build helping relationships.
- Communicate effectively through active listening and avoid barriers to communication.
- Use flexible interviewing to enable a better understanding of students' mathematical thinking and misconceptions.
- Facilitate learning versus direct teaching practices (show and tell)
- Frame learning to make it more connected and accessible to others.
- Think differently about mathematics.
- Facilitate learning for PK-12 students' transitions in mathematical thinking around vital mathematical concepts.
- Use mathematical, conceptual understanding to promote achievement in mathematics.
- Promote social justice so that all students have access to and success in mathematical literacy.
- Be prepared to facilitate and debrief games in the schools served by SIAP; and
- Be engaged in activities that will enhance their tutoring abilities.

The training involved sessions on barriers to communication and active listening, social justice sessions which help mentors understand their placement as social justice advocates through different interactive math games. Mentors learn various vital aspects and mathematical

models, including shapes, numbers, divisions, and prime lines, with associated interactive games to make learning fun. Information gathered from mentor evaluations of the training is used to design different methods to improve the performance of professional development for educators and mentors to improve educational practices. Data from the surveys are used to help design and enhance future teacher and mentor professional development programs.

Training in 2019 was a modified version of the above-stated traditional SIAP mentor training. As stated, training in 2019 was a 4-day training instead of the traditional 2-week training, which both SIAP mentors and teachers receive. In addition, the training focused on a broad concept of mentoring and general student support with a brief introduction to SIAP concepts; it was not focused on teaching math concepts.

Materials

Several psychological measures were administered to mentors to examine the impact of SIAP's intervention on critical mentor characteristics. The Child and Adolescent Mindfulness Measure (CAMM), Short Self-Regulation Questionnaire (SSRQ), and the academic Efficacy subscale from the Patterns of Adaptive Learning Scale (PALS). Academic performance was self-reported semester Grade Point Averages (GPAs). Reliability coefficients:

The Child and Adolescent Mindfulness Measure (CAMM)

The CAMM is a 10-item self-report measure of awareness of the present and being nonjudgmental in responses to thoughts and feelings. The CAMM has been assessed in children and adolescents ages 10 to 17 (Greco et al., 2011). Respondents rated how often each item correctly pertained to them using a 5-point scale (0 = never true; 4 = always true). All ten items are negatively worded and reversed-scored so that higher scores indicate greater levels of mindfulness. The CAMM is statistically sound with good internal reliability ($\alpha = .81$). CAMM

scores were positively correlated with academic competence, social skills, and quality of life and negatively correlated with externalizing problems, internalizing symptoms, and somatic complaints (Greco et al., 2011; Goodman et al., 2017).

The Short Self-Regulation Questionnaire (SSRQ)

The Short version of the Self-Regulation Questionnaire (SSRQ) is a 31-item self-report measure of the ability to regulate behavior to achieve one's goals. The SSRQ is CAMM is statistically sound with good internal reliability ($\alpha = .86$). Participants indicate the extent to which they agree with each item using a 5-point Likert scale: 1 (Strongly Disagree), 2 (Somewhat Disagree), 3 (Neutral), 4 (Somewhat Agree), and 5 (Strongly Agree). Also, the measure has one total scale computed by summing the items (after reverse-coding certain items, as needed). An example of questions includes the following: "Once I have a goal, I can usually plan how to reach it," "I have a lot of willpower," and "As soon as I see a problem or challenge, I start looking for possible solutions" (Neal & Carey, 2005).

Patterns of Adaptive Learning Scales (PALS)

This instrument was used to assess four major types of academic coping behavior among mentors (Midgley et al., 2000). The subscales used a five-point Likert scale ranging from 1 = "Not at all true," 3 = Somewhat true," and 5 = Very true." *Academic Efficacy* - 5 items were used to refer to the student's individual perception of their level of competence or ability to complete their classwork. Sample scale statements include, "I am certain I can master the skills taught in class this year" and "Even if the work is hard, I can learn it." Internal consistency was at ($\alpha = .78$), (Midgley, et al., 2000)

Procedure

Survey instruments were gathered via two sources, using Qualtrics, an electronic survey engine. Evaluations of the mentoring process were paper and pencil questionnaires completed at the end of the academic year by both mentors and mentees. College mentors completed pre and post-professional development survey instruments via Qualtrics. Pre-training surveys were completed before mentor training to gather diagnostic information on mentors' approach to academic performance, attitude towards mentoring, and challenges to academic success. Post-training surveys completed immediately after mentor training evaluated the mentor professional development training and mentors' attitudes, opinions, and experiences related to various aspects of mentoring and learning. After training, mentors completed professional development evaluation surveys at two intervals throughout the school year (after the first nine weeks of the school year and at the end of the school year). Before completing the survey, informed consent was explained to each student. The students were asked to give consent before participating in the study; the instructions were provided in Qualtrics before taking the survey measures. The survey measures took a total of about 40 minutes to complete.

Chapter 4

Results

Descriptive Statistics and Data Screening

To examine the impact of SIAP mentor training on mentor cognitive characteristics of mindfulness, self-regulation, and sense of efficacy, a total of 183 college mentors participated by completing the pre and post-surveys 123 completed surveys before training while only 60 complete surveys after training. A sample of 60 mentors was selected based on those who completed pre, and post-surveys for the 2018 and 2019 SIAP training. There were 21 males and 39 females. An additional separate sample of 34 SIAP mentors completed the professional development evaluation questionnaire; 28 in 2018 and 6 in 2019. Furthermore, a sample of 419 middle school students between the ages of 11 and 15 completed the evaluation questionnaire. Data were analyzed for extreme scores, and that met the requirements of test assumptions of normality, linearity, homoscedasticity, homogeneity, and multicollinearity. Preliminary data screening indicated that the scores on all variables were normally distributed. Missing data were eliminated from the data resulting in differing numbers of participants per instrument.

The current study examined four different hypotheses that evaluate the efficacy of the SIAP mentoring process in terms of effective mentor characteristics that enable mentee engagement and trusting and supportive relationships from the perspective of both SIAP mentors and mentees. The different hypotheses are as follows:

Hypothesis 1 stated that *there will be a positive correlation between mentor cognitive characteristics of mindfulness, self-regulation (impulse control and goal setting), and self-efficacy*. The data reveals that scores on mindfulness and sense of efficacy were positively correlated to scores on impulse control and mindfulness. Thus, results suggest that SIAP mentors have levels of cognitive characteristics essential for being successful mentors.

A correlation matrix was computed for each data set gathered in 2018 and 2019. Correlations were a means to explore relationships between the sub-factors of each measure, as applicable (See Table 1). Most notably in 2018, Cumulative GPA was negatively correlated to SSRQ Impulse Control was positively correlated to CAMM ($r = .419, p = .000.$), PALS Academic Efficacy ($r = .581, p = .000.$). SSRQ Goal- setting was positively correlated to CAMM ($r = .351, p = .002.$) and PALS Academic Efficacy ($r = .466, p = .000.$).

	Mindfulness	Academic Efficacy	Impulse Control	Goal Setting
Mindfulness	1			
	82			
Academic Efficacy	.209 .059	1		
	82	82		
Impulse Control	.419** .000	.581** .000	1	
	78	78	78	
Goal setting	.351** .002	.466** .000	.653** .000	1
	78	78	78	78

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 1: *Mentor Cognitive Characteristics Correlations 2018*

In 2019 data set (See Table 2), the most notable correlations SSRQ Impulse Control was positively correlated to Academic Efficacy ($r = .513, p = .000.$), and CAMM ($r = .397, p = .000.$). SSRQ Goal setting was positively correlated to Academic Efficacy ($r = .601, p = .000.$) and CAMM ($r = .292, p = .004.$).

	Academic Efficacy	Mindfulness	Impulse Control	Goals Setting
Academic Efficacy	1			
	108			
Mindfulness	.137	1		
	.177			
	99	99		
Impulse Control	.513**	.397**	1	
	.000	.000		
	97	97	97	
Goal setting	.601**	.292**	.737**	1
	.000	.004	.000	
	97	97	97	97

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 2: Correlations Mentor Training 2019

Hypothesis 2 stated that SIAP training would enhance mentors' *perception of their efficacy as mentors and understanding of the mentoring process before and after training*. Only partial support for this hypothesis was obtained. The data only provide post-training assessments relative to those variables. The posttest assessments revealed that the SIAP training produced a high overall sense of efficacy among mentors and a sense of adequate understanding of the

mentoring process. Seventy percent of mentors felt that the training they received was sufficient to preparing them for their role as mentors and improving their overall understanding of the process. These results are illustrated in Chart 2.

A paired-samples t-test was conducted to compare the effect of SIAP training on mentor self-regulation, as measured by the SSRQ (Impulse Control and Goalsetting); mindfulness, as measured by CAMM; and sense of efficacy, as measured by the PALS Academic Efficacy. T-test compared scores on stated scales before and after (2018) SIAP training (See Table 3) and a year (2019) after SIAP training (See Table 4).

Paired Samples Test									
		Paired Differences							Sig. (2-tailed)
		Mean	SD	SEM	95% Confidence Interval of the Difference		t	df	
					Lower	Upper			
Pair 1	Mindfulness_T1 – Mindfulness_T2	.466	8.172	1.073	-1.683	2.614	.434	57	.665
Pair 2	Impulse Control T1 – Impulse Control _T2	1.660	6.409	.880	-.106	3.427	1.886	52	.065
Pair 3	Goal setting T1 – Goal setting T2	1.075	5.622	.772	-.474	2.625	1.393	52	.170
Pair 4	Efficacy_T1 – Efficacy _T2	.763	4.280	.557	-.353	1.878	1.369	58	.176

Table 3: *Paired Samples t-test before and after training in 2018*

Results of paired samples t-test conducted based on training completed in 2018 revealed no significant difference in mentor mindfulness and self-regulation (goals-setting) before and after training. There was also no significant difference a year after completing the training in 2019. Results showed that in 2018, mentors had higher levels of self-regulation (impulse control) before SIAP mentor training ($M = 44.77$, $SD = 5.06$) than after training ($M = 43.11$, $SD = 5.88$). The paired sample t-test found this difference to be marginally significant; $t(52) = 1.89$,

$p = .06$. Together these results suggest that the mentor training in 2018 affected mentors' ability to self-regulate. Specifically, our results suggest that the SIAP mentor training in self-regulation was effective in enhancing mentors' ability to control their impulses, thus being better equipped to form supportive, trusting connections with their mentees within their care.

<i>Paired Samples Test</i>		Paired Differences							
					95% Confidence Interval of the Difference				Sig (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper	t	df	
Pair 1	Mindfulness_T1 – Mindfulness_T2	-1.769	7.014	1.945	-6.008	2.469	-.910	12	.381
Pair 2	Impulse Control T1 – Impulse Control_T2	.538	3.526	.978	-1.593	2.669	.551	12	.592
Pair 3	Goal setting T1 – Goal setting T2	.615	3.927	1.089	-1.758	2.989	.565	12	.582
Pair 4	Efficacy_T1 – Efficacy_T2	-.077	3.353	.930	-2.103	1.949	-.083	12	.935

Table 4: *Paired Samples t-test a year after training in 2019*

Hypothesis 3 stated that *SIAP mentor training would strengthen or enhance critical mentoring cognitive characteristics such as self-regulation, mindfulness, and sense of efficacy after mentor training*. This hypothesis was partially supported. The results revealed no significant changes in mindfulness $t(57) = .43$, $p = .66$ and sense of efficacy $t(58) = 1.37$, $p = .18$. before SIAP training (see Table 3) and after SIAP training for mentors who received the full SIAP training in 2018 and the hybrid SIAP training in 2019 $t(12) = -.90$, $p = .381$. (Mindfulness) and $t(12) = -.08$, $p = .93$. (Sense of efficacy) (see Table 4), respectively. However, findings indicated a marginally significant difference in scores for impulse control before and after SIAP

training among mentors who received the full SIAP training, $t(52) = 1.89$, $p = .06$. These results suggest that the mentor training in 2018 affected mentors' ability to regulate their emotions. However, none of the major mentoring characteristics were significantly increased a year after training, although they remained high.

Hypothesis 4 stated that mentors and mentees *would perceive the mentoring relationship favorably and as enabling trust and support*. The results indicated that both mentors and mentees perceived the SIAP mentor initiative positively and trustworthy, allowing the development of trust and support. Among mentors, 88% reported that the mentees in their care were able to form trusting relationships with them. At the same time, over 90% of mentees viewed their mentors as trustworthy and felt supported by their mentors. These results are illustrated in Charts 5, 6, and 7.

Hypothesis 5: stated that *mentors and mentees will view the impact of the mentoring relationship as improving mentees' efficacy for learning math*. The results revealed that after embracing their roles as mentors for one academic year, 88% of mentors were optimistic that their approach to the mentoring process and their interaction with mentees enabled the mentees to engage in the process. In comparison, 91% of mentors stated that their presence in the classroom aided in improving mentee learning of math concepts. These results are illustrated in Charts 3 and 4.

Mentor Evaluation Data

At various points along academic years, 2018 and 2019, 34 mentors, providing mentoring services at three different middle schools, completed an evaluation questionnaire. The questionnaire was based on mentor appraisal of their roles as mentors and their interactions with mentees (See Appendix A). Over the course of each academic year, many of the mentors worked under the supervision of up to three different teachers during weekday class time. Only four

mentors worked during Saturday tutoring in addition to regular class time. During typical weekday mentoring sessions, most of the mentors provided mentoring services to up to six different mentees at a time; some were also able to have one-on-one mentoring sessions with their mentees and group sessions. At times, mentors provided services to entire classes, some of which were between 20 – 32 mentees (See Chart 1).

Chart 1: *Number of Mentees per visit*

For this current study, only three questions from the evaluation questionnaire were evaluated:

1. Do you think the training/preparation you received was adequate for mentoring?
2. Do you think your mentee(s) was engaged in the mentoring process? Please explain why you feel this way.
3. Do you think your mentee(s) trust you? How important do you feel trust is in a mentee/mentor relationship?

Overall, 70% of mentors stated that the training was adequate, 18% were undecided, while 12% felt that the SIAP training was insufficient for mentoring (See Chart 2). One mentor

who thought that he/she was not adequately prepared explained that he/she “was not prepared to be in a room of 30-32 children with one teacher. There was way too much to control that couldn't be controlled due to the number of children in the room (Talking, disobedience, lack of respect).”

Chart 2: *Adequate of Mentor Training*

Although most mentors felt that the mentees in their care were engaged in the mentoring process, a small percentage felt their mentees (18%) were not focused (See Chart 3). Qualitative data reveal several unique explains by mentors for the perceived high level of engagement among mentees, including:

- i. Mentees were alert and were able to assimilate the lesson
- ii. Mentee showed interests by trying their best to work through problems and by continually asking questions about the concepts being taught and about college
- iii. Mentees showed interest in their mentors by being excited to see mentors and engaging mentors in conversations
- iv. Requesting one on one time with mentors

- v. Displaying positive emotions of genuine interest, being attentive, and showing resolve.

The reasons cited by mentors for their mentees lacking interest or having minimal to no engagement in the mentoring process included:

- i. Too many distractions in the classroom
- ii. Mentees being talkative and playful
- iii. Mentees did not like Math
- iv. School was not a priority

Chart 3: *Mentee Engagement*

In terms of mentors' evaluations of their mentoring through mentee improvement in learning, liking, and gaining increased efficacy in Math, the majority of mentors were positive and optimistic of their role. Ninety-one percent of the mentors affirmed that their mentorship helped improve mentee learning of Math concepts, while only 9% of the mentors did not observe

enhanced learning (See Chart 4). Common reasons why mentors felt they played such a positive role with their mentees include:

- i. A college mentor conveyed the importance of gaining a college-level education.
- ii. A college mentor provides different and sometimes more straightforward ways to grasp the materials taught.
- iii. Seeing young people teaching the material was a significant influence for young mentees.
- iv. Students/mentees were observed asking fewer questions and worked harder as the semester progressed.
- v. Mentees were more engaged and gained a greater sense of positivity with college mentees.

The few mentors who did not observe improved learning, liking, and self-efficacy in their mentee listed the following reasons why:

- i. They did not get to spend much time with their mentees.
- ii. One mentor came towards the end of the quarter, and as such, mentees were being prepared to leave so, mentees benefited very little from the limited interactions with mentors.

Chart 4: *Improvement in Learning of Math*

About 88% of mentors perceived that mentees in their care were able to form trusting relationships with them during the mentoring process, while a small percentage felt their mentees (18%) were not as trusting (See Chart 5). Mentors cited various reasons why they felt trust in the mentor/mentee relationship is essential, including:

- i. To feel comfortable enough to listen to mentors.
- ii. Trust enables mentees to open up to mentors, which allowed mentors to understand mentees' learning styles better
- iii. Trust enables classroom engagement, mentor acceptance, and mentee sense of security in their learning
- iv. Trust provides a foundation to build an effective mentoring relationship

The reasons cited by mentors for their mentees not displaying trust in their mentoring relationship included:

- i. Not enough time to develop a trusting relationship as limited classroom time and lack of instructional time.

- ii. Some mentees did not engage with or ask many questions of their mentors
- iii. One mentor shared that there were prior unrelated events that inhibited trust between mentor and mentee, but mentees trusted the information provided

Chart 5: *Mentorship Trust* (Mentors' Perspective)

Mentee Evaluation Data

A sample of 419 mentees completed the mentee evaluation (See Appendix B). Mentees were from various elementary and middle schools in a southern state. Per SIAP intervention, mentees ranged in grade level 4th through 8th grade. Mentees were allowed to rate the experiences with their mentors based on their perception of the mentors' ability to attend to their needs by building secure, supportive, trusting mentorship. Mentees evaluated their mentors' ability to listen to them, to understand them, and to guide them to do the right things. Mentees also assessed how trustworthy their mentors were based on rapport building and whether they were able to share complex and sensitive topics. The responses were separated into categories of 1) support and 2) trust. Based on the responses, 95% of the mentees agreed that they were able to

build a supportive relationship with their mentors. Also, these mentees agreed that their mentors always listened to and understood them (See Chart 6).

Of note, 93% of mentees were able to build trusting relationships with their mentors. These mentees agreed that they trusted their mentors, and they were able to discuss delicate topics with them. Furthermore, the mentees trusted that the mentors told them the right things to do (See Chart 7).

Chart 7: *Trust within the Mentorship* (Mentees' Perspective)

Chapter 5

Discussion

This study evaluates the impact of SIAP intervention on characteristics associated with effective mentoring and the ability of those trained to build trust and rapport with the student mentees. The study addressed the role/influence of self-regulation, mindfulness, and social justice as essential characteristics in fostering a supportive and trusting relationship with student mentees. Additionally, the study evaluated how the aforementioned cognitive traits impact mentee/student's trust/rapport, engagement, and liking for math and the impact of mentor-tutor training on a trained mentor's perceptions and critical mentoring behavioral characteristics. The study also explored factors that may undergird learning and academic efficacy nurtured through the mentor-mentee relations. Results are broadly consistent with expectations. Both mentors and mentees were able to build trusting and supportive mentorship over the academic year. Although only self-regulation emerged as the only characteristic of effective mentoring impacted by the SIAP training, mentors reported that the training they received was adequate for preparing them to serve as effective mentors. These positive attitudes and perceptions of trust found in this study are characteristic of the critical supportive relationships essential for adaptive coping (Spencer, Dupree, & Hartman, 1997).

Benefits of Training

The results of the mentor evaluation of the SIAP mentor training reveal that most mentors, who participated in SIAP training since 2018, stated that the mentor training they

received was adequate for mentoring. It prepared them to understand their roles as mentors and to understand their mentees. In addition, SIAP mentors perceived the mentorship as enabling trust and supportiveness by mentees' ability to listen to, to open up in discussions, mentee sense of security, mentee comfort in engaging, and mentee interest in learning. These findings are consistent with Chan (2016) on mentoring practices. Her study found that the different mentor practices which promote trust in the mentoring relationship included: listening, maintaining excellent communication, having a holistic understanding of the mentee, self-disclosing, using humor, being willing to discuss race and culture, acknowledging mistakes, and behaving with integrity (Chan, 2016).

SIAP training equipped mentors to help increase mentee efficacy in learning math and functioning as a protective factor for mentees. The idea of the effect of SIAP training improving mentor ability to be influential mentors is consistent with the net stress engagement component outlined in research supporting the PVEST framework developed by Margaret Spencer (2006). The findings of this study suggest that the addition of mentors could potentially serve to reduce the "net stress" of students by providing a supportive tutor/mentor that students trusted, which could lead to increased adaptive coping and academic motivation among mentees.

According to Dubois et al., 2011, youth with higher levels of baseline risks, most notably those environmental risks of living in under-resourced communities where violence is prominent, and poverty is common, are more likely to benefit from mentoring than youth who are more affluent. SIAP mentors are confident that they can help mentees navigate through stresses and risk factors. They may represent protective factors because their training prepares mentors/tutors with the skills and awareness they need to show unconditional support to their mentees. By serving as supportive tutors, SIAP mentors could facilitate students' ability to engage in adaptive

coping with their challenging experiences, which serve as the building block for positive self-images and productive academic outcomes (Spencer et al., 2015).

Mentor Cognitive Characteristics

Our findings indicated that SIAP training did have an effect on mentors' ability to regulate their emotions. Specifically, our results suggest that the SIAP mentor training in self-regulation effectively enhanced mentors' ability to control their impulses. Thus, mentors were better equipped to prepare for the role of mentors and form supportive, trusting connections with their mentees within their care. Additional findings of future time orientation, enjoyment and value for math, and low levels of self-handicapping coincide with characteristics of successful mentors and are consistent with factors that should lead to adaptive coping among high-risk youth (Terrion & Leonard, 2007). PVEST predicts that students exposed to supportive environments should engage in more adaptive rather than maladaptive coping (Spencer, 2006). The SIAP training had positively influenced mentors' ability to regulate their emotions, be future-oriented, and have increased enjoyment and value for Math.

The basic underlying concept of this research question is fitting with the reactive coping strategies outlined in research supporting the PVEST framework. When mentees experience stress, such as problems understanding math concepts or psychosocial difficulties, they often cope by using reactive coping methods. SIAP equips mentees with a support system, protective factors, and efficient coping skills such as self-regulation, mindfulness, and social justice knowledge to confront stressful situations. Per, PVEST, there is an unavoidable reciprocal link between the two coping strategies (Spencer, 1995 & 2013; Spencer et al., 2006; Spencer and Dupree, 2007). Depending on the stress experiences, SIAP mentees can respond to learning by using stable characteristics of cultural identity, enabling them to develop competency, self-

efficacy, and resiliency. Along this journey of learning, mentees learn self-discovery, self-appraisal, and identity formation (Spencer, Dupree, & Hartman, 1997, Spencer et al., 2006; Swanson et al., 2009). SIAP's mentors within the SIAP intervention learn more about themselves and develop reactive coping strategies that aid in building competency and self-efficacy as mentors.

Trusting and Supportive Relationships

These findings are in line with Wang and colleagues; they stated that the goal of any mentoring program should be to facilitate a variety of learning experiences from which high-quality mentoring relationships will be the outcomes. SIAP mentors are believed to function optimally in their capacity as mentors. These findings are in keeping with PVEST idea that mentoring relationships are mutually rewarding in light of a mutually trusting and supportive relationship. Mentors do not only give support to their mentees; they are also beneficiaries of this mentoring relationship as trust is provided as well as received. The mentorship can be viewed as a mutual exchange with the mentees teaching the mentors as much as they are learning from them (Weiston-Serdan, 2017).

In conventional mentorships, the relationship between mentor and mentee does not occur naturally despite mutual respect or interests; it must be nurtured. As such, the findings underline the importance of examining the trust and supportiveness within a mentorship from both mentor and mentee perspectives. PVEST states that available support can help young people navigate challenging experiences that produce stress; hence, the support of mentors is a protective factor reducing the net level of stress experience (Lee, Spencer & Harpalani, 2003). This mutual exchange is in line with the social exchange perspective of a give-and-take relationship. Mentors invest time and effort and become protective factors for their mentees. Mentors come to believe

that developing trusting and supportive relationships will enable them to receive approval and respect in return (Wang, Tomlinson, & Noe, 2010).

According to the mentors, having their mentees trust them promoted mentee engagement in the learning process and made mentees feel safe in the academic setting. The mentees' perspective is also supportive of the importance of trust and support within the mentoring relationship. Mentees trusted their mentors to tell them the right things to do. Generally, mentees agreed that their mentors listened to them, understood them, and made them feel safe to share complex topics. In SIAP mentorship, trust and support are also consistent with the net stress engagement component outlined in research supporting the PVEST framework. That is, mentees face immediate experiences of stress, specifically with learning Math concepts, in the hope of increasing their grades and efficacy to continue to learn. Consequently, the mentors should function as a social support system is to help mentees enhance a sense of efficacy and achieve their full learning potential.

Efficacy for Learning

The study also examined whether the mentors helped their mentees improve their liking and self-efficacy for math. SIAP mentors are optimistic that their presence in the classroom and their relationship with the mentees were beneficial in enabling mentees to engage with mentors and learning new Math concepts. According to mentors, mentees were alert and were able to assimilate the lesson; they showed interest by trying their best to work through problems and always asking questions about the concepts being taught, and going to college. Additionally, a large percentage of mentors perceived their relationship with their mentees as being advantageous in improving mentee learning of Math concepts. Per SIAP mentors, their mentees

were able to associate mentors' role as college students with the importance of mastering Math concepts and mentees' pursuit of their college education. Perhaps marginal

The idea of SIAP mentorship improving mentee learning and efficacy in Math relates to the potential of favorable perceptions of mentees by SIAP-trained mentors. Furthermore, the mentees' ability to build trust is consistent with Clarke-Midura et al. (2018), who found that mentor relatability is a significant predictor of mentee self-efficacy and interest in education. Additionally, the results echoed Spencer and colleagues; they found that interactions with family, school, peers, and community enable the development of cultural/ethnic identity, sex-role identity, self-efficacy, and personal identity (Spencer et al., 2015).

Clinical Implications

Trusting and supportive relationships are the foundation for the development and maintenance of healthy, happy, and successful relationships. The findings of the current research do not only have implications for building trust within a mentoring relationship, but it does apply to trust between a patient and therapist within a therapeutic relationship. The current study's finding tells us that the mentors' behaviors perceived by the mentees as positive and encouraging support the importance of mentor listening, understanding, and feeling secure in disclosing sensitive information are to building trust within the mentoring relationship. Similarly, within a therapeutic relationship, the patient perceiving the clinician's behaviors as positive will encourage building rapport and an effective therapeutic relationship. Bowlby's attachment theory and Erickson's stages of development (Rathus, 2016;) stress the importance of trusting and supportive relationships at the early stages of life as stepping-stones to healthy adult lives.

Through their approach and interactions, mentors and clinicians are likely to build incredible trust elicited from individuals with a secure attachment. For individuals coming in

from high-stress environments and relationships, the therapeutic relationship built on security within the relationship and trust can be associated with developing adaptive coping strategies. Building rapport, trust, and support within a therapeutic relationship further encourage growth, recovery, and outstanding outcomes (Brems, 2001; Crits-Christoph et al., 2019).

Limitations

Several limitations were encountered while examining the study's findings. Firstly, the variables used were not manipulated in an experimental design. As a result, it is recognized that there may be other variables, which may be operating within the relationships found and may significantly influence the results. Variables such as mentor burnout and availability could have impacted the findings. The current research study is drawn from a more extensive, quasi-experimental design study. That study included more than seven different survey instruments, each with multiple subscales. About 43% of study participants did not complete all survey instruments due, perhaps, to the lengthiness of the surveys. Mentor retention is another noteworthy limitation of this study for many reasons. Many mentors were not involved with mentor training one year later for various reasons. As such, they did not receive the total exposure to SIAP concepts; this limited our ability to assess the full impact of the training.

The different types of training also influenced the generalizability of the findings. SIAP training in 2018 was the traditional training, which involved only SIAP mentors in a 2-week Youth Development Institute. In 2019, SIAP training was a hybrid/modified version, which consisted of all university mentors, not only SIAP mentors. The focus of the 2019 training was a generalized student support training; it served primarily as an introduction of SIAP concepts (e.g., social justice and experiential learning), but not on tutoring Math concepts. This dynamic may have impacted SIAP mentor participation. An additional limitation is that majority of the

SIAP mentors in the sample were female college students, which affected the generalizability of this study.

Additionally, the fact that there was only a marginal difference with cognitive mentor traits after the mentorship training may speak to the caliber of individuals who chose to be mentors. SIAP mentors are college students who are STEM majors with a 3.0 or higher GPA. As a result, mentors may already possess the cognitive skills and characteristics necessary to form trusting and supportive relationships with mentees. Additionally, SIAP mentors are knowledgeable, disciplined, and have high self-efficacy for learning. Thus, the training provided at SIAP produced a minimal effect on cognitive characteristics needed, such as self-regulation, mindfulness, and social justice.

Lastly, there were limitations with the data collection itself in the areas of timing for data collection, which hindered data analysis. In order to be consistent and effective with collecting data, the process has to be more purposeful and structured. That is, each mentor who participates in mentor training should complete survey instruments pre and post-training in addition to completing the mentor training evaluation. There needs to be consistency with ID codes per data point. This consistency will allow for more copious data for more robust data analysis, specifically to assess the characteristics of successful mentoring, which best predict trusting, supportive, and adaptive coping among mentees. Finally, matching data points to mentors' responses is essential across all data collection points.

Conclusion and Future Studies

The current study uses Spencer's PVEST theoretical framework (Spencer, 1995, 2006) to assess characteristics of successful mentoring, including such variables as mindfulness, self-regulation, and reactive coping skills. This research has implications for practice. While the

study suggests the SIAP training does not affect the reactive coping skills, perhaps because those skills were already high prior to SIAP training, the study did find that both mentors and mentees were satisfied with the level of trust and support that developed in their relationship. The current study also identifies several opportunities for further research. Given the results, different hypotheses are likely to be generated and tested. For instance, Elliot et al. (2006) tell us that the development of trust within a mentoring relationship appears to occur relatively quickly and deeply with same-gender pairs (mentor-mentee) rather than cross-gender. A future quantitative design study using SIAP mentor/mentee pairs can evaluate the development of trust by gender and same-gender pairs. The study can use SIAP questionnaires to assess mentor and mentee perspectives of trust within the dyad.

The current study findings did not assess academic performance; however, research tells us that school performance and internal and external resiliency can lead to positive academic outcomes (Hanson, Austin & Lee-Bayha, 2003; Deb & Arora, 2012). A future study can assess mentee resilience and inner peace by incorporating mindfulness within the SIAP classroom as it relates to academic performance. Research by Talley, Scherer & Hill (2021) pointed out that the inclusion of mindfulness in the teaching through interactive activities can increase resilience and bridge the achievement gap for African American students raised in high-stress, high-risk, underserved communities.

The element of time can also be introduced to measure trust at different intervals over the course of an academic year and across academic years as both mentor and mentee remain in the SIAP program for up to 3 years. Time is necessary for trust to develop. Mayer et al., 1995 tells us that initial trust is based on benevolence, integrity, and competence. However, trust changes over time depending on different factors, including gender or the gender match, which may

affect the mentoring relationships. Future research in SIAP mentorship trust must evaluate trust from the perspective of gender.

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Appendices

Appendix A: SIAP Mentor Evaluation Form

Instructions: Please fill out this sheet completely and honestly

Mentor Name: _____ University/Affiliation: _____

1. Do you think the training/preparation you received was adequate for mentoring? Circle Yes or No
2. List the school(s) where you worked as a mentor.
3. How many students do you typically mentor at one time?
4. How many different teachers have you mentored for this academic year?
5. List the name of the teachers and grading period you worked with them this year.
6. How many times a week do you have contact with your mentee(s)? Circle below:
a. One day b. Two days c. Three days d. Four or more days
7. Do you think your mentee(s) was engaged in the mentoring process? Please explain why you feel this way.
8. Do you think your mentee(s) learning improved as a result of receiving mentorship?
9. Overall, do you think your mentee(s) has a better appreciation for math than before this program began? Circle, Yes or No
10. Do you think your mentee(s) trust you? How important do you feel trust is in a mentee/mentor relationship?
11. What are some challenges that your mentee(s) expressed to you about school, neighborhood, and home life?
12. Would you like to serve as a mentor next year? Circle, Yes or No

Appendix B: SIAP Mentee Evaluation Form

Each Mentee should fill out honestly.

Name: _____ Mentor Name: _____

1. My mentor always listens to me.

a. Strongly Agree b. Agree c. Disagree d. Strong Disagree

2. My mentor understands me.

a. Strongly Agree b. Agree c. Disagree d. Strong Disagree

3. I trust my mentor.

a. Strongly Agree b. Agree c. Disagree d. Strong Disagree

4. I tell my mentor what is hard for me to do.

a. Strongly Agree b. Agree c. Disagree d. Strong Disagree

5. My mentor tells me the right thing to do.

a. Strongly Agree b. Agree c. Disagree d. Strong Disagree

What I want my mentor to know

About me is.....

About my school is.....

About my neighborhood is