

Towson University
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Mentoring in Higher Education: An Evaluation of the SAGE Mentoring Program and its
Relation To Implicit Intelligence Theories

By

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THESIS APPROVAL PAGE

This is to certify that the thesis prepared by Christopher Travers entitled Mentoring in Higher Education: An Evaluation of the SAGE Mentoring Program and its Relation To Implicit Intelligence Theories has been approved by the thesis committee as satisfactorily completing the thesis requirements for the degree Master of Arts.

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Abstract

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Christopher Travers

More African Americans are in college than ever before, but these students still lag behind their white counterparts in every major area of academic achievement. The disparity between African American and White students is known as the achievement gap. Colleges have tried to improve this gap by providing students with mentoring and educational assistance programs. The purpose of this study was to evaluate the effectiveness of one mentor program, (SAGE), on achievement in terms of Grade Point Average. It was expected that implicit intelligence theories would moderate the relationship between SAGE participation and GPA. A hierarchical regression analysis was run in order to examine the interaction between SAGE and implicit intelligence theories. Results showed no significant main effects or interaction.

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Introduction

Over the last decade of the 20th century, the population of the United States has become increasingly diverse resulting, in part, in major demographic shifts in student diversity on many college campuses (Negy & Lunt, 2008). Because of this growing trend in diversity, there has been a major increase in the number of African Americans attending college. African American college enrollment has gone up by half a million students (U.S. Department of Education, 2004). This trend of increased enrollment is supported by reports from the U.S. Bureau of the Census that 20% of 18-24 year old African Americans attended college in 1984 compared to 31% in 2004 (U.S. Department of Education, 2004). Despite the growing attendance in college of African Americans, there is still a considerable gap in academic achievement and retention compared to white students, which is a major issue known as the achievement gap (Spenner, Buchmann, & Landerman, 2005).

One of the ways in which Predominately White College Universities (PWCUs) attempt to attend to the achievement gap and the difficulty that African American students experience, especially after failure or negative performance feedback, is by providing mentoring programs. Although mentoring programs have shown to be effective in improving the experience of African American students, the literature is limited in terms of addressing the effectiveness of mentoring programs on increasing African American academic achievement, retention, and personal development. In addition, more evidence is needed on the role that implicit intelligence theories play in the relationship between mentoring programs and academic achievement in terms of

GPA. This paper is an attempt to study the effectiveness of one such program at a particular PWCU, Towson University.

Another possible contributing factor for the achievement gap between African Americans and white students is implicit intelligence theories, more specifically whether an individual holds an entity (stable) or incremental (malleable) view of intelligence. Research has shown that how a student views his intelligence (entity vs. incremental) influences the types of goals he pursues, his reaction to conflict, and performance in school (Dweck, 1999). Individuals with an entity theory of intelligence are more prone to blame their intellect for negative results compared to those with an incremental theory of intelligence, who are better able to associate the same negative outcomes as a result of their effort or approach (Dweck, Chiu, & Hong, 1995). Students with an entity theory of intelligence are more susceptible to react helplessly when faced with achievement setbacks. Not only are these students more prone to make negative judgments about their intelligence, but also more likely to display negative affect (Dweck et al., 1995). Contrastingly, students with an incremental theory of intelligence tend to focus more on their effort and strategies as sources of unfavorable achievement outcomes, which leads them to focus on improving their effort and strategies in order to improve their performance (Dweck et al., 1995). Because, feedback directs future task performance; negative performance feedback from school can potentially disrupt student achievement (Ruscher, Wallace, Walker & Bell, 2010). This may be especially important for minority students who may come from less rigorous high schools. Jacobson (2004) reported, students of color are less likely to be prepared for college. The lack of preparation in

high school and rigorousness in course load for African American students can contribute to the difficulties and setbacks they encounter once they are enrolled in college.

To date the literature has discussed the benefits of mentoring programs on academic achievement. Previous research has highlighted the benefits of such programs on African American achievement. The literature has also provided evidence for the benefits of adopting an incremental view of intelligence. The present study will examine the relationship between participation in a mentoring program (SAGE) and academic achievement (GPA) among African American college students, and the role of implicit intelligence theories in that relationship. The findings from the present study will add to the current literature of mentoring programs in higher education, including the role of implicit intelligence theories and how they influence academic achievement for African American students at a PWCU.

Literature Review

Achievement Gap

Despite growing attention by scholars, researchers, and academic personnel, educational achievement disparities persist between African American college students and their white counterparts. According to Aronson, Fried, & Good (2001), “Virtually every measure of academic achievement taken at every level of schooling shows African Americans trailing their White counterparts” (Aronson, Fried, & Good, 2001, p.114). Compared to White students, African Americans graduate from 4-year colleges at a rate that is 20% less and report the lowest college graduation rates of any ethnic group (Cokely & Moore, 2010). The disparity between academic performance and graduation rates has been known for quite some time, but scholars are still in debate about the possible causes of this issue. One potential cause to the achievement gap in college between African American and white students is attributed to the lack of preparation African American students receive in high school. During high school, fewer African American students take four years of English, and three years of Science, Math, and Social Studies compared to white students (Jacobson, 2004). Even if African American students do take the minimum number of courses necessary for college entry, this does not ensure they will be prepared for college because those courses may not be rigorous enough (Jacobson, 2004). Many African American students enter college at a different level than their white counterparts due to the lack of thoroughness and precision in their curriculum in high school (Jacobson, 2004). Spenner, Buchmann, and Landerman (2005) found that 40% of the achievement gap between black and white college students is attributed to the lack of high school academic preparation and socioeconomic status.

Adelman (2000) reported that the academic intensity and quality of one's curriculum are necessary for making a smooth transition into college and significant for academic achievement. Therefore, the level of preparation one receives from high school is very crucial to the future success in college.

Another known potential cause to the achievement gap is a psychological factor known as stereotype threat (Steele, 1995). Steele, (1995) defines stereotype threat as, "being at risk of confirming, as self-characteristic, a negative stereotype about one's group" (Steele & Aronson, 1995, p.797). This phenomenon may be explained as a social psychological threat derived from the ongoing American representation of black students as intellectually inferior (Aronson et al., 2002). Stereotype threat can undermine academic achievement mainly in two ways. The short-term effect of stereotype threat can disrupt academic performance by inducing anxiety in the student (Aronson et al., 2002). The unconscious concern of confirming that negative stereotype brings forth anxiety that can negatively impact one's thinking and performance in evaluative situations (e.g., intellectually challenging test or speaking in front of the class) (Aronson & Rogers, 2008). The other way in which stereotype threat appears to disrupt academic achievement is through disidentification (Aronson et al., 2002). Aronson and colleagues, (2002), define disidentification as, "the psychological disengagement from achievement hypothesized to help students cope with stereotype threat and underperformance in a given domain" (Aronson et al., 2002, p. 114). In order for an individual to maintain self-esteem, he needs to either be successful in that domain or disidentify from that domain if he feels that success is difficult to attain (Aronson et al., 2002). Disidentification occurs once one reshapes his self-concept by refraining from using that threatened domain as a

measure of self-esteem (Steele, 1992). For example, once a student can discredit academics as a significant domain, academic performance will have minimal impact on the formation of his/her self-perception (Steele, 1992). Over time, disengagement can turn chronic and lead students to disidentify completely from school (Major & Schmader, 1998). Research has shown that due to stereotype threat, African American college students are more likely than white college students to disidentify from school (Major & Schmader, 1998; Steele et al., in press). In conclusion, stereotype threat primarily undermines African American achievement through performance disruption from induced anxiety and disidentification from the academic domain.

There is great concern at PWCUs about the low achievement of African American students because low achievement can lead to low retention and universities want to provide as diverse a population as possible in classrooms and on campus. However, it has been extremely difficult to do this because African American students are still having trouble in terms of grades, standardized test scores, and graduation rates (Cokely & Moore, 2010). In order to attend to the gap, many PWCUs have implemented mentoring programs that promote success in order to improve the academic and personal achievement of African American students.

Intervention Programs Addressing the Achievement Gap

Intervention programs have been implemented throughout different colleges and universities in order to assist African American students and attend to the achievement gap. There are different types of intervention programs provided in higher education, which include faculty-faculty mentoring, faculty-student advising, peer mentoring, first-year experience, social integration, academic help, and professional-student mentoring

(Pan, Guo, Alikonis, & Bai, 2008; Strayhorn & Terrell, 2007). Many minority students, including African Americans, have trouble identifying role models and find success to be very difficult in higher education (Patitu & Terrell, 1997). Minority intervention programs attempt to address this issue and promote student-student and student-faculty relations that assist African American students in finding role models as well as improving academic achievement. Saint Augustine's College in North Carolina implemented an Academic Bridge (mentoring) Program for first year college students majoring in science and technology. In this mentoring program, Payne and Dusenbury (2007) found that 75% of students in the bridge program passed the entry-level courses compared to 20% of the non-participant African American students. Pan et al. (2008) studied the effects of intervention programs (First-Year Experience, Academic Advising, Social Integration, and Academic Help) on first year college students and found that these intervention programs had a positive effect on students' cumulative GPA and retention. Intervention programs are implemented throughout higher education in order to assist students in academic achievement.

Research on mentoring programs in higher education provide evidence of the importance of programs in helping students with their academic performance and adjustment to college (Carter, 1994; Patitu & Terrell, 1997; Pfleeger & Mertz, 1995; Salinitri, 2005; Santos & Reigados, 2000). Campbell and Campbell (1997) define mentoring as, "A situation in which a more experienced member of an organization maintains a relationship with a less experienced, often new member to the organization and provides information, support, and guidance so as to enhance the less experienced member's chances of success in the organization and beyond (Campbell & Campbell,

1997, p. 727). Defined this way, the experienced member would be the upper classman student or faculty member and the less experienced member would be the incoming student. Crisp and Crus (2009) conducted a meta-analysis on the effects of mentoring programs. Overall, findings have indicated a positive relationship and an impact of mentoring on student persistence and/or grade point average of undergraduates. (Campbell & Campbell, 1997; Freeman, 1999; Kahveci et al., 2006; Mangold et al., 2003; Pagan & Edwards-Wilson, 2003; Ross-Thomas & Bryant, 1994; Salinitri, 2005; Sorrentino, 2007; Wallace et al., 2000).

Mentoring can work in many different forms. Typically mentoring takes a hierarchical approach such that the mentor has a greater deal of knowledge and experience, which places him/her above the mentee (Campbell & Campbell, 1997). However, another approach is peer mentoring, where mentors, similar in age to the mentees, but greater in expertise offer assistance, guidance and support to the mentees (Terrion & Leonard, 2007,). Despite, the educational and experiential disparities, mentees tend to respond to peer mentors in a much more effective way because of the greater feeling of approachability and comfort provided with a peer mentor (Terrion & Leonard, 2007). Though faculty-student mentoring still exists in higher education, when compared to faculty/student mentor relationships, peer mentors show a stronger ability to provide psychosocial support characterized by “confirmation, emotional support, personal feedback, and friendship” (Terrion & Leonard, 2007, p. 150). The relationship between mentor and mentee allows mentees to profit from the mentors’ knowledge and experiences (Carter, 1994). Due to this knowledge and experiential information, mentees can learn ways to become successful and persist through college leading to graduation

and into their careers. Research has shown that implementing mentoring relationships in businesses may help organizations as well as employees (Allen & O'Brian, 2006). Studies have emphasized some of the most important benefits from mentoring relationships for employees in organizations as: autonomy, self-esteem, career success, organizational commitment, job satisfaction, retention, achievement, competence, diversity, and affiliation (Allen et al., 2004; Noe et al., 2002; Wanberg et al., 2003). A mentor can play the role of a friend, counselor, advisor, sponsor, and teacher, to the mentee (Carter, 1994). The quality of the relationship between mentor and mentee has shown to be crucial in an individual's academic success (Haines, 2003). Therefore, the mentoring role of the mentors and the quality of the relationship between the mentors and mentees for the SAGE group will be assessed in the present study.

Students Achieve Goals Through Education (SAGE)

The SAGE (Students Achieve Goals Through Education) Program is one element of Towson University's multicultural enhancement and minority student retention movement. SAGE is a peer-mentoring program for entering freshmen and transfer college students who identify themselves as a member of an underrepresented ethnic, racial, or cultural group. Over the years, the majority of the student population in the SAGE program has been African American. Underrepresented incoming freshmen and transfer students are connected with upper class, peer mentors that are typically of the same race, ethnicity, culture and major. In order to become a mentor in the program, one must maintain a 2.8 cumulative GPA or better, full-time student status, involvement in three student organizations/activities (employment may be considered), have had mentoring or community service experience, and must hold sophomore class standing or

better (R. N. Woodus, personal communication, April 13, 2010). Mentors are compensated with bi-weekly checks of \$125 through either regular student employment or federal work-study funds.

Mentors are expected to spend at least 10 hours a week completing the following: attending weekly staff meetings (30 min.), maintaining weekly contact with each assigned mentee (6 hrs.), attending scheduled SAGE Program events (1 hr), attending weekly meetings with program graduate assistant (30 min), completing weekly journal entries for each mentee (1 hr), and attending and contributing to weekly mentor group project meetings (1 hr) (R. N. Woodus, personal communication, April 13, 2010).

Mentors meet weekly with mentees and usually work with them to improve academic strategies, adjustment, and social connections with other faculty, staff, and students on campus (<http://www.towson.edu/sage/mentoring.asp>). The SAGE program attempts to promote academic achievement, personal development and campus wide involvement through mentor/mentee relationships and various programming throughout the year that addresses academic success, diversity, career development, stress management, financial planning, interpersonal development, course scheduling strategies and opportunities to network with peers and university officials (<http://www.towson.edu/sage/mission.asp>). The SAGE program mentees are encouraged to continue their connection with mentors and fellow mentees, ask many questions, and learn as much knowledge and information as possible in order to assist them in academic achievement, social relations, and personal development.

SAGE attempts to assist students by pairing them with mentors, so that mentees can learn what it takes to be successful in college. One way the SAGE program strives to

assist members is by helping them with their classes and overall experience as a minority student in order to strive toward high academic achievement through maintaining solid GPAs throughout college (<http://www.towson.edu/sage/mission.asp>). A major initiative of the SAGE program is to ensure that every member strives toward achieving academic excellence in the classroom (R. N. Woodus, personal communication, April 13, 2010). Clearly, SAGE provides a resource to students. African American students who are not a part of this group maybe more likely to struggle academically. This study expects that SAGE participation will positively impact African American students' GPA relative to African American students not enrolled in the program, such that SAGE students out perform non-SAGE students.

Implicit Theories

Research has provided convincing evidence that a student's thoughts about intelligence can have a significant impact on his academic achievement (Aronson et al., 2002). Dweck and her colleagues (e.g., Dweck, 1999; Dweck & Leggett, 1988; Hong et al., 1999; Dweck et al., 1995) have suggested two distinct ways in which an individual can view intelligence. People with an entity theory of intelligence view it as fixed; while those who view intelligence with an incremental theory believe it to be malleable (Dweck et al., 1995). An entity theory of intelligence is the idea that intelligence is a set trait or a personal quality that cannot be changed. According to Dweck et al., (1995) "Individuals who subscribe to this theory believe that although one can learn new things, their underlying intelligence remains the same" (Dweck et al., 1995, p.267). For example, a college student that has an entity theory of intelligence may say, "I failed the midterm because I am not smart enough". This student believes that his intelligence cannot

change and his negative performance is based on ability and not effort. One who identifies with an incremental theory of intelligence believes that intelligence is malleable (i.e., individuals may become more intelligent through their efforts) (Dweck et al., 1995) and performance is based on effort rather than ability. For example, a college student that has an incremental theory of intelligence may say, “I failed the exam because I did not study hard enough this time around. I need to re-evaluate my study/preparatory strategy”. This individual knows that he can improve his performance if he puts more effort into studying harder in the future. There is compelling evidence showing that how an individual views intelligence (malleable vs. fixed) determines his/her goals, responses to difficulty, and how well one achieves academically in school (Aronson et al., 2002). Specifically, an individual’s view of intelligence can significantly impact his or her level of success as a student and ability to persist.

A malleable theory of intelligence has shown to be the more adaptive theory of intelligence and appears to help students after failure or difficulty because of the belief that performance can improve through exerting more effort (Burns & Isbell, 2007). For African American students, who are potential targets of stereotype threat and other challenges, intelligence theories may be particularly important in predicting achievement (GPA) (Dweck, 1999; Dweck & Leggett, 1988; Hong et al., 1999; Dweck et al., 1995). Also, African American students may come from schools that ill-prepared them for the rigors of college life, thus leading to greater setbacks and difficulties than white students. If African American students respond to difficulties by disidentifying, academic success appears unattainable and thus leads to a desire to quit (Steele, 1997). Individuals with a

more incremental theory of intelligence should be better able to persist in college because they believe that their intelligence can change and grow.

Other research (Aronson et al., 2002; Burns & Isbell, 2007; Dweck, 1999; Dweck & Leggett, 1988; Hong et al., 1999) shows that encouraging malleability is associated with a more resilient response to difficulty, and failure and can thus help African American students respond positively to difficulties and begin to close this achievement gap. Research on the achievement gap shows that African American students are much less likely to be prepared for college than white students (Jacobson, 2004) and that African American student's suffer more than any other ethnic group from the achievement gap (U.S. Department of Education, 2005). In order to survive and persist in college when faced with the struggles and academic challenges that many African American student's face, it would seem more beneficial to adopt an implicit view of intelligence that supports the notion that intelligence can change through effort. Therefore, it is important to encourage African American students who are having trouble with academic performance to view intelligence as malleable and not fixed.

There is evidence supporting the link between mentoring programs and implicit intelligence theories. A study by Blackwell, Trzesniewski, and Dweck (2007) on the effects of a math intervention program in a math course taught students to see intelligence as incrementally and not fixed. Results showed that the intervention program had a significant positive effect on the math scores of the students in the intervention group from the fall to the spring semester. Good, Aronson, and Inzlicht (2003) set out to improve adolescents' standardized test scores through an intervention program that promoted a malleable view of intelligence. The researchers split the students up in four

groups. Participants in group one were taught a malleable view of intelligence, while group two were taught a fixed view of intelligence. Participants in group three were taught a combination of both a fixed and incremental view and group four were taught neither. Results showed that scores on the standardized reading test were significantly higher for students in the group that received the incremental view of intelligence intervention program. After only three training sessions of encouraging an incremental theory of intelligence to participants, Aronson et al., (2002), reported that students improved in their grade point averages compared to their counterparts in the control and fixed intelligence condition. Participants in the incremental group also received higher grades and reported a better enjoyment of their academics compared to their counterparts (Aronson et al., 2002). To date, the literature has provided evidence that intervention programs that promote an incremental view of intelligence have shown to be effective in improving academic achievement.

Hypotheses

The present study will attempt to evaluate the effectiveness of the SAGE mentor program on achievement in terms of GPA by comparing African American students enrolled in the program with those who are not. A moderation analysis will be conducted in order to examine the role of implicit intelligence theories in this relationship. Students in the SAGE program are expected to report higher GPAs than students not in SAGE (*Hypothesis #1*). In addition, African American students with an incremental theory of intelligence should report higher GPAs compared to those with an entity theory of intelligence (*Hypothesis #2*). It is hypothesized that implicit intelligence theories will moderate the relationship between SAGE participation and achievement, such that

students in SAGE with an incremental theory of intelligence will report higher GPAs than all other groups of students. (*Hypothesis #3*).

Methods and Materials

Sample

Data collection took place during the 2011 spring semester. The number of subjects needed for this study was calculated according to Cohen's tables (1992). Conducting a regression analysis with two independent variables (group: SAGE/non-SAGE and implicit intelligence theories) and assuming a p value of .05 and a medium effect size of .15, 134 total participants would be needed ($n = 64$ in each group) which would yield a power estimate of .80. In order to attain this power level, participants in the SAGE group were recruited through the SAGE program, while those in the Non-SAGE group were recruited through the Black Student Union and African Diaspora Club.

Due to time constraints for data collection, the study lacked the participants needed to maintain a power of .80. Participants were 81 African American undergraduate college freshmen (29 men and 52 women) who attended Towson University. Of the 81 participants, 37 were in the SAGE experimental group. Of those, 25 were administered an online version of the research packet and 12 were given paper versions of the packets. Forty-four participants were in the Non-SAGE control group and of those students, only three were administered paper versions of the packet. All participants were at least 18 years of age. To ensure that this unequal distribution of survey versions (paper and pencil vs. online) did not impact the dependent variable, a t -test was conducted comparing GPA between the test versions and no significant differences emerged ($p > .05$). As such, responses were combined across administration types for all subsequent analyses.

Thirty-four participants reported being 1st generation college students; 17 were in the experimental group and 17 were in the control group. Students' majors included science ($n= 18$), social science ($n= 23$), business ($n= 22$), mass communication ($n= 4$), and other ($n= 7$), which included graphic design, electronic media and film, undecided, education, and dance. Because science, social science, and business were the most popular majors, differences in GPA between the two experimental conditions were examined separately for each of these majors. No significant GPA differences emerged between the experimental groups when analyzed separately by major ($p > .05$). Students' majors were not analyzed further.

There were a total of 52 female participants: 25 in the SAGE group and 27 in the non-SAGE group. Because no gender differences emerged in terms of GPA between the experimental conditions ($p > .05$), all subsequent analyses were collapsed across gender.

Instruments

Demographic survey. Participants reported their gender, racial/ethnic identification, high school cumulative GPA, academic major, whether or not they were a first-generation college student. In addition, students were asked to state if they were in the SAGE program and what other student organizations they may be involved in at Towson University. Participants were also asked to report how prepared they felt for college coming out of high school on a 7-point Likert-type scale anchored by 1 (*very unprepared*) and 7 (*very prepared*). Lastly, participants were asked to report their first-semester GPA, which is the dependent variable of interest.

Implicit Theories of Intelligence. Implicit intelligence theory was measured using the Theory of Intelligence Scale developed by Dweck et al. (1995). The Theory of

Intelligence scale is a three item measure used to determine an individual's view of intelligence as either incremental or entity. The three items in the implicit theory of intelligence measure include: (1) "You have a certain amount of intelligence and you really can't do much to change it"; (2) "Your intelligence is something about you that you can't change very much"; and (3) "You can learn things, but you can't really change your basic intelligence". Participants indicated their level of agreement with these items on a 5-point Likert-type scale anchored by 1 (*strongly agree*) and 5 (*strongly disagree*). When scoring this measure, an average was calculated from the three items, where higher scores indicated an incremental theory of intelligence. Responses to this scale have demonstrated high internal consistency in the past (α ranged from .94 to .98) (Dweck et al., 1995). Responses to this scale indicated adequate internal consistency ($\alpha = .91$).

Mentoring role survey. Participants in the SAGE experimental group were administered a Mentoring Role Survey created by Brooks (1995). This 10-item measure was used to assess the mentor's effectiveness in carrying out the assigned mentor duties. An example of an item on this instrument is, "My mentor provided me with information about college". Participants indicated their level of agreement with each item on a 5-point Likert-type scale anchored by 1 (*strongly agree*) and 5 (*strongly disagree*). Responses to these items demonstrated adequate internal consistency ($\alpha = .77$).

Mentoring relationship satisfaction scale. Participants in the SAGE experimental group were administered a Mentoring Relationship Satisfaction Scale created by Brooks (1995). This 9-item measure was used to evaluate the mentee's relationship with his/her mentor in the SAGE program. An example of an item on this instrument is, "I am not happy with my relationship with my mentor". Participants

indicated their level of agreement with each item on a 5-point Likert-type scale anchored by 1 (*strongly agree*) and 5 (*strongly disagree*). Responses to these items demonstrated adequate internal consistency ($\alpha = .69$).

Procedure

Based on the above inclusion criteria, all participants self selected into the study. At the beginning of the Spring Semester, all participants were administered an informed consent form briefly outlining the nature of the study and emphasizing the degree of confidentiality for anyone participating in the study. Participants completed a brief demographic form requiring them to report their first semester GPA, high school cumulative GPA, how prepared they felt entering college, major, and whether or not they are a first-generation college student. The demographic form also required participants to report whether or not they were enrolled in the SAGE program and what other student organizations they were enrolled in at Towson. In addition to a questionnaire on implicit intelligence theories and attitudes toward college, participants in the SAGE group also were administered two additional surveys where they reported how they felt about the mentoring relationship with their SAGE mentor and their perceptions of their mentor's effectiveness in carrying out the assigned duties during their first-semester. The Towson University Institutional Review Board approved the present study.

Results

Descriptive Analyses

Table 1 presents the descriptive statistics and correlations among the variables of interest: group, implicit intelligence theories, college GPA, high school GPA and high school preparedness between each group. The results revealed that GPA was significantly correlated with high school GPA $r(79) = .36, p < .01$. The positive relationship between high school GPA and college GPA shows that students with higher GPAs in high school also tend to report higher college GPAs. In addition, participation in SAGE was significantly correlated with implicit intelligence theories $r(79) = .24, p > .05$, such, that students in SAGE tend to report a more incremental view of intelligence.

Regression Analysis

According to Frazier, Barron, & Tix (2004), a moderator is a variable that can change the direction or strength of the relationship between predictor and criterion variable. Therefore, a moderator is merely an interaction where the impact of one variable depends on the level of another (Frazier, Barron, & Tix, 2004). The interaction term was computed by multiplying the two predictor variables together (SAGE and IIT). In order to assess the impact of the interaction between SAGE and implicit intelligence theories on college GPA, a hierarchical regression analysis was used. Hierarchical regression requires the experimenter to specify the selection order of the independent variables in the regression equation. In addition, it holds the effects of variables in previous steps of the equation constant while assessing the unique impact of variables in later steps. Here, the predictors (SAGE and IIT) were entered in step 1, and the

interaction between the two was entered in step 2. If the interaction term is significant, this is evidence that moderation is supported (Tabachnick & Fidell, 1989). In the present study, both SAGE and implicit intelligence theories were the predictor variables and GPA was the criterion variable. The group variable was given a binary code (0, 1), and implicit intelligence theories was centered. Centering is necessary in order to avoid multicollinearity (overly high correlations) between the predictors and interaction term since the interaction term is computed as the product of the predictor variables. In multicollinearity, two or more predictor variables in a multiple regression model are highly correlated. Multicollinearity does not impact the predictive power of the multiple regression model as a whole, but it can affect the calculations of the individual predictors, leading to potential errors in the analyses of the regression model (Aiken & West, 1991). In order to address this problem of multicollinearity effects, Aiken and West (1991) recommended centering continuous moderator variables when testing interactions in regression.

Main effect. The regression model from group and implicit intelligence theories did not significantly predict GPA $F(2, 78) = 1.29, p > .05$. Although not significant, results indicated that participants in the SAGE program had higher GPAs ($M = 3.14, SD = .54$) compared to those not in the program ($M = 3.05, SD = .65$), $\beta = -.038, p > .05$. In addition, results revealed a trend that participants with an incremental view of intelligence tended to have higher GPAs.

Moderation Analyses. The hierarchical regression analysis revealed that the interaction term did not add significantly to the prediction of unique variance in GPA,

$\Delta R^2 = -.002, F = .133, p > .05$. Table 2 presents the main effects and interaction between implicit intelligence theories and SAGE participation on GPA.

Mentoring Role/Relationship Satisfaction Analyses

Participants in the SAGE group evaluated their mentor's role and indicated their level of satisfaction with the mentor relationship. In evaluating each participant in the program's level of achievement, it was important to determine the role of the mentor and their level of effectiveness with the mentees. Students in SAGE reported high scores on the mentor role survey ($M = 4.18, SD = .48$), providing evidence that SAGE mentors were effectively carrying out their roles to the mentees. As expected, mentees also reported high satisfaction with the mentoring relationship ($M = 2.79, SD = .46$). Because lower scores indicate high satisfaction of the mentee's relationship with mentor, the average score of 2.79 provides evidence that the mentoring relationship had an overall positive impact for the participants in SAGE.

Discussion

The purpose of this investigation was to examine the effect of implicit intelligence theories on the relationship between SAGE participation and GPA. Although, mentoring programs have been examined as an intervention program for African American students, the present study tested implicit intelligence theories as a moderator in this relationship. Specifically, three research questions were examined. First, does participation in SAGE positively impact GPA for first-semester freshmen? Second, how does a student's view of intelligence, whether incremental or entity, impact GPA? Finally, is there an interaction between implicit intelligence theories and SAGE participation, such that student's in SAGE with an incremental view of intelligence report higher GPAs?

Findings from this study provide no evidence of significance between groups in terms of GPA and implicit intelligence theories. Despite this, the literature has provided evidence for the benefits that mentoring programs provide mentees (Campbell & Campbell, 1997; Freeman, 1999; Kahveci et al., 2006; Mangold et al., 2003; Pagan & Edwards-Wilson, 2003; Ross-Thomas & Bryant, 1994; Salinitri, 2005; Sorrentino, 2007; Wallace et al., 2000). One of the advantages of having a mentor is the academic benefit. Campbell and Campbell (1997) assert that students with a mentor achieved a higher grade-point average equal to between .2 and .3 of a grade point, compared to students who did not have a mentor. In another study conducted by Fox and Connelly (2010), they found that mentees who engaged in a peer-mentor program achieved higher scores after their involvement. It was found that, not only were students performing better academically, they were also gaining better study habits and strategies, as compared to students not participating in the mentor program (Fox & Connelly, 2010). It has been

found that peer mentoring can offer student's the assistance needed to persist in college and maintain academic achievement (Strayhorn & Terrell, 2007). Therefore, the results from the present study may not reveal any significant differences between the experimental and control group, but they do provide evidence that is consistent with past and present research on mentoring. The average GPA of the SAGE participants was trending higher than the non-SAGE participants, providing evidence that the mentoring component of the program may be assisting students in academic achievement. Furthermore, some of the beneficial aspects of peer mentoring provided by SAGE are also a part of the Black Student Union, which may have contributed to the lack of disparity in GPA between groups. The Black Student Union (BSU) at Towson University sets out to provide support and services for all African American students. Similar to SAGE, many of the incoming freshmen in the Black Student Union build relationships with upperclassman and learn ways to be successful academically and socially on the campus. Therefore, participants in the non-SAGE group from the Black Student Union may have received much of the support and services that participants in the SAGE program received throughout the semester. Participants in the SAGE program were set receive an intervention of a mentoring program that was different from those in the non-SAGE group. However, if those in the non-SAGE group received a similar intervention in terms of support and services as SAGE participants, then that provides rationale for the lack of significant findings for hypothesis 1.

The results of the second set of analyses did not support hypothesis 2. Those with an incremental view of intelligence did not differ significantly in terms of GPA from those with an entity view. These findings do not support the literature on implicit

intelligence theories. Results on the implicit intelligence theories measure did not warrant significance and showed no support for the notion that those with an incremental view of intelligence report higher GPA compared to those with an entity view.

Research on implicit intelligence theories provides evidence that one's view of intelligence determines the way one will respond to challenging academic situations and how one attributes his negative academic performance (Dweck et al., 1995). Data collection for the present study occurred after the first semester for each participant. Therefore the sample population reported GPA only for their first semester. For some students, academic challenges and failure occur in later semesters and therefore, one's view of intelligence may not be significant to academic success until more time has progressed in college. Dweck et al. (1990) found that students with an entity view of intelligence are more likely to react helplessly when challenged by achievement setbacks.

Though some participants may have more of entity view of intelligence, academic achievement in the short term can still be attained. Because many of the participants were recruited through SAGE and BSU, programs that offer assistance to African American students, it is still possible for these participants to achieve academically despite an entity view of intelligence. Much of the emphasis in each organization centers around promoting academic achievement and social involvement by connecting students with successful peers. The tools provided in each organization can help students achieve academically in the short term despite one's view of intelligence. However, as time persist and as students matriculate through higher education and face academic failure and adversity, an incremental view of intelligence would be the more adaptable of the two for students in order to maintain academic achievement.

Because all participants in the sample were in their first semester of college, their level of high school preparation and achievement was controlled when evaluating the relationship between the predictor and criterion variables. Although high school preparedness did not significantly predict GPA, high school cumulative GPA was the strongest predictor of College GPA in terms of all the variables of interest. Thus, it is important to be cognizant of the participant's level of academic success before entering college because it may have influenced their college GPA and the overall findings of the study. Students who performed at a high-level entering college may have been equipped with the necessary adaptive tools to succeed in their first semester of college. Therefore, participation in an intervention program may not have as much of an impact on academic performance on student's who came into college with a strong academic background and a high level of preparation for college. In addition, GPA was tracked for only one semester and if given more time or another semester, differences in GPA may have emerged between each group. For example, if GPA was tracked for the entire first two years of college between students in the SAGE program and those who are not, results may have revealed significant differences between each group. Allowing for more time in college presents more opportunities for setbacks and difficulties and allows the researchers to get a better idea of how implicit intelligence theories and intervention programs affect GPA. Research on implicit intelligence theories provides evidence that an incremental view of intelligence is the more adaptable view when faced with adversity and academic challenges (Dweck, 1999; & Aronson, Fried, & Good, 2002). Therefore, tracking students over their first two years of college as opposed to their first semester may provide significant findings between groups in terms of GPA.

The last analyses revealed no significant interaction between implicit theories of intelligence and SAGE participation in terms of GPA. It was predicted that individuals in SAGE with an incremental view of intelligence would report higher GPA. However, the results do not support this hypothesis. It was believed that implicit intelligence theories would moderate the relationship of SAGE and GPA. However, participants in SAGE with an incremental view of intelligence did not significantly differ from those not in SAGE with an entity view of intelligence in terms of GPA. Given the support in the literature on the impact of implicit intelligence theories and mentoring programs on African American achievement, it would seem that the predicted interaction between the two is not significant due to the low amount of power in the study. For the predicted effect size of .15, there would need to be 134 participants and there were only 81 in the present study, which decreased the power. A post-hoc power analyses with a sample size of 81 and an effect size of .03 resulted in a power of .34. A power of .34 limits the opportunity of finding significant main effects as well as an interaction.

Additional data analysis revealed an interesting finding between implicit theories of intelligence and participation in the SAGE group. Results showed that individuals in the SAGE program reported more of an incremental view of intelligence compared to those not in SAGE. Though this was not an area of investigation during data collection, it is a finding worth noting. Mentoring programs like SAGE are in place to assist students in the short-term in terms of GPA, but also in the long-term in terms of retention and graduation. Research has provided evidence that implicit theories of intelligence can impact an individual's level of academic achievement, goals to pursue, and responses to difficulty (Aronson et al., 2002). Therefore, it would seem that SAGE is achieving a

main initiative of its program, such that student's in SAGE are adopting more of a malleable view of intelligence. In terms of the short-term effects, there was no significant difference between groups in GPA. If there was a long term study instead of conducting data after one semester, there may be a greater potential for significant differences because results show that student's in SAGE are reporting a more malleable view of intelligence, putting them in a better position to perform well academically throughout college.

Limitations

There are several noteworthy limitations of this research. First, the use of self-reported GPA instead of school-record GPA with African American students is an issue. Research has shown that self-reported GPA with African American participants can influence results (Zimmerman, Caldwell, & Bernat, 2002). Participants were asked to report their GPA, which may lead to inaccurate GPA. Particularly, students who over report their GPA are more apt to also record more positive characteristics of themselves (Cokely, 2003). Second, the power analysis ran prior to the data collection revealed a discrepancy between the power needed to find the desired effect and the actual power reported from the study. The low actual power of the study makes it difficult to find significance between the two groups. In addition, the sample is not representative of the population of interest, as there were disproportionately more female than male participants. Despite the gains that African American men have made in enrollment in higher education, African American women in higher education still report higher grades, graduation rates and degree attainment (Cokely & Moore, 2007). The proportion of women was similar in each group, with SAGE having 68% women and non-SAGE with

62 %. The similar percentage of women for each group make it unlikely that gender played a role in the data analyses, but it still must be noted that each group had more women than men. Third, students in the control group were primarily recruited through the Black Student Union. The Black Student Union is an organization at Towson University, which provides social and educational events for the betterment of the African American student community. Some of the core benefits that students in the SAGE program receive including mentoring and educational and social programming are also provided by the Black Student Union, which may affect the lack of significant findings between groups. The Black Student Union does not put as much of an emphasis on mentoring relationships as SAGE. However, if students in the control group were gaining many of the benefits that SAGE students receive, then it would be hard to find significant differences between African American students in SAGE compared to those who are not. Recruiting students outside of BSU with no exposure to a student support organization and comparing them to the SAGE students may have warranted significance between each group in terms of GPA.

Implications

The composition of race and ethnicity on college campuses have diversified, leading to more minority students in higher education than ever before. Despite the growing number of diverse students, minorities still lag behind white students in academic achievement and graduation. Of all minorities, African American students tend to be at the center of the achievement gap debate. African American students face unique difficulties in higher education that lead to their lower level of achievement compared to white students. However, more colleges are attending to the unique experiences of

African American students by providing mentoring programs. By providing successful mentors that are racially and ethnically similar to the student mentees, students can see and believe that success is possible. In addition, through the academic and social programs that are in place in programs like SAGE, students can gain support and knowledge on ways to address many of the transitional issues that disrupt achievement in the classroom.

In the past decade, research has shown that implicit intelligence theories can impact a student's ability to learn and perform well in the classroom. Evidence has shown that adopting a more malleable view of intelligence can combat many of the setbacks and difficult situations that African Americans experience. Many of these organizations and mentoring programs set out to help students perform well academically, including long-term initiatives of assisting students toward retention and graduation. Significant findings between the variables of implicit intelligence theories and SAGE, such that students in SAGE present more of an incremental view of intelligence compared to their counterparts, allow for programs to tailor their initiatives appropriately. Mentoring and other intervention programs can adopt a new framework of promoting academic achievement but also encouraging an incremental view of intelligence. Further research needs to be conducted on mentoring programs and how they impact student views of intelligence in order to investigate this relationship. The current study suggests that African American student's can succeed in higher education at predominately white schools with mentoring programs that promote academic achievement and an incremental view of intelligence.

Tables

Table 1

Descriptive Statistics and Correlations Among Study Variables

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. SAGE	—	—	—				
2. IIT	2.03	1.12	.24*	—			
3. College GPA	3.09	0.6	-0.08	-0.18	—		
4. High School GPA	3.36	0.46	-0.13	-0.03	.36**	—	
5. High School Prepared.	5.89	0.81	-0.09	-0.13	0.11	.34**	—

Note. *N* = 81. College GPA and High School GPA were measured on a 4.0 scale.

IIT = Implicit Intelligence Theories

IIT was measured on a 5-point Scale (1 = Strongly Agree/ 5 = Strongly Disagree). High School Preparedness was measured on a 7-point Scale (1 = Very Unprepared/ 7= Prepared)

**p* < .05, two-tailed.

***p* < .01, two-tailed

Table 2

Hierarchical Multiple Regression Analyses

Model	<i>R</i>	<i>R</i> ²	<i>SE B</i>	<i>DR</i> ²	<i>F</i>	<i>df</i>	Sig.
1	0.179	0.032	0.599	0.032	1.295	2, 78	0.280
2	0.184	0.034	0.603	0.002	0.133	1, 77	0.446

Note. Model 1: Predictors: SAGE, Implicit Intelligence Theories / Model 2: Predictors: SAGE, Implicit Intelligence Theories and Interaction between SAGE and Implicit Intelligence Theories
 SAGE- β = -.038, Implicit Intelligence Theories- β = -.166, Interaction- β = -.075

Appendix A

INFORMED CONSENT FORM

I, _____, agree to participate in a study entitled "Student Attitudes Toward Mentoring," which is being conducted by Christopher Travers of the Psychology Department at Towson University. The purpose of this study is to learn about how people view intelligence based on participation in the SAGE Program. Approximately one hundred and forty (140) undergraduate students will be invited to participate in this study.

Your role in this project will consist of completing a twenty (20) minute online survey where you will report some demographic information and state your level of agreement with a number of statements that relate to implicit theories of intelligence. We are only interested in your opinions; there are no correct responses to these statements. You must be at least eighteen (18) years of age to participate in this study.

Participation in this study is voluntary. All information you provide is anonymous. Although the descriptions and findings may be published, at no time will your name be used, as the survey you complete cannot be linked back to you. I agree that any information obtained from this research may be used in any way thought best for publication or education, provided that I am in no way identified and my name is not used.

I understand that there is no personal risk or discomfort directly involved with this research, that my participation is voluntary, and that I am free to withdraw my consent and discontinue participation in this study at any time. A decision to withdraw from the study will not result in penalty or any loss of benefits to which you are otherwise entitled.

If I have any questions or problems that arise in connection with my participation in this study, I should contact Christopher Travers, ctravel@students.towson.edu (email), Dr. Devin Wallace at (410)-704-2543, (work) or dwallace@towson.edu (email) or Dr. Debi Gartland, Chairperson of the Institutional Review Board for the Protection of Human Participants at Towson University at (410) 704-2236

 (Date)

(Signature of Participant)

 (Date)

(Investigator)

 (Date)

(Witness)

THIS PROJECT HAS BEEN REVIEWED BY THE INSTITUTIONAL REVIEW BOARD FOR THE PROTECTION OF HUMAN PARTICIPANTS AT TOWSON UNIVERSITY.

**EXEMPTION NUMBER: 11-1X03**

To: Christopher Travers
From: Institutional Review Board for the Protection of Human
Subjects, Steven Mogge, Member *SM*
Date: Thursday, March 10, 2011
RE: Application for Approval of Research Involving the Use of
Human Participants

Office of University
Research Services

Towson University
8000 York Road
Towson, MD 21252-0001
t. 410 704-2236
f. 410 704-4494

Thank you for submitting an application for approval of the research titled,
Student Attitudes Toward Mentoring

to the Institutional Review Board for the Protection of Human Participants
(IRB) at Towson University.

Your research is exempt from general Human Participants requirements
according to 45 CFR 46.101(b)(2). No further review of this project is
required from year to year provided it does not deviate from the submitted
research design.

If you substantially change your research project or your survey
instrument, please notify the Board immediately.

We wish you every success in your research project.

CC: Devin Wallace
 File

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EDUCATION

TOWSON UNIVERSITY

Towson, MD

Master of Arts: Counseling Psychology

May 2011

3.94 GPA

Related Coursework

Ethical Guidelines and Principles in Psychology

Individual Appraisal

Advanced Abnormal Psychology

Group Counseling

Counseling Techniques

Career Development

Advanced Experimental Design

Counseling Theories

Multicultural Counseling

Advanced Development

FROSTBURG STATE UNIVERSITY

Frostburg, MD

Bachelor of Science: Psychology

May 2009

3.59 GPA

Related Coursework

Child and Adolescent Disorders

Child Development

Social Psychology

Research Methods

Advanced Research Methods

Adolescence and Adulthood

AWARDS

Outstanding Graduate Student Award, Counseling Psychology, Towson University, Spring 2011

- Award given to only two graduate students for outstanding achievement in the counseling psychology master's program.

Best Presentation of Research, Psychology Department, Frostburg State University, Spring 2009

- Award given in recognition of outstanding research in the Psychology Department of Frostburg State University

Best Research Presentation of First-Year Scholar, McNair Scholars Program, Summer 2008

- Award given in recognition for the most outstanding research presentation by a First-Year McNair Scholar

Black Student Alliance Award, Black Student Alliance, Spring 2006-2009

- Award given in recognition for academic achievement

PROFESSIONAL EXPERIENCE

Teaching Assistant, Developmental Psychology, Towson University, Baltimore, MD, 2009-2010

- Assisted in daily lesson plans with professor and facilitated student discussions during Developmental Psychology classroom instruction
- Arranged and facilitated study sessions for upcoming examinations

Residential Peer Mentor, Frostburg State University, Frostburg, M.D., 2007- 2009

- Administered mid-semester warnings and set up academic plans for students to improve academic performance
- Held office hours to facilitate academic programs and study sessions for residents

Student Assistant, Frostburg Summer Planning Conference, Frostburg, MD, 2006-2007

- Oriented incoming freshmen to Frostburg State University
- Assisted teacher advisors in getting incoming freshmen scheduled for fall classes
- Helped organized and run scheduled events such as registration, placement testing, and campus tours for incoming freshmen while at orientation

INTERNSHIPS

Counseling Intern, Montgomery College in Rockville, Rockville, MD, 2010 – Present

- Provided personal and career counseling and advising to 4-5 students per week
- Conducted Psycho-educational group counseling to 15-20 two times a week
- Served as a co-facilitator of DS-106 success course and DS-103 career course
- Conducted day-to-day research on college student counseling orientations and theories
- Engaged in weekly peer consultation.
- Served as a mentor for 2 students in the Boys To Men mentoring group

Instructor of General Psychology Redesign Course, Frostburg State University, Frostburg, MD,

Fall 2008

- Facilitated discussions on weekly assigned general psychology topics
- Graded student discussions and weekly assignments
- Conducted research on the effects of the General Psych Redesign and found that students in the redesign Psychology course were more active participants in the online course and performed better on tests and assignments compared to students only in the traditional lecture course

RESEARCH & PRESENTATIONS

Master's Thesis, Mentoring in Higher Education: An Evaluation of the SAGE Mentoring Program and its Relation To Implicit Intelligence Theories, Towson University, Fall 2010 – Present

- Compared African American achievement between students in the SAGE Mentoring program and those who are not.
- Assessed student's view of intelligence and the moderating impact it has on the relationship between SAGE Mentoring participation and African American achievement

Empowering Students of Color: Winning Strategies for Promoting Students' Success, Towson University, Spring 2010

- Co-presented strategies to improve minority achievement in the classroom
- Provided empirical data on the impact of mentoring programs on minority student success

John Gissendanner Symposium on Scholarship in African and African American Studies, Towson University, Spring 2010

- Presented thesis material on the impact of mentoring programs on African American achievement and the role that implicit theories of intelligence play

MEMBERSHIPS

- *Kappa Alpha Psi Fraternity, Inc.*, 2011-Present
- *American Counseling Association*, 2010– Present
- *Psi Chi, National Honor Society in Psychology*, 2008 – Present

ACTIVITIES

Volunteer, Davon Green-Franklin Foundation, Baltimore, MD, Spring 2010-Present

- Assisted in various fundraising events to raise money and awareness for International Travelers Bill of Rights
- Assisted in efforts to pass the International Travelers Bill of Rights in memory of Davon Green-Franklin.

AmeriCorps Member, Hallstars Program, Frostburg State University, Frostburg, Maryland, Fall 2005 – Spring 2006

- Tutored and provided guidance to middle-school ages 9-12 children in Cumberland, MD.
- Helped with homework and planned after-school activities like swimming, arts, and crafts.
- Motivated, organized and led large groups (10-12) of children in recreational activities such as basketball, kickball, soccer, baseball, etc.

SKILLS

- Public Speaking
- Crisis Management
- Active and Critical Listening
- Technically certified in Microsoft Excel and PowerPoint
- Technically proficient in Microsoft Word.

