

# Do School Counselors Exhibit Bias in Recommending Students for Advanced Coursework?

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## Abstract

In this paper, we seek to understand minority and female underrepresentation in advanced STEM courses in high school by investigating whether school counselors exhibit racial or gender bias during the course assignment process. Using an adapted audit study, we asked a sample of school counselors to evaluate student transcripts that were identical except for the names on the transcripts, which were varied randomly to suggestively represent a chosen race and gender combination. Our results indicate that black female students were less likely to be recommended for AP Calculus and were rated as being the least prepared. Female students were penalized less for having borderline behavior while male students were penalized less for having borderline academics. Our results have policy implications for any program that asks individuals to make recommendations that may be subject to bias - whether conscious or unconscious.

Keywords: Human Capital; STEM Participation; Race and Gender. JEL Classifications: D90, I24, J15, J16

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# 1 Introduction

Advanced curriculum programs such as gifted and talented education at the elementary and middle school levels and Advanced Placement (AP) courses at the high school level provide numerous benefits to students including access to more highly trained and effective teachers (Oakes, 2005). In many cases, teachers and school counselors are responsible for recommending or referring students to advanced curriculum programs. Even when they are not directly responsible for making recommendations, teachers and counselors may play a significant role by encouraging particular students to apply to advanced curriculum programs (and/or discouraging others). Female students and black students, in particular, are more likely to seek out college preparatory advice from school counselors (Bryan et al., 2009). Thus, while most school counselors no longer play the role of a formal gatekeeper to advanced courses, their roles as intermediaries in course selection processes may directly or indirectly influence who has access to advanced courses (Smith, 2011).

Black and Hispanic students in the United States are underrepresented in advanced curriculum programs, contributing to racial inequality in the access to high quality education. Racial disparities in AP participation at the high school level are more pronounced in courses involving science, technology, engineering and math (STEM) (College Board, 2014). There are also gender differences in STEM course participation, with female students less likely to participate than male students. The intensified national focus on preparing more students for STEM fields, coupled with research that demonstrates that improvements in math outcomes for minority students appear to be closely linked to better long-term life outcomes (Chetty et al., 2014; Ferenstein and Hershbein, 2013), underscores the need to more fully understand the underrepresentation of female and minority students in these fields.

Although some of the disparities in AP participation may be do to lack of adequate preparation, studies have hinted that black and Hispanic students are less likely to be recommended for advanced curriculum by teachers and school counselors even when they are academically qualified (Archer-Banks and Behar-Horenstein, 2012; Darity and Jolla, 2009; Grissom and Redding, 2016; Oakes, 2005). School counselors often advise hundreds of students, along with their many other school responsibilities. In the 2013-2014 academic year, the national ratio of students to school counselors in secondary schools was 436 to 1, with some school districts in large urban areas (most likely to have high minority student populations) having ratios of up to 1000 to 1 (NACAC, 2015). Thus, many have only a limited amount of time to advise individual students about their course recommendations (Johnson et al., 2010). They may rely solely on a quick perusal of students' academic files and teacher recommendations to decide whether to recommend students for advanced courses. Split-second decisions, often based on intuition, are precisely the circumstances under which even well-intentioned people may allow subconscious bias to impact their decision-making (Banaji and Greenwald, 2013). This study seeks to identify whether school counselors exhibit racial or gender bias (whether conscious or subconscious) when they recommend students for AP Calculus courses and whether the propensity for racial bias is reduced if counselors engage in blinded evaluations.

In order to answer these questions, we rely on an adaptation of an audit study. A sample of school counselors are asked to evaluate multiple student transcripts of varying academic and

behavioral strength to decide whether to recommend each student for advanced coursework. In addition to academic and behavioral strength, the names on the profiles are varied randomly across participants to have white or black-sounding names, and male or female-sounding names. We also include a blind recommendation scenario (no name visible on the transcript) as an experimental intervention designed to reduce the potential for bias. Since the only differences in the profiles are the suggestive racial and gender origins of the names on the top, in the case of no bias, we would expect no significant difference in the likelihood of a particular student profile being recommended for the AP Calculus course. Any significant differences can be attributed to bias.

Our results indicate that black female students are the least likely to be recommended for AP Calculus and are rated as being the least prepared for the course even though the transcripts were equivalent. Female students appear less likely to be penalized for having borderline behavioral records while male students appear less likely to be penalized for having borderline academic records. Our results have key policy implications for any program that asks individual school professionals to make student recommendations that may be subject to bias - whether conscious or subconscious.

## 2 Background and Previous Research

Why are AP classes important? In addition to providing access to more highly trained and effective teachers (Oakes, 2005), researchers have identified numerous benefits that accrue to students from being placed in learning environments with high achieving peers and in advanced curriculum programs including: 1) improved academic performance, 2) increased likelihood of graduation, 3) increased likelihood of matriculation to four year colleges and universities, 4) improved behavioral outcomes, 5) improved self-esteem, and 6) increased access to beneficial social networks (Darity and Jolla, 2009; Graham, 2008; Long et al., 2012; Oakes, 2005; Smith et al., 2017; Vigdor and Nechyba, 2007). Black students, one of the target populations of this paper, are disproportionately denied access to these benefits.<sup>1</sup>

Multiple factors may contribute to the underrepresentation of black and Hispanic students in advanced curriculum programs. First, many black and Hispanic students come from lower socioeconomic status backgrounds, and are less likely to have access to high-quality early education programs prior to elementary enrollment (Fryer and Levitt, 2004b; Heckman, 2006; Murnane et al., 2006). This leaves them at a disadvantage when taking the screening tests for advanced coursework that often start as early as the second grade (Archbald et al., 2009; Conger et al., 2009; Klopfenstein, 2004). Once they are placed on a lower academic track, it is nearly impossible to switch onto a higher track during the elementary and middle school years (Darity et al., 2001; Dauber et al., 1996; Eder, 1981; Lucas and Berends, 2002). Also, many black and Hispanic students are still educated in racially segregated, under-resourced elementary and middle schools, which leaves them unprepared and under-qualified for advanced coursework when they reach high school (Clotfelter, 2011; Clotfelter et al., 2005; Diamond, 2006).

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<sup>1</sup>While Hispanic students are also underrepresented in advanced courses, sample size limitations force us to restrict our analysis to a comparison between black students and white students.

Differential preparation, however, does not fully explain the disparate enrollment. Some researchers point to cultural differences between black and white students as an explanation for why even high-achieving black students are less likely than high-achieving white students to take advanced coursework (Austen-Smith and Fryer, 2005; Fryer and Torelli, 2010; Klopfenstein, 2004). They argue that blacks exhibit an oppositional culture to the dominant white cultural framework of schools and society and that they eschew behaviors that are seen to represent white culture, including studying hard and achieving academic success (Fordham and Ogbu, 1986; Ogbu, 2008). Those blacks who do exhibit academic success are then at risk of being accused of “acting white” – a term meant to be derogatory.

Others have found little or no support for these cultural arguments (Cook and Ludwig, 1998; Harris, 2006; Noguera, 2009). In a large qualitative study of North Carolina high school students, Tyson (2011) finds that most black students do not avoid taking Advanced Placement classes for fear of being labeled “acting white,” but rather because they fear failure. Further, the “acting white” slur only becomes salient in schools with a pattern of within-school racial segregation that makes advanced courses seem like they are meant only for white students, because few or no black students have ever been enrolled in them (Tyson et al., 2005).

Building upon this research, Francis et al. (2016) have empirically demonstrated that a historical pattern of racialized tracking in schools that produces a visual racial divide between course types can decrease the likelihood that academically eligible, high-achieving blacks will opt to take AP courses dominated by white students. This is especially true for black male students. This points to underlying structural barriers to AP courses that can disproportionately deter black students from taking these courses even if black and white students value academic work equally. In this paper, we seek to add to the research that examines structural forces within schools and society as an explanation for minority and female underrepresentation in advanced STEM courses by investigating whether school counselors exhibit racial or gender bias during the course assignment process.<sup>2</sup>

The number of studies concerning bias and discrimination in school settings has grown in the past decade.<sup>3</sup> Many are concerned with black-white disparities in discipline and the behavioral perceptions of teachers (Bryan et al., 2012; Figlio, 2005; Francis, 2016; Gilliam et al., 2016; Kunesh and Noltemeyer, 2015; Okonofua and Eberhardt, 2015). Okonofua and Eberhardt (2015), for example, find that black students are more likely than white students to be viewed by teachers as exhibiting a troubling pattern of misbehavior after only two minor behavioral infractions. Their corresponding punishments are also harsher than those given to white students for the same infractions.

Biased perceptions of low-income and minority students with respect to behavior can also affect academic outcomes if they lead to disparate discipline – especially in the case of suspensions that cause students to miss valuable class time. Teachers also rely on behavioral perceptions, in addition to academic merit, when making academic placement recommendations, such as admission to gifted and talented programs and honors level coursework (Condrón, 2007). If teachers exhibit biased perceptions of the behavior of low-income and minority students, they

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<sup>2</sup>Our study design does not allow us to distinguish between implicit (or unconscious) bias and explicit (or intentional) bias.

<sup>3</sup>see Dee and Gershenson (2017) for an overview of research on unconscious bias in classroom settings.

may be unfairly denied access to advanced curriculum settings. In an experimental study in The Netherlands, Van Ewijk (2011) randomly alters names on the top of a writing assignment and finds no difference in the grades given to ethnic minority versus ethnic majority students, but finds that teachers were less likely to recommend the ethnic minority students for advanced coursework even given the same academic grade.

With regard to women in STEM fields, research has shown that professors in STEM fields are more likely to respond – and to respond faster – to email inquiries from prospective doctoral students who are male (Milkman et al., 2012). Science faculty have also been shown to rate potential lab assistant applicants who are male higher than those who are female, even given the same qualifications (Moss-Racusin et al., 2012). Our paper adds to the experimental research on bias in school settings by examining whether school counselors create a structural barrier to entry into AP math courses for female and minority students.

### 3 Methodology

We conduct a randomized experiment akin to an audit study. Audit studies have been used to investigate racial discrimination in labor markets, real estate markets, and consumer markets (Bertrand and Mullainathan, 2004; Darity and Mason, 1998; Gaddis, 2014; Pager, 2008; Quillian, 2006; Yinger, 1998). In the typical labor market audit study, matched pairs of different race or gender volunteers are sent to interview for the same advertised job openings. The volunteer pairs are given similar fictional qualifications and trained on how to observe and record their treatment by prospective employers when applying for a position. Each volunteer’s interactions and observations are compared. Bias exists if the minority or female volunteer has fewer positive results (i.e. being invited to interview further) and more negative results (i.e. being told the position has been filled) than the white or male volunteer.

Two major criticisms of audit studies involve the use of paired volunteers. Some critics have argued that even well trained volunteers can exhibit differences in interpersonal skills that can result in differential outcomes (Heckman and Siegelman, 1993). Others have argued that volunteers who are informed of the purpose of the study may not be objective when recording their observations (Yinger, 1998). Correspondence audit studies like that of Bertrand and Mullainathan (2004) that rely on sending out correspondence like job inquiries or résumés address these concerns by eliminating volunteers all together and relying instead on identical correspondence that differs only by the ethnic or gender identification of the name of the sender.<sup>4</sup>

Adapting the correspondence audit study method, we ask school counselors to evaluate student transcripts that are identical except for the name on the profile and decide whether to recommend each student for an AP Calculus course. Each participant receives, at random, a profile with a name designed to be suggestive of either a black or white student and a male or female student. We also include a set of profiles with no names in order to compare a situation in which there is a blind review of the transcript. Since the only differences in the profiles are the suggestive racial and gender origins of the names on the top, in the case of no bias,

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<sup>4</sup>For more examples of studies in the education context that use names to signal race and gender see Figlio (2005), Gilliam et al. (2016), Kunesh and Noltemeyer (2015), Linnehan et al. (2011), Milkman et al. (2012), and Moss-Racusin et al. (2012)

we would expect no significant difference in the likelihood of a particular student profile being recommended for the AP Calculus course. Any significant differences can be attributed to bias. The blind review is included as an experimental intervention designed to reduce the potential for bias. If, however, school counselors tend to be more social justice-oriented and use racial and gender identification to offset prior disadvantage (i.e. recommend identifiable minority and female students with lesser qualifications than white or male students), the blind review intervention could lead to *fewer* female and minority students being recommended. Research on blind review interventions is mixed with some studies demonstrating blind review can reduce bias (Lavy, 2008; Roberts and Verhoef, 2016) and others indicating no change (Hinnerich et al., 2011).

The experimental audit methodology is better suited than quasi-experimental methods to answer questions of racial or gender discrimination. It is nearly impossible to identify students in observational data who are identical in every aspect but race or gender in order to compare their outcomes. Any observable or unobservable differences that are not accounted for are potential confounding explanations for differential treatment making it impossible to attribute differential treatment solely to race or gender-based bias. Asking participants to evaluate otherwise identical student profiles eliminates confounding explanations.

A potential limitation of the audit methodology is the ability to generalize beyond the experimental setting. Participants who know they are answering questions in a research setting are likely to behave differently than they would if they were evaluating actual student files outside of the study setting. Participants are more likely to give socially desirable answers when they know their answers are being observed. If the socially desirable answer in this case is to recommend minority or female students when they normally would not, this could skew the results towards not finding evidence of bias against minority or female students. Therefore, any evidence of bias in this study should be viewed as a conservative estimate.

### 3.1 Experimental Procedures

In order to conduct the experiment, we secured an exhibit booth at a national education conference with a history of high attendance among school counselors. We solicited conference attendees to voluntarily participate in the study for the chance to win one of six \$100 gift cards through a random drawing every two hours while the exhibit hall was open. We also gave any visitor to our booth a small giveaway regardless of whether they completed the survey.<sup>5</sup>

Upon agreeing to participate in the study, each participant was asked to complete a roughly 10 minute survey on one of four tablets set up at our booth.<sup>6</sup> The instructions for the survey read as follows:

In this survey you will be presented with six (6) student academic profile snapshots. For each profile you will be asked to evaluate whether or not you would recommend the student take an Advanced Placement (AP) Calculus course. Brief comments

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<sup>5</sup>Figure A1 in the referee/online appendix shows the advertisement we placed in the conference program to recruit participants.

<sup>6</sup>On average, participants took a little over 5 minutes to complete the survey. The longest completion time was a little over 12 minutes.

from each student’s math teachers are included in the profile. Once you complete the recommendation for a profile, you will not be able to go back and alter that recommendation.

Figure 1 provides an example of a student academic profile. This profile is one of two baseline transcripts that were the same for all participants in order to judge each participant’s relative rating style (i.e., lenient or harsh)<sup>7</sup>. For all participants, the two baseline profiles were the first two transcripts they were asked to rate. The names used on the baseline transcripts were “Michelle Fuller” and “Michael Collins” - names not meant to be indicative of any particular racial group. For participants given the blinded review treatment, the names in the baseline transcripts were blacked out just as they were for the four treatment transcripts.

Brief comments from math teachers are included in the transcripts along with the academic records to account for the possibility that school counselors also rely on behavioral information to make academic placement decisions (Condron, 2007). Following the two baseline transcripts, participants were presented four treatment transcripts that reflect the following academic and behavioral characteristics:

1. Strong Academic, Strong Behavioral (SASB)
2. Borderline Academic, Strong Behavioral (BASB)
3. Strong Academic, Borderline Behavioral (SABB)
4. Borderline Academic, Borderline Behavioral (BABB)

We included variation in strong versus borderline behavior and academics to test whether bias is more likely to manifest in borderline cases than in strong cases. The strength of the academic profiles were vetted by school counselors in the field. Figures A3 through A6 in the referee/online appendix provide samples of profiles (1) through (4) respectively. For each new survey participant, the survey platform drew randomly from the five batches of files listed in Table 1.<sup>8</sup>

### 3.1.1 Profile Names

In their book *Freakonomics*, economists Levitt and Dubner (2005) compiled a list of the top 20 “whitest” and “blackest” sounding names for both boys and girls. The lists are compiled following the methodology of a Fryer and Levitt (2004a) study that identifies distinctively black names using California birth certificate data. We chose names from these lists for black and white-sounding male and female first names. Following Bertrand and Mullainathan (2004) we chose surnames from their list of the most common surnames for blacks and whites in the U.S. We tested the validity of the names using an anonymous survey on Amazon’s Mechanical Turk platform, also following Bertrand and Mullainathan (2004). Our chosen and vetted names are:

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<sup>7</sup>The second baseline transcript is pictured in the referee/online appendix as Figure A2

<sup>8</sup>After the baseline transcripts, each counselor participant was presented the four remaining transcripts in the same order with only the names changed. This avoids confounding the order in which a participant may have seen a stronger versus weaker transcript with the race-gender treatment

- Black Female: Deja Jackson <sup>9</sup>
- Black Male: DeAndre Washington
- White Female: Hannah Douglas
- White Male: Jake Connor

### 3.2 Data Collection

We collected three major data components from the participant surveys:

1. *The course recommendation:* For each of the six student profiles in the survey, we record whether or not the survey participant would recommend the student in the profile for advanced coursework.
2. *An academic preparedness rating:* For each of the six student profiles in the survey, participants rate the student’s academic preparedness of advanced coursework on a scale of 0 to 10. This provides more detail about the rater’s opinion of the transcript than the simple yes or no recommendation.
3. *School counselor demographic information:* At the end of the survey, each participant was asked to fill out a short demographic component designed to collect information on participant age, gender, geographic location, and years of experience counseling and/or teaching.

### 3.3 Empirical Strategy

In order to test whether there are significant differences in how student transcripts are viewed by race and gender, we conduct regression analysis using a linear probability model predicting the effects of having a particular race/gender name treatment on the likelihood of being recommended for AP Calculus and a linear regression model predicting similar effects on the preparedness rating score. The models we estimate are:

$$\begin{aligned}
 Recommend = \beta_0 + \beta_1 * BlackFemale + \beta_2 * WhiteFemale \\
 + \beta_3 * BlackMale + \beta_4 * WhiteMale + \Gamma X + \varepsilon \quad (1)
 \end{aligned}$$

and

$$\begin{aligned}
 Rating = \beta_0 + \beta_1 * BlackFemale + \beta_2 * WhiteFemale \\
 + \beta_3 * BlackMale + \beta_4 * WhiteMale + \Gamma X + \varepsilon \quad (2)
 \end{aligned}$$

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<sup>9</sup>With one exception, all of the tested names resulted in at least 88% of the respondents believing the name was indicative of the intended race or gender. The exception was that only 83% of respondents believed Deja Jackson was the name of a female. To correct for this, we include gender clues in the teacher behavioral prompts. For example, a female transcript might include the comment “Puts forth her best effort.” The corresponding male transcript would replace “her” with “his.”



In these equations, *Recommend* and *Rating* are the outcome variables of interest indicating whether or not the participant recommends a particular transcript for AP Calculus and what level of preparedness for AP Calculus the participant believes the student has. The variables *BlackFemale*, *WhiteFemale*, *BlackMale*, and *WhiteMale* are the independent variables of interest. They are indicator variables that take a value of 1 if the name on the transcript is indicative of that particular race/gender combination, and 0 otherwise. The coefficients on these variables can be interpreted as the difference in recommendation likelihood or preparedness rating between a particular race/gender combination and the blind (no name) transcript. Analyzing the results using regression analysis allows us to include controls ( $X$ ) for the characteristics of the survey participants (including gender, race and ethnicity) and for the ratings on the baseline transcripts that were meant to gauge whether a rater tended to be more or less harsh than the average rater.<sup>10</sup> We estimate each model separately for each of the four transcript types (SASB, BASB, SABB, and BABB) as well as a pooled sample with all transcript types.<sup>11</sup>

## 4 Findings

In total, 268 participants participated in our survey. We restrict our analysis to the 152 participants who indicated they have had some school counseling experience at the high school level.<sup>12</sup> Table 2 presents demographic information on our participants compared to a nationally representative sample of high school level school counselors. The majority (86%) of the sample are women, a characteristic of the school counseling field in general. Roughly 71% of the sample are white, 17% are black, and 15% are Hispanic of any race.<sup>13</sup> The geographic location of the sample participants' home districts skews toward the southern and western regions of the country - a byproduct of the location of the conference. The sample is not nationally representative in other ways as well. According to the 2012 National Survey of School Counselors (Bruce and Bridgeland, 2012), women make up a comparatively smaller 77% of school counselors at the high school level nationally, only 10% of high school counselors are black at the national level, and 78% are white at the national level, compared to 71% in our sample. Also, school counselors who attended the conference where we collected our survey data tend to have participated in more social justice-oriented professional development. This could possibly make it less likely that we would observe bias that negatively impacts minorities and women among our sample of participants. Having a sample that is not nationally representative limits our ability to generalize our results beyond our particular sample.

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<sup>10</sup>Although random assignment to guards against systematic bias from both observable and unobservable teacher characteristics, we choose to control for our observable teacher characteristics to increase the efficiency of our estimates and to correct for any spurious observational imbalances that may remain even after the randomization procedure.

<sup>11</sup>For the pooled sample we use Seemingly Unrelated Regression (SUR). The SUR model is not more efficient than estimating separate models for each of the four transcript types since all of the right hand side variables are the same in all four separate equations (Zellner and Huang, 1962), however, we choose to use SUR because the joint estimation allows us to more easily test the relationships of coefficients across the equations (eg. testing whether the coefficient on *BlackFemale* in the SASB equation is significantly different from the coefficient on *BlackFemale* in the BASB equations)

<sup>12</sup>Corresponding results for the full sample are similar to those for the high school counselor sample and are presented in the referee/online appendix as Tables A1 and A2.

<sup>13</sup>The full sample contains slightly more female (88%) and black participants (20%) and slightly fewer Hispanic participants (12%)

In order to test the randomization procedure, we conduct Bartlett’s test for equal variances across samples for the five randomization batches in Table 1 on the multiple observable participant characteristics. The results are presented in Table 3. For all but % white, we observe significant differences between samples. To explore further, we conduct pairwise comparisons between each of the five batches to see which batch is the outlier. Results indicate that the sample participants who were given the second randomization batch were younger and more likely to be female and Hispanic than the other randomized groups. The participants who were given the first randomization batch were more likely to identify as black. In order to account for these observable imbalances in the randomization process, we control for these factors in our regression analysis.

#### 4.1 Recommendations and Ratings of the Four Transcript Profile Types

The overall likelihood of recommendation for each of the four transcript profile types (SASB, BASB, SABB, BABB) follows a somewhat predictable pattern. High school counselors who participated in the survey recommended the strongest transcript (SASB) for admittance to AP Calculus 95% of the time. This was followed by the strong academic but borderline behavior profile (90%) and the borderline academic but strong behavior profile (83%). Lastly, the least competitive profile (BABB) was only recommended for AP Calculus by 65% of the high school counselors who were surveyed. Interestingly, the relative ranking of the two middle transcripts indicates that survey participants put more emphasis, overall, on having solid academics than on behavior. This is supported by the answers to an open-ended question we asked respondents about what they relied on in making their recommendations where 85% of respondents indicated they relied on grades and only 57% mentioned behavior.

Figure 2 presents the means and distributions of the preparedness rating for each transcript profile type. Again, the strongest profile has the highest mean score (8.11 on a scale of 0 to 10), followed by the strong academic but borderline behavior profile (7.53), the borderline academic but strong behavior profile (6.77) and the borderline academic and behavior profile (6.13). The score distribution becomes more spread out as we go from the most to the least prepared profiles indicating a greater diversity of opinion among respondents for the more borderline profiles.

#### 4.2 Recommendations and Ratings by Race/Gender of Transcript Profile

The findings from our estimation of Equations (1) and (2) are presented in Figures 3 and 4 respectively. Tables 4 and 5 provide more detailed information from the estimations used to produce the figures.<sup>14</sup>

##### 4.2.1 Recommendations

Each point in Figure 3 represents the coefficient estimate and 95% confidence interval obtained by estimating Equation (1) separately for each of the four transcript profile types (SASB, BASB, SABB, BABB). The coefficients represent the likelihood of being recommended to AP Calculus

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<sup>14</sup>While the main results we present in the paper are derived from our regression estimates, we also make available the raw means for the likelihood data and the means and distributions for the preparedness score data by transcript type and race/gender combination in Figures A7 through A14 of the referee/online appendix.

for each race/gender treatment *relative to the blinded transcript evaluation*. For example, in the strongest profile (SASB), the transcript with a black female name is 20 percentage points less likely to be recommended for AP Calculus than the blinded transcript. The transcripts with a white female name, a black male name, and a white male name did not have outcomes that were significantly different from the blinded transcript.

In Panel B of Table 4 we present the chi-square statistics and p-values from two-tailed tests of whether the coefficients are the same for pairwise comparisons of the four race-gender treatments. For the strongest transcript, only the coefficient on Black Female is significantly different from the coefficients on the other race-gender pairs at a 95% confidence level. It is important to note that these estimates control for counselor gender and race and the baseline transcript ratings; however, in the raw data, respondents recommended a transcript holder for AP Calculus 100% of the time for all but the black female profile. The black female transcript was recommended only 79% of the time. This is a striking result given this is the strongest transcript we tested. It implies that even the strongest black female candidates may face significant barriers to entry into AP Calculus courses that their white or male counterparts do not face.

The differences in the Borderline Academics, Strong Behavior (BASB) and Strong Academics, Borderline Behavior (SABB) are less striking. In the BASB profile, black females are still the least likely to be recommended, though the differences between black females and the other race/gender combinations are no longer significant. For the SABB transcript, white males, followed by black males, are the least likely to be recommended for AP Calculus. These differences are significantly different from the blinded transcript. The likelihood estimate for white females is not significantly different from the blinded transcript, while black female students are about 3 percentage points more likely to be recommended for AP Calculus than the blinded transcript.

Interestingly, for the BASB transcript, both female profiles are less likely to be recommended than their male counterparts, while for the SABB transcript, both male profiles are less likely to be recommended than their female counterparts. This may provide suggestive evidence that female students are viewed less favorably than males when it is their academics that are borderline, while male students are viewed less favorably than females when it is their behavior that is borderline. We consider the evidence to be only suggestive of this pattern because the differences are not statistically significant.

When evaluating the weakest profile (BABB), a pattern similar to that of the strongest profile emerges. The black female transcript is the least likely to be recommended (25 percentage points less likely than the blinded transcript). This corresponds to a raw value of only being recommended 50% of the time while the blinded transcript is recommended 79% of the time. The white male transcript is next (11 percentage points less likely than the blinded transcript), followed by the white female and black male transcripts at 2 and 3 percentage points less likely than the blinded transcript, respectively - values not significantly different from zero. There may be at least two explanations for the observation that the white male transcript is less likely to be recommended than the black male and white female transcripts in the weakest profile scenario. First, school counselors may recognize that black and female students are less likely

to be represented in AP Calculus courses, and are exercising a social justice remedy by advantaging the black male and white female transcripts. The social justice explanation, however, is at odds with the results for the black female transcript. Alternatively, it is possible that school counselors hold higher academic expectations for white males (whether consciously or subconsciously) (Gershenson et al., 2016; Harber et al., 2012; van den Bergh et al., 2010). Thus, when a school counselor sees a white male name paired with borderline academics and behavior, he or she may view that transcript less favorably because it fails to live up to expectations.

The results of the pooled model where all transcript types (SASB, BASB, SABB, and BABB) are pooled for the each of race-gender pairings are presented in the first results column of Table 4. The black female transcripts overall are the least likely to be recommended (13 percentage points less likely than the blinded transcript). None of the other race-gender pairs are significantly different from the blinded transcript. In results not presented here, we also tested whether the coefficients on the race-gender pairings were significantly different across the transcript types. For the white female, black male and white male transcripts we cannot reject the hypothesis that the coefficients are the same across transcript types. However, for the black female transcript we are able to reject the null at the 95% confidence level.

#### 4.2.2 Ratings

For the most part, the preparedness ratings results (Figure 4 and Table 5) are consistent with the respondents' recommendation decisions. For example, in the strongest and weakest transcript profiles, the black female transcript is the least likely to be recommended for AP Calculus, and it also has the lowest preparedness scores - 1.37 points lower than the blinded transcript for the strongest profile and 0.70 points lower for the weakest profile, on a scale of 0 to 10. The white male transcript in the weakest profile (BABB) has a preparedness score 0.46 points lower than the blinded transcript, which is reflective of the decreased likelihood of being recommended.

There are two notable departures of the preparedness ratings from the recommendation patterns. First, even though the white female transcript in the Strong Academic, Borderline Behavior profile is significantly more likely to be recommended for AP Calculus than the white male counterpart, it is rated as being significantly less prepared for the course than the white male transcript. This provides more evidence that white males may be disproportionately punished for having borderline behavior. Even though they are rated as being more prepared, they are still less likely to be recommended for the advanced course if they have questionable behavior or motivation.

Second, the black female transcript is significantly less likely than the blinded transcript to be recommended for AP Calculus in the Borderline Academics, Strong Behavior category, even though their preparedness rating is no different from the blinded transcript. Thus, even though they are deemed as being similarly prepared, they are more likely to be denied access.

### 4.3 Alternative Specifications

In order to test the robustness of our results, we estimated alternative models.<sup>15</sup> First, we estimated models without controlling for the baseline transcript scores (Tables A3 and A4). While the estimates were not qualitatively different from our chosen specification, including the controls explained much more of the variation in the dependent variables and led to more efficient estimates. For those reasons, we chose the specification that includes baseline transcript controls.

Second, we included a control for how long it took each respondent to complete the survey (Tables A5 and A6). Given that split second decisions are more likely to result in implicit bias (Banaji and Greenwald, 2013), it is possible that participants who spent less time on the survey were more likely to exhibit bias. Controlling for survey duration, however did not impact the race/gender estimates, and the coefficient on survey duration was not significantly different from zero.

We also split the sample by respondents who took at or above the median time to finish the survey and those who took below the median time to finish the survey (Tables A7 and A8). The relative rankings for the coefficients on the race/gender subgroups in both the recommendation and ratings regressions remained consistent with the main results across both survey duration samples; however, those who took less time to complete the survey were more likely to have recommendation and rating results that were closer to those of the blinded transcripts. In other words, those who took less time to answer the survey seemed to exhibit less bias overall, when compared to the blinded survey.

It would also be interesting to know whether the results differ by the race and/or gender of the counselor taking the survey. Unfortunately, there is not enough diversity in our predominantly white female sample of school counselors to effectively power subsample analyses by race and gender.

## 5 Discussion

The results of this study support three main conclusions. First, male students are less likely to be penalized for having borderline academics while female students are less likely to be penalized for having borderline behavior. This is consistent with societal stereotypes about male and female students. Female students are stereotyped as not being as academically adept at math as male students, while male students are stereotyped as not being as well-behaved as female students. School counselors who pair a female name with borderline academics may confirm their prior beliefs (whether subconscious or conscious) about female math ability and are therefore less likely to recommend them than male students with the same profile. Alternatively, when school counselors see a male name paired with borderline behavior it may confirm their prior beliefs about male student behavior, making them less likely to recommend them for advanced coursework.

Second, white male students are significantly less likely to be recommended in the weakest

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<sup>15</sup>For brevity, we do not present the results from these alternative specifications in the main body of the paper, but they are available in the online appendix as Tables A3 through A8 .

profile scenario. This may be because academic expectations are higher for white males (Gershenson et al., 2016; Harber et al., 2012; van den Bergh et al., 2010), and when they fail to live up to those expectations (by having borderline academics and borderline behavior), they are viewed more harshly than other students for whom expectations are not as high. More research is necessary to fully unpack this result.

Finally, black female students are uniquely disadvantaged. School counselors are significantly less likely to recommend them for AP Calculus in both the weakest and strongest profile scenarios. In fact, the black female transcript in the *strongest* academic and behavioral profile was equally as likely to be recommended for AP Calculus as the blinded profile in the *weakest* academic and behavioral profile (79%). Thus, for black female students, it may not be enough to simply study hard, get good grades, and be well-behaved. As psychologist Nilanjana Dasgupta (2011) posits, they may need to be “innoculated” against the subtle stereotyping that sends them signals that they don’t belong in STEM fields or advanced courses. This inoculation can happen through them seeing successful role models who are similar to them in advanced STEM fields, allowing them to ignore negative signals born out of bias.

Access to Advanced Placement courses can lead to long term benefits, especially in STEM fields. School counselors often have influence on who takes AP courses. Even in schools where the ultimate decision to take an AP course is left to the student, the ability of school counselors to encourage some students to take the course and not encourage others still has the potential to place them in the role of a gatekeeper. Increasingly more studies have identified racial and gender bias (implicit or otherwise) in multiple education settings, making this an issue that is not unique to school counselors. The results of this study highlight an important juncture on the road to STEM education where policy may be useful in guiding us past biases that may disadvantage particular groups of students. One way to reduce the bias observed in this study would be to have school counselors engage in blind reviews of student files when making their initial recommendations. However, subjectivity can also be used to redress prior disadvantage as in the case of students who may come from ineffective middle schools but show promise beyond what their academic profiles alone might suggest. In this case, policymakers must balance the potential for reducing unwanted subjective biases with the ability of school counselors to use their subjectivity to give an opportunity to disadvantaged students who show potential but may not have strong academic records.

Another suggestion would be to involve multiple stakeholders – including students, parents, and school professionals – in any academic decisions that have long-term ramifications. Whenever one person alone is tasked with making an academic recommendation – whether that person is a school counselor, a teacher, or even the student – accurate assessment of the student’s likelihood of success is necessarily limited and potentially biased. A more holistic approach may be necessary to increase equity and access for all students with the potential to succeed in advanced curriculum programs.

## Acknowledgements

Funding: This work was supported by a research grant from the College of Social and Behavioral Sciences at UMass Amherst and approved under UMass IRB Protocol ID: 2016-3031. We would like to thank the participants at multiple workshops and seminars at UMass Amherst, UCONN, Teachers College, and The Brookings Institution for their helpful comments and suggestions.

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## Tables and Figures

HIGH SCHOOL TRANSCRIPT									
STUDENT INFORMATION					SCHOOL INFORMATION				
FULL NAME: MICHELLE FULLER		DATE OF BIRTH: MARCH 5, 1998			KENNEDY HIGH SCHOOL		PHONE: 582-782-9191		
ADDRESS: 123 EAST ST.		PHONE: 582-782-4569			DATE OF ENROLLMENT: AUGUST 10, 2013		DATE OF GRADUATION: JUNE 5, 2017		
ACADEMIC RECORD									
School Year: 2013-2014 Grade Level: 9					School Year: 2014-2015 Grade Level: 10				
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments
English I		A-	1		English II		A	1	
Geometry		A	1	Diligent worker	Algebra II		A	1	Completes all assignments as given
Biology/Lab		A-	1		Chemistry	H	A	1	
World History		A	1		US History		A-	1	
Spanish I		B+	1		Spanish II		B+	1	
Art History		A-	1		Art I		A-	1	
Music Appreciation		A	0.5		Orchestra		A-	0.5	
Physical Education/Health		A	0.5		Physical Education		A	0.5	
Total Credits: 7		GPA: 3.77		Cumulative GPA: 3.77		Total Credits: 14		GPA: 3.86 Cumulative GPA: 3.82	
School Year: 2015-2016 Grade Level: 11					School Year: 2016-2017 Grade Level: 12				
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments
English III		A	1		English IV				
Pre-Calculus		A	1	Asks questions and participates regularly					
Anatomy and Physiology	H	A-	1		Physics/Lab	H			
European History		A-	1		Psychology				
Spanish III		B	1		Sociology				
Art II		A	1		Spanish IV	H			
Orchestra		A-	0.5		Jazz Ensemble				
Physical Education		A	0.5		Physical Education				
Total Credits: 21		GPA: 3.82		Cumulative GPA: 3.82		Total Credits:		GPA: Cumulative GPA:	

H: Honors AP: Advanced Placement

Figure 1: Baseline Transcript 1

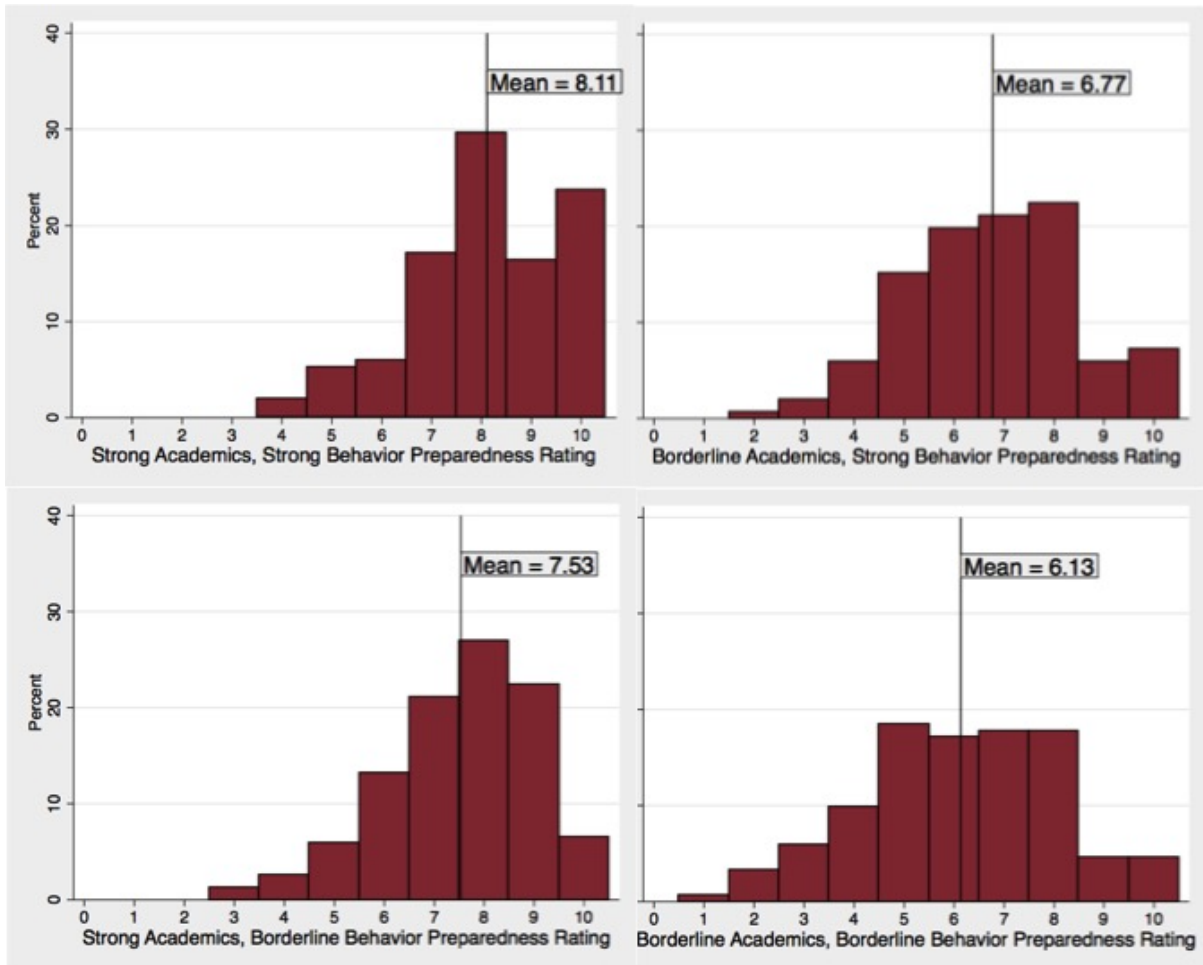
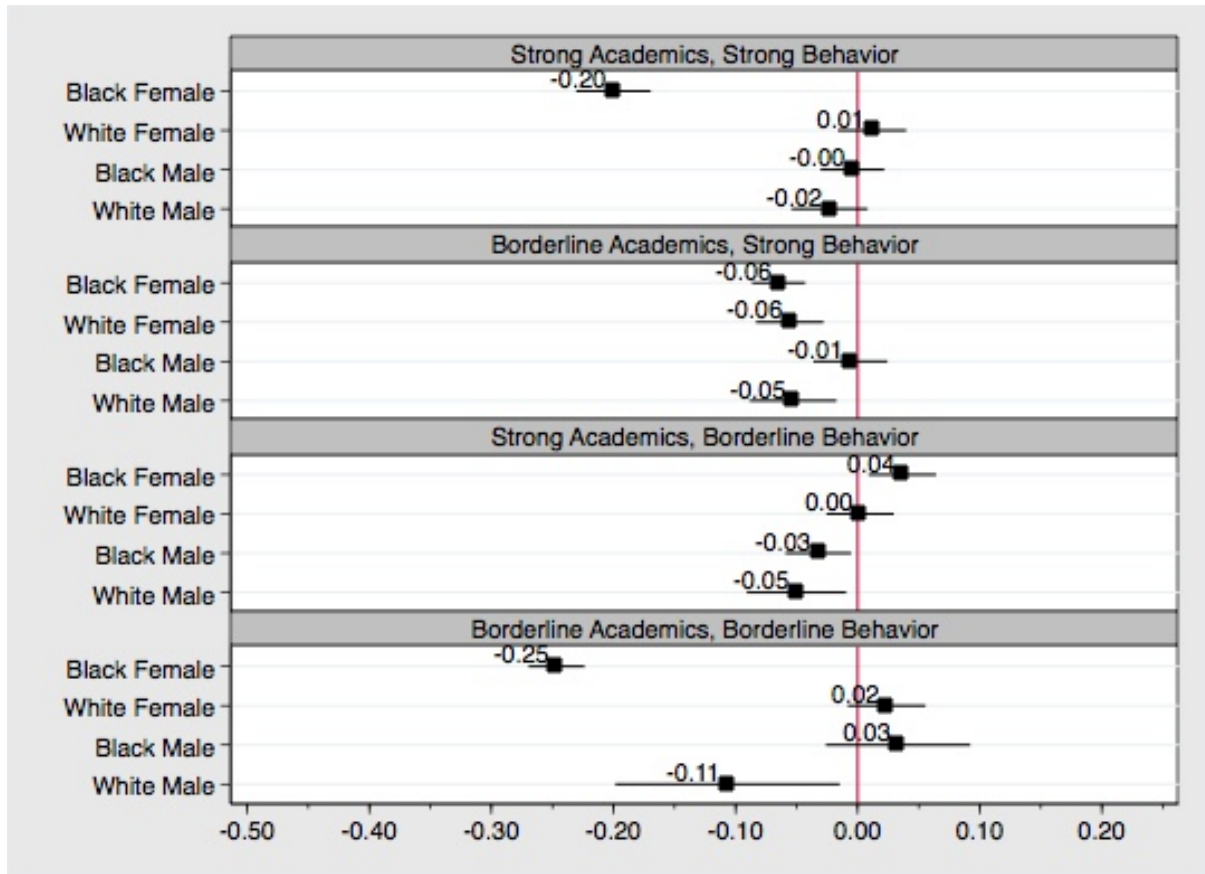
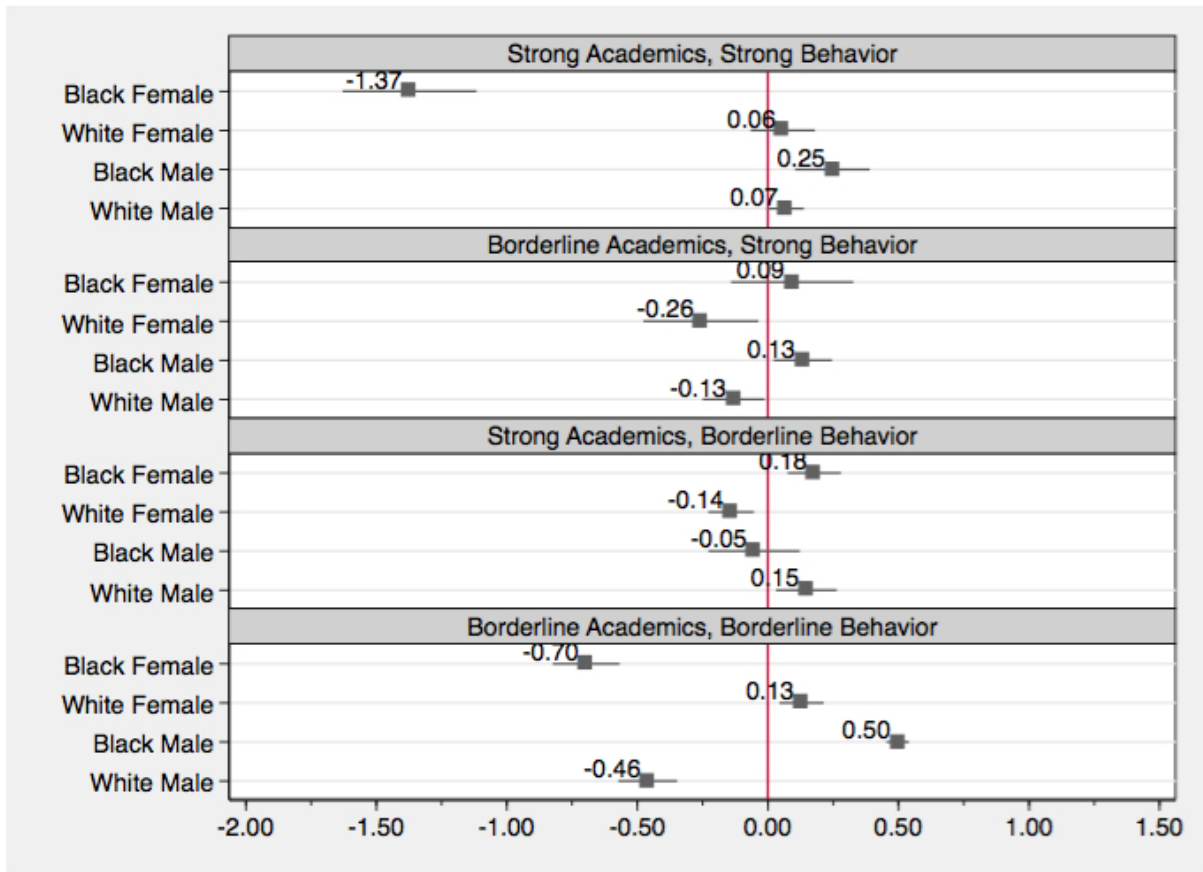


Figure 2: Overall Preparedness Rating Mean and Distribution for each Transcript Profile



Note: Each point in the figure represents the coefficient estimate and 95% confidence interval obtained by estimating Equation (1) separately for each of the four transcript profile types (SASB, BASB, SABB, BABB). The coefficients represent the likelihood of being recommended to AP Calculus for each race/gender treatment relative to the blind transcript evaluation (ex. the Black Female transcript is 20% less likely to be recommended for AP Calculus than the blind evaluation of the SASB profile).

Figure 3: Likelihood of Recommendation for AP Calculus by Race/Gender of Transcript Holder



Note: Each point in the figure represents the coefficient estimate and 95% confidence interval obtained by estimating Equation (2) separately for each of the four transcript profile types (SASB, BASB, SABB, BABB). The coefficients represent the preparedness rating (on a scale of 0 to 10) for each race/gender treatment relative to the blind transcript evaluation (ex. the Black Female Transcript is has a rating 1.37 points below the blind transcript rating for the SASB profile).

Figure 4: Preparedness Rating by Race/Gender of Transcript Holder



Table 1: Randomization Batches

Batch	Academic Profile	Name on File
1	Strong Academic, Strong Behavior	black female
	Borderline Academic, Borderline Behavior	white male
	Borderline Academic, Strong Behavior	white female
	Strong Academic, Borderline Behavior	black male
2	Strong Academic, Strong Behavior	white female
	Borderline Academic, Borderline Behavior	black male
	Borderline Academic, Strong Behavior	black female
	Strong Academic, Borderline Behavior	white male
3	Strong Academic, Strong Behavior	black male
	Borderline Academic, Borderline Behavior	black female
	Borderline Academic, Strong Behavior	white male
	Strong Academic, Borderline Behavior	white female
4	Strong Academic, Strong Behavior	white male
	Borderline Academic, Borderline Behavior	white female
	Borderline Academic, Strong Behavior	black male
	Strong Academic, Borderline Behavior	black female
5	No names associated with any file – blind evaluation	

Table 2: Demographic Representation

	% of Sample	%Nationally*
Female	86	77
Black	17	10
White	71	78
Hispanic	15	13
Midwest	16	–**
Northeast	176	–
South	37	–
West	30	–
N	152	

\*Source: 2012 National Survey of School Counselors  
\*\*National data on geographic distribution unavailable.

Table 3: Balance Tests: Sample Means for Observable Participant Demographics by Randomization Batch

	Randomization Batch					Prob > F*	Outlier**
	1	2	3	4	Blinded		
% Female	82.1	91.2	87.5	80.0	85.7	0.001	Batch 2
% Black	25.0	11.8	12.5	13.3	21.4	0.001	Batch 1
% Hispanic	14.3	23.5	9.4	13.3	3.6	0.000	Batch 2
% White	53.6	70.6	68.8	80.0	71.4	0.222	–
Average Age	41.5	37.8	40.1	43.4	41.2	0.007	Batch 2

\*Prob > chi2 on Bartlett’s test for equal variances across samples  
\*\*Batch(s) identified as having sample mean significantly different from the others in pairwise comparisons of means with equal variances

Table 4: Likelihood of Recommendation for AP Calculus by Race/Gender of Transcript Holder

Panel A - Point Estimates and Standard Errors, Blinded Transcript is the Omitted Category					
	Pooled	SASB	BASB	SABB	BABB
Black Female	-0.126*** (0.0403)	-0.200*** (0.0110)	-0.0647*** (0.00785)	0.0366** (0.00993)	-0.247*** (0.00827)
White Female	0.004 (0.0403)	0.0118 (0.0101)	-0.0556*** (0.00996)	0.00202 (0.00993)	0.0237 (0.0115)
Black Male	-0.012 (0.0402)	-0.00433 (0.00941)	-0.00594 (0.0109)	-0.0323** (0.00969)	0.0330 (0.0213)
White Male	-0.042 (0.0405)	-0.0230 (0.0112)	-0.0529** (0.0128)	-0.0501** (0.0146)	-0.107** (0.0331)
Constant	0.648** (0.0835)	0.797*** (0.141)	0.442 (0.271)	0.901*** (0.0685)	0.139 (0.374)
Controls?	Yes	Yes	Yes	Yes	Yes
Observations	152	152	152	152	152
R-squared	-	0.249	0.150	0.124	0.253

Controls include: Counselor is Female, Counselor is Black, Counselor is Hispanic, Baseline Transcript 1 and Baseline Transcript 2  
Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B - Two-way Coefficient Comparisons					
Wald Test Chi-Square Values (p-values in parentheses)					
Black Female = White Female	16.58 (0.000)	19.10 (0.000)	0.01 (0.917)	0.22 (0.641)	6.11 (0.013)
Black Female = Black Male	11.21 (0.001)	15.54 (0.000)	0.42 (0.517)	0.86 (0.354)	6.98 (0.008)
Black Female = White Male	5.97 (0.014)	11.83 (0.001)	0.02 (0.894)	1.41 (0.235)	1.76 (0.185)
White Female = Black Male	0.23 (0.633)	0.11 (0.746)	0.29 (0.591)	0.23 (0.632)	0.01 (0.931)
White Female = White Male	1.81 (0.178)	0.47 (0.492)	0.00 (0.975)	0.53 (0.467)	1.41 (0.234)
Black Male = White Male	0.84 (0.360)	0.13 (0.716)	0.26 (0.611)	0.07 (0.799)	1.83 (0.176)

Table 5: Preparedness Rating by Race/Gender of Transcript Holder

Panel A - Point Estimates and Standard Errors, Blinded Transcript is the Omitted Category					
	Pooled	SASB	BASB	SABB	BABB
Black Female	-0.505** (0.2188)	-1.373*** (0.0924)	0.0928 (0.0843)	0.178*** (0.0368)	-0.697*** (0.0461)
White Female	-0.034 (0.2190)	0.0570 (0.0444)	-0.257** (0.0795)	-0.141** (0.0315)	0.129** (0.0306)
Black Male	0.146 (0.2191)	0.247*** (0.0516)	0.133** (0.0404)	-0.0528 (0.0630)	0.497*** (0.0155)
White Male	-0.183 (0.2194)	0.0666* (0.0254)	-0.132** (0.0429)	0.147** (0.0419)	-0.460*** (0.0407)
Constant	3.030*** (0.490)	4.553*** (0.421)	1.885* (0.786)	4.534** (1.014)	0.705 (0.444)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	152	152	152	152	152
R-squared	–	0.461	0.359	0.239	0.492

Controls include: Counselor is Female, Counselor is Black, Counselor is Hispanic, Baseline Transcript 1 and Baseline Transcript 2  
Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Panel B - Two-way Coefficient Comparisons Wald Test Chi-Square Values (p-values in parentheses)					
Black Female = White Female	12.76 (0.000)	26.50 (0.000)	1.07 (0.302)	0.83 (0.362)	5.01 (0.025)
Black Female = Black Male	21.20 (0.000)	32.02 (0.000)	0.01 (0.910)	0.43 (0.511)	11.12 (0.001)
Black Female = White Male	5.17 (0.023)	23.74 (0.000)	0.41 (0.520)	0.01 (0.931)	0.43 (0.510)
White Female = Black Male	1.59 (0.208)	0.44 (0.506)	1.17 (0.279)	0.07 (0.795)	1.01 (0.314)
White Female = White Male	1.10 (0.295)	0.00 (0.974)	0.13 (0.719)	0.72 (0.395)	2.54 (0.111)
Black Male = White Male	6.05 (0.014)	0.38 (0.540)	0.54 (0.461)	0.37 (0.543)	7.58 (0.006)

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Participate in a research study to help school counseling and be entered in a drawing for a chance to win one of six \$100 gift cards. Participation takes less than 20 minutes. Drawings held approximately every 2 hours.

<http://www.umass.edu/resec/giving/cieve-e-willis-experimental-economics-laboratory-fund>

Figure A1: Conference Program Advertisement

HIGH SCHOOL TRANSCRIPT											
STUDENT INFORMATION					SCHOOL INFORMATION						
FULL NAME: MICHAEL COLLINS		DATE OF BIRTH: JANUARY 16, 1998			KENNEDY HIGH SCHOOL		PHONE: 582-782-9191				
ADDRESS: 123 WEST ST.		PHONE: 582-954-6873			DATE OF ENROLLMENT: AUGUST 10, 2013		DATE OF GRADUATION: JUNE 5, 2017				
ACADEMIC RECORD											
School Year: 2013-2014					School Year: 2014-2015						
Grade Level: 9					Grade Level: 10						
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
Writing/English I	H	B	1		English II		B+	1			
Geometry	H	B+	1	Talkative, easily distracted	Algebra II	H	B	1	Lacks self motivation		
Biology/Lab		B+	1.5		Chemistry	H	B+	1.5			
World History	H	A	1		US History	AP	A-	1			
Japanese I		B+	1		Japanese II		A-	1			
Principles of Business		A-	0.5		Accounting		A-	0.5			
Speech		A	0.5		Debate		A-	0.5			
Physical Education/Health		B	0.5		Physical Education		B	0.5			
Total Credits: 7		GPA: 3.67		Cumulative GPA: 3.67		Total Credits: 14		GPA: 3.73		Cumulative GPA: 3.68	
School Year: 2015-2016					School Year: 2016-2017						
Grade Level: 11					Grade Level: 12						
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
English III	H	B+	1		English IV	H					
Trigonometry/Pre-Calculus	H	B+	1	Achieves more when pushed							
Biology/Lab	AP	A-	1.5		Physics/Lab	H					
European History	AP	A-	1		Economics	AP					
Japanese III		A	1		Sociology						
Computer Programming		A	0.5		Japanese IV	H					
Drama		A-	0.5		Web Design						
Physical Education		B	0.5		Physical Education						
Total Credits: 21		GPA: 4.1		Cumulative GPA: 3.82		Total Credits:		GPA:		Cumulative GPA:	
H: Honors AP: Advanced Placement											

Figure A2: Baseline Transcript 2

HIGH SCHOOL TRANSCRIPT											
STUDENT INFORMATION					SCHOOL INFORMATION						
FULL NAME:		DATE OF BIRTH:			JANUARY 8, 1998		KENNEDY HIGH SCHOOL		PHONE: 582-782-9191		
ADDRESS: 123 MAIN ST.		PHONE:			582-325-1037		DATE OF ENROLLMENT: AUGUST 10, 2013		DATE OF GRADUATION: JUNE 5, 2017		
ACADEMIC RECORD											
School Year: 2013-2014					School Year: 2014-2015						
Grade Level: 9					Grade Level: 10						
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
Writing/English I	H	A	1		English II		A	1			
Geometry	H	A	1	A pleasure to have in class	Algebra II	H	A	1	Puts forth his best effort		
Biology/Lab		A	1.5		Chemistry	H	A	1.5			
World History	H	A	1		US History	AP	A-	1			
Spanish I		B+	1		Spanish II		B+	1			
Art I		A-	0.5		Computer Science		A-	0.5			
Music Appreciation		A	0.5		Ceramics		A-	0.5			
Physical Education/Health		B	0.5		Physical Education		B	0.5			
Total Credits: 7		GPA: 4.02		Cumulative GPA: 4.02		Total Credits: 14		GPA: 4.01		Cumulative GPA: 4.01	
School Year: 2015-2016					School Year: 2016-2017						
Grade Level: 11					Grade Level: 12						
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
English III	H	A	1		English IV	H					
Trigonometry/Pre-Calculus	H	A-	1	Always stays on task							
Biology/Lab	AP	A-	1.5		Physics/Lab	H					
European History	AP	A-	1		Psychology	AP					
Spanish III		B	1		Sociology						
Art II		A	0.5		Spanish IV	H					
Choir		A-	0.5		Ceramics II						
Physical Education		B	0.5		Physical Education						
Total Credits: 21		GPA: 4.11		Cumulative GPA: 4.05		Total Credits:		GPA:		Cumulative GPA:	
H: Honors AP: Advanced Placement											

Figure A3: Strong Academic, Strong Behavior Transcript

HIGH SCHOOL TRANSCRIPT											
STUDENT INFORMATION					SCHOOL INFORMATION						
FULL NAME:		DATE OF BIRTH: FEBRUARY 12, 1998			KENNEDY HIGH SCHOOL		PHONE: 582-782-9191				
ADDRESS: 23 SOUTH ST.		PHONE: 582-335-9542			DATE OF ENROLLMENT: AUGUST 10, 2013		DATE OF GRADUATION: JUNE 5, 2017				
ACADEMIC RECORD											
School Year: 2013-2014				Grade Level: 9		School Year: 2014-2015				Grade Level: 10	
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
Writing/English I	H	A-	1		English II		A	1			
Geometry	H	B	1	A pleasure to have in class	Algebra II	H	B	1	Puts forth his best effort		
Biology/Lab		A-	1		Chemistry	H	B+	1			
World History	H	A	1		US History	AP	A-	1			
French I		B+	1		French II		B+	1			
Art I		A-	1		Computer Science		A-	1			
Journalism		A	0.5		Ceramics		A-	0.5			
Physical Education/Health		B	0.5		Physical Education		B	0.5			
Total Credits: 7		GPA: 3.77		Cumulative GPA: 3.77		Total Credits: 14		GPA: 3.76		Cumulative GPA: 3.77	
School Year: 2015-2016				Grade Level: 11		School Year: 2016-2017				Grade Level: 12	
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
English III	H	A	1		English IV	H					
Trigonometry/Pre-Calculus	H	B-	1	Always stays on task	Physics/Lab	H					
Engineering/Technology		A-	1		Psychology						
European History	AP	A-	1		Economics						
French III		B	1		French IV	H					
Art II		A	1		Yearbook						
Choir		A-	0.5		Physical Education						
Physical Education		B	0.5								
Total Credits: 21		GPA: 3.78		Cumulative GPA: 3.77		Total Credits:		GPA:		Cumulative GPA:	
H: Honors AP: Advanced Placement											

Figure A4: Borderline Academic, Strong Behavior Transcript



HIGH SCHOOL TRANSCRIPT											
STUDENT INFORMATION					SCHOOL INFORMATION						
FULL NAME:		DATE OF BIRTH: APRIL 18, 1998			KENNEDY HIGH SCHOOL		PHONE: 582-782-9191				
ADDRESS: 98 PLEASANT ST.		PHONE: 582-757-8832			DATE OF ENROLLMENT: AUGUST 10, 2013		DATE OF GRADUATION: JUNE 5, 2017				
ACADEMIC RECORD											
School Year: 2013-2014					School Year: 2014-2015						
Grade Level: 9					Grade Level: 10						
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
Writing/English I	H	A	1		English II		A	1			
Geometry	H	A-	1	Easily distracted off task	Algebra II	H	A	1	Occasionally exhibits disruptive behavior		
Biology/Lab		A	1.5		Chemistry	H	A	1.5			
World History	H	A	1		US History	AP	A-	1			
French I		B+	1		French II		B+	1			
Art I		A-	0.5		Graphic Design		A-	0.5			
Speech		A	0.5		Debate		A-	0.5			
Physical Education/Health		B	0.5		Physical Education		B	0.5			
Total Credits: 7		GPA: 4.02		Cumulative GPA: 4.02		Total Credits: 14		GPA: 4.01		Cumulative GPA: 4.01	
School Year: 2015-2016					School Year: 2016-2017						
Grade Level: 11					Grade Level: 12						
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
English III	H	A	1		English IV	H					
Trigonometry/Pre-Calculus	H	A-	1	Does not always put forth his best effort							
Biology/Lab	AP	A-	1.5		Physics/Lab	H					
European History	AP	A-	1		Psychology	AP					
French III		B	1		Sociology						
Computer Programming		A	0.5		French IV	H					
Drama		A-	0.5		Web Design						
Physical Education		B	0.5		Physical Education						
Total Credits: 21		GPA: 4.11		Cumulative GPA: 4.05		Total Credits:		GPA:		Cumulative GPA:	
H: Honors AP: Advanced Placement											

Figure A5: Strong Academic, Borderline Behavior Transcript

HIGH SCHOOL TRANSCRIPT											
STUDENT INFORMATION					SCHOOL INFORMATION						
FULL NAME:		DATE OF BIRTH: MARCH 31, 1998			KENNEDY HIGH SCHOOL		PHONE: 582-782-9191				
ADDRESS: 123 NORTH ST.		PHONE: 582-438-9677			DATE OF ENROLLMENT: AUGUST 10, 2013		DATE OF GRADUATION: JUNE 5, 2017				
ACADEMIC RECORD											
School Year: 2013-2014				Grade Level: 9		School Year: 2014-2015				Grade Level: 10	
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
<i>Writing/English I</i>	H	A-	1		<i>English II</i>		A	1			
<i>Geometry</i>	H	B	1	<i>Easily distracted off task</i>	<i>Algebra II</i>	H	B	1	<i>Occasionally exhibits disruptive behavior</i>		
<i>Biology/Lab</i>		A-	1		<i>Chemistry</i>	H	B+	1			
<i>World History</i>	H	A	1		<i>US History</i>	AP	A-	1			
<i>Spanish I</i>		B+	1		<i>Spanish II</i>		B+	1			
<i>Music Appreciation</i>		A-	1		<i>Voice</i>		A-	1			
<i>World Cultures</i>		A	0.5		<i>Comparative Religions</i>		A-	0.5			
<i>Physical Education/Health</i>		B	0.5		<i>Physical Education</i>		B	0.5			
Total Credits: 7		GPA: 3.77		Cumulative GPA: 3.77		Total Credits: 14		GPA: 3.76		Cumulative GPA: 3.77	
School Year: 2015-2016				Grade Level: 11		School Year: 2016-2017				Grade Level: 12	
Course Title	Level	Final Grade	Credit Earned	Comments	Course Title	Level	Final Grade	Credit Earned	Comments		
<i>English III</i>	H	A	1		<i>English IV</i>	H					
<i>Trigonometry/Pre-Calculus</i>	H	B-	1	<i>Does not always put forth his best effort</i>							
<i>Engineering/Technology</i>		A-	1		<i>Physics/Lab</i>	H					
<i>European History</i>	AP	A-	1		<i>Psychology</i>						
<i>Spanish III</i>		B	1		<i>Sociology</i>						
<i>Anthropology</i>		A	1		<i>Spanish IV</i>	H					
<i>Choir</i>		A-	0.5		<i>Choir</i>						
<i>Physical Education</i>		B	0.5		<i>Physical Education</i>						
Total Credits: 21		GPA: 3.78		Cumulative GPA: 3.77		Total Credits:		GPA:		Cumulative GPA:	

H: Honors AP: Advanced Placement

Figure A6: Borderline Academic, Borderline Behavior Transcript

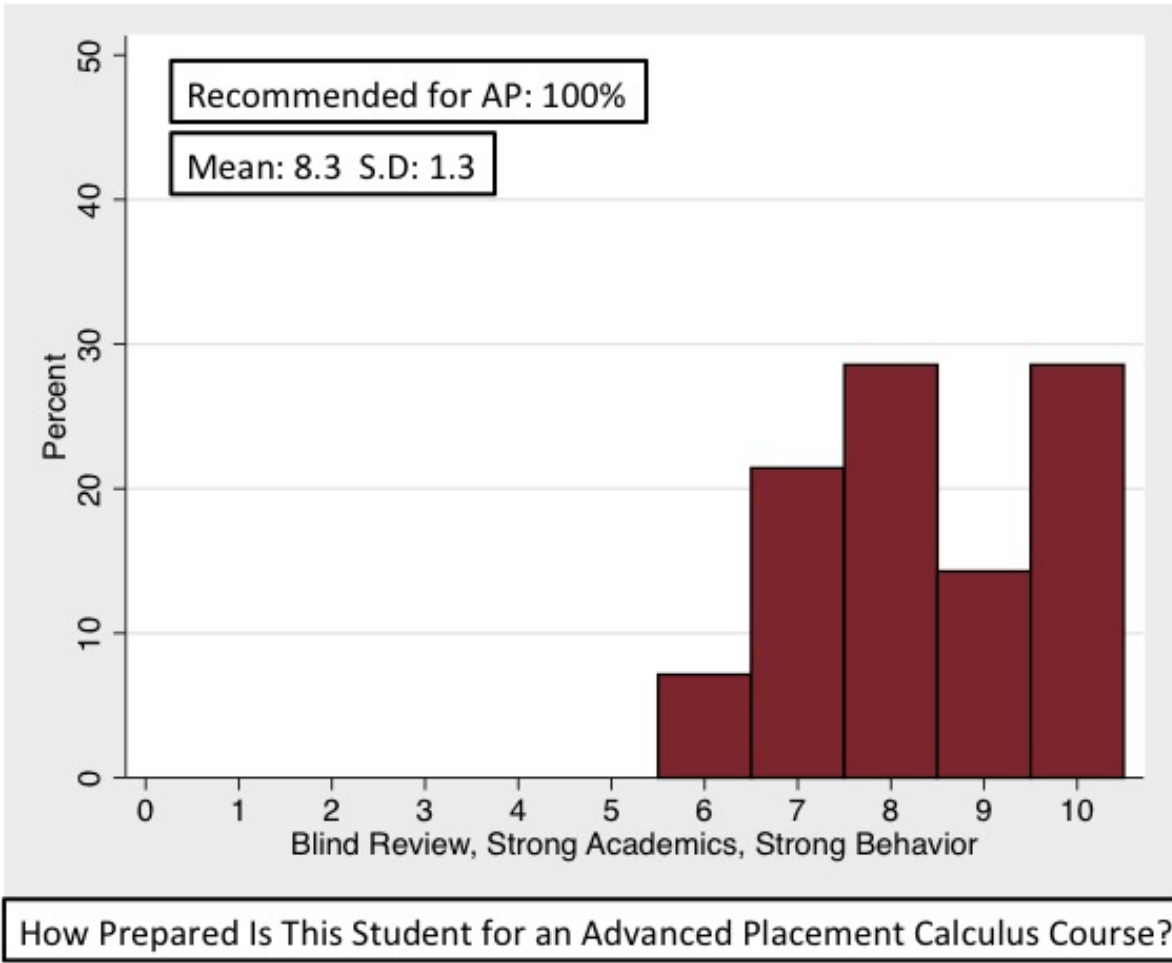
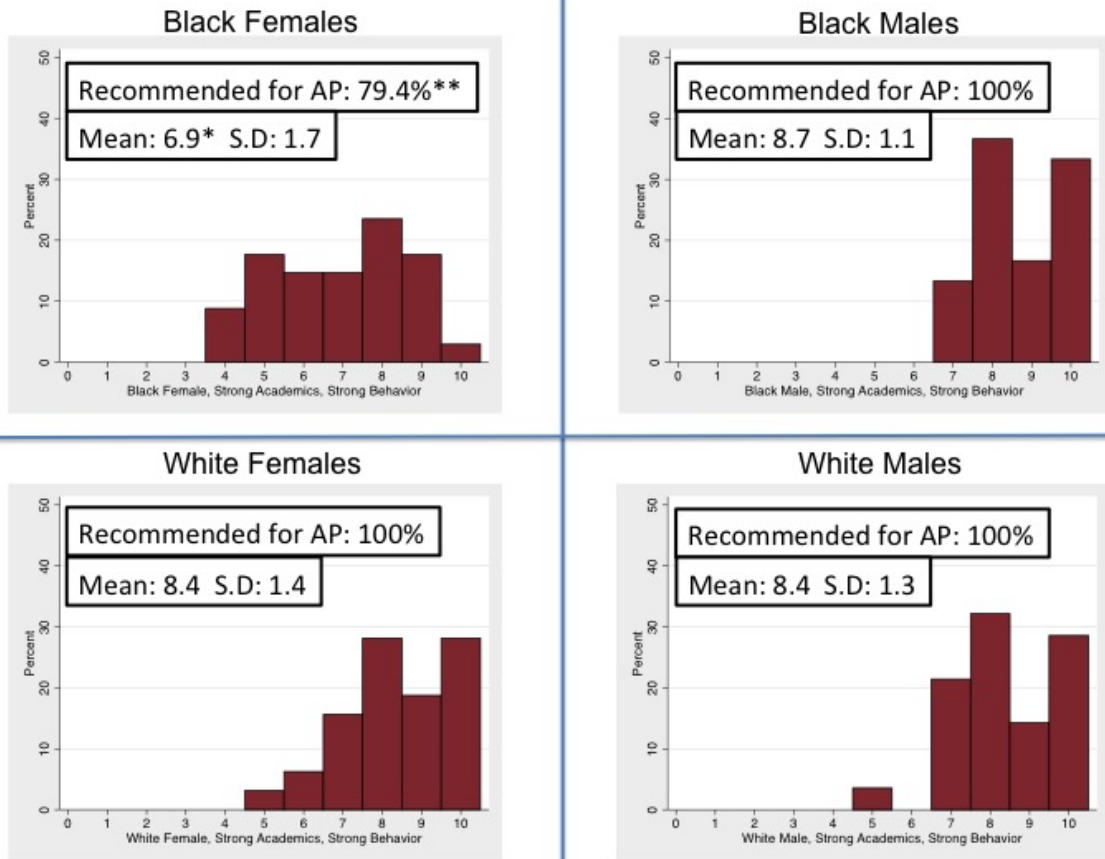


Figure A7: Preparation Score Distribution for Blind Evaluation of Strong Academics, Strong Behavior Profile



Note: Significant difference from corresponding values for the blinded transcript indicated by: \*\*  $p < 0.05$  and \*  $p < 0.1$ .

Figure A8: Preparation Score Distribution for Subgroup Evaluations of Strong Academics, Strong Behavior Profile

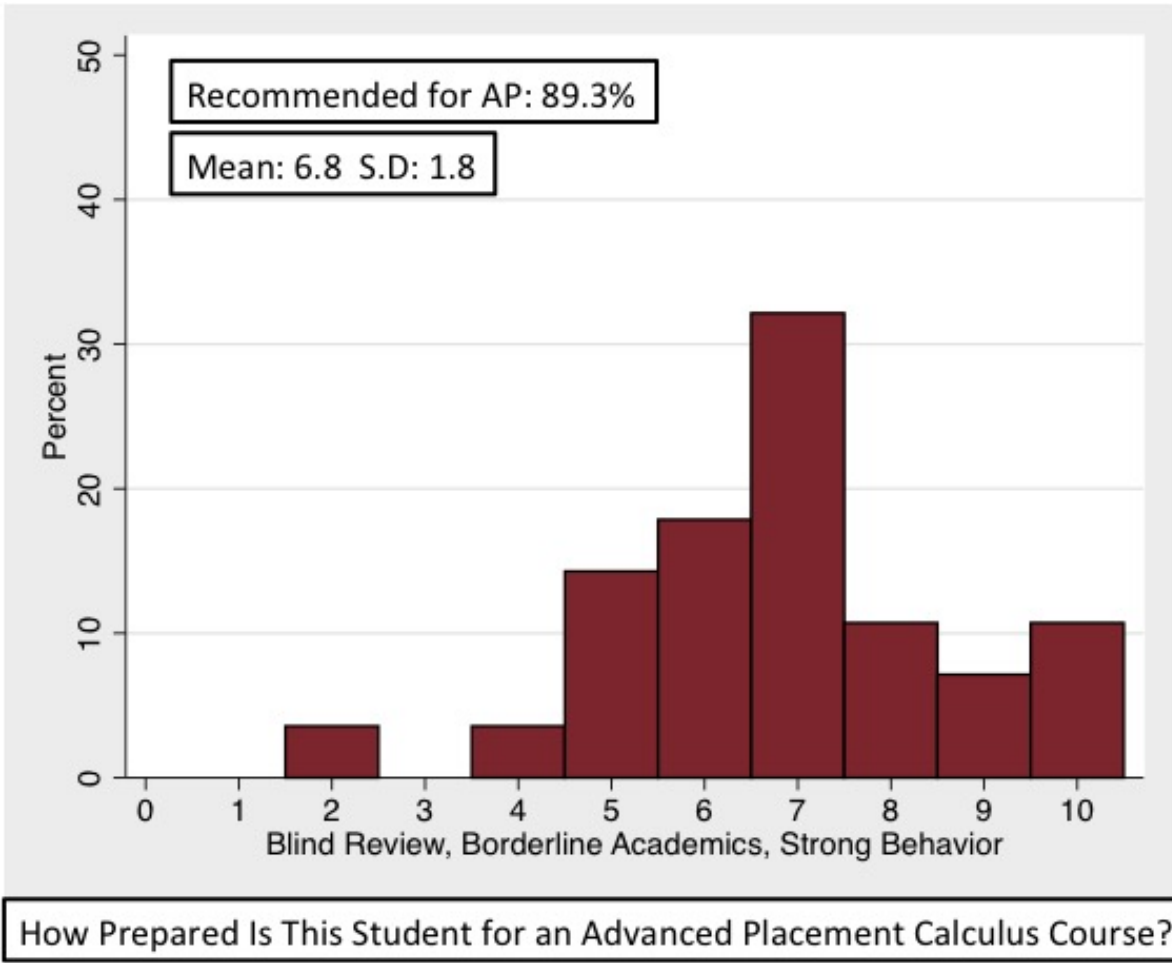


Figure A9: Preparation Score Distribution for Blind Evaluation of Borderline Academics, Strong Behavior Profile

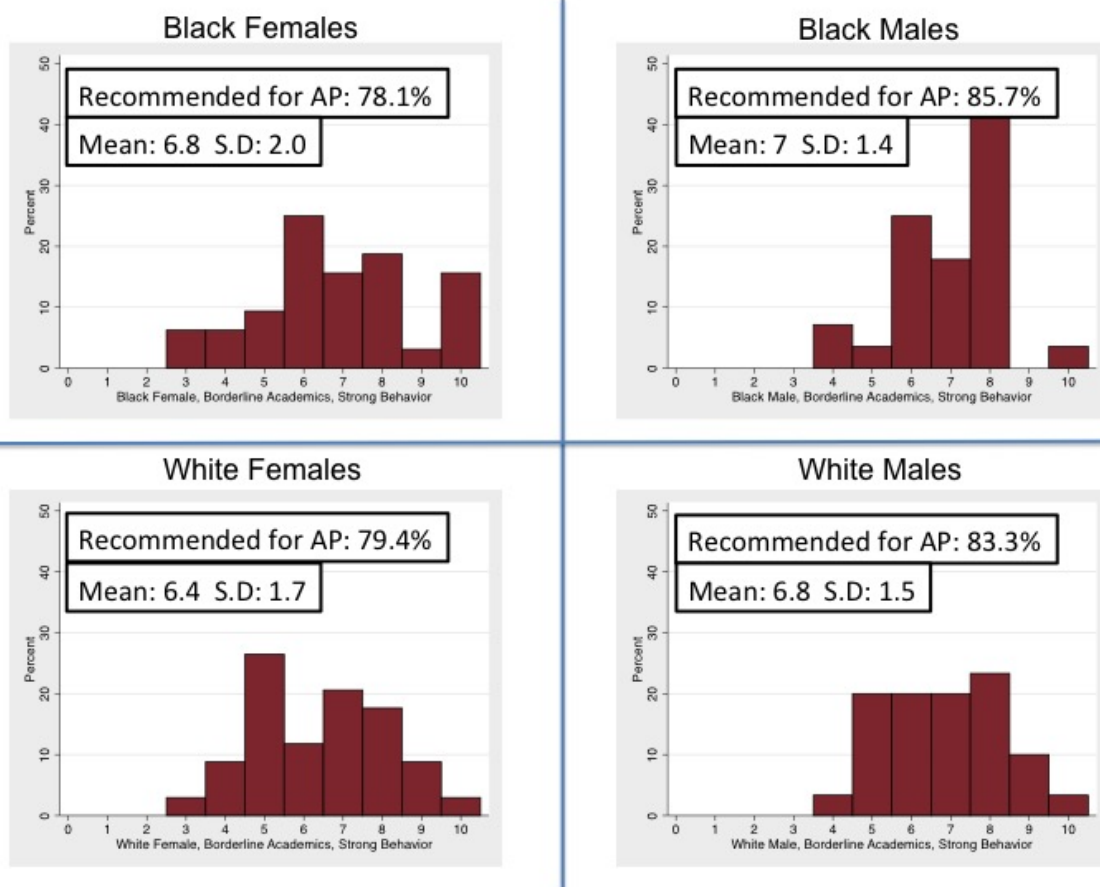


Figure A10: Preparation Score Distribution for Subgroup Evaluations of Borderline Academics, Strong Behavior Profile

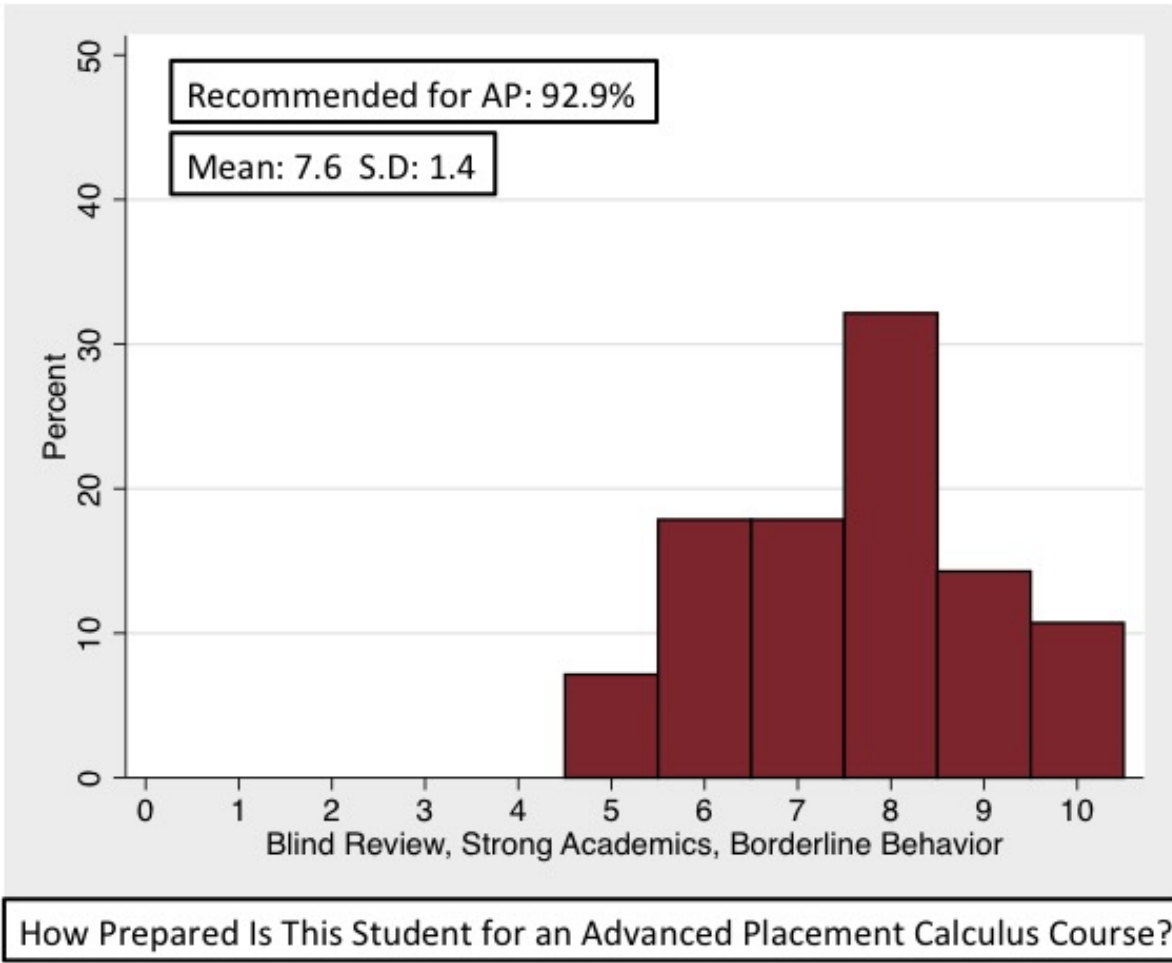


Figure A11: Preparation Score Distribution for Blind Evaluation of Strong Academics, Borderline Behavior Profile

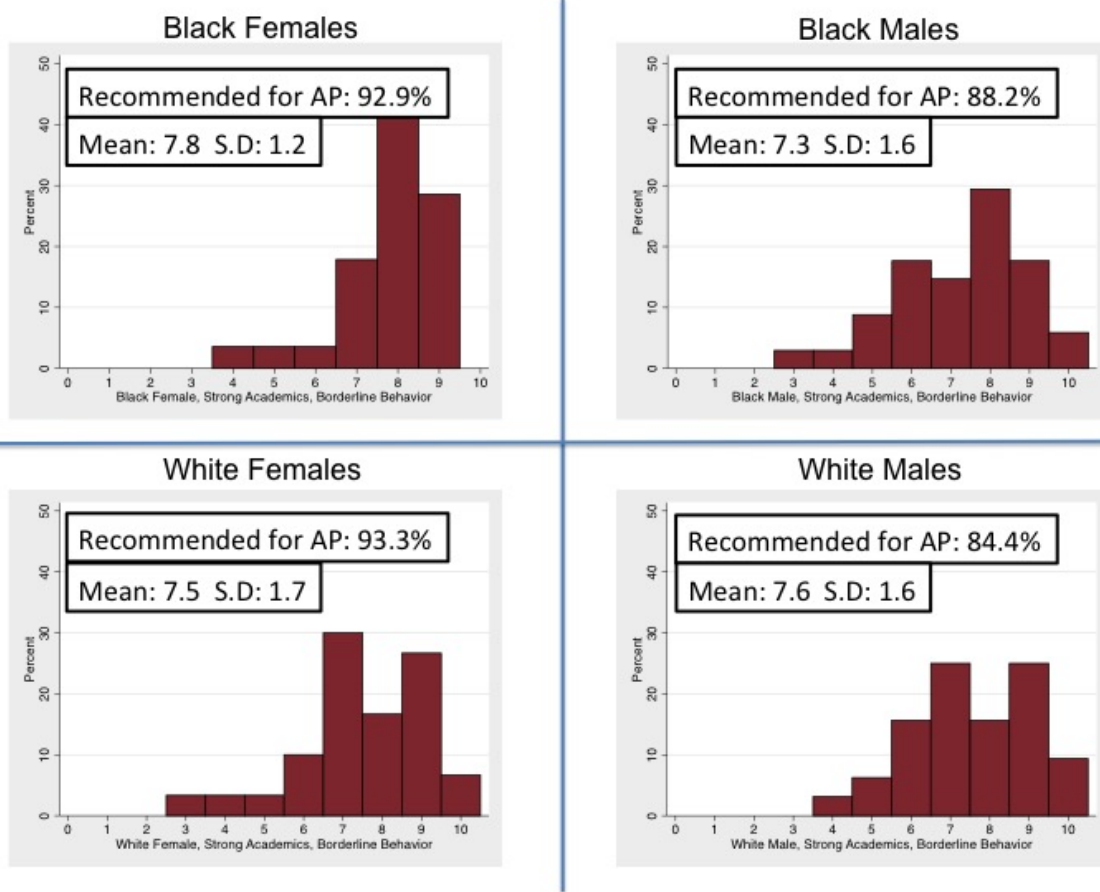


Figure A12: Preparation Score Distribution for Subgroup Evaluations of Strong Academics, Borderline Behavior Profile



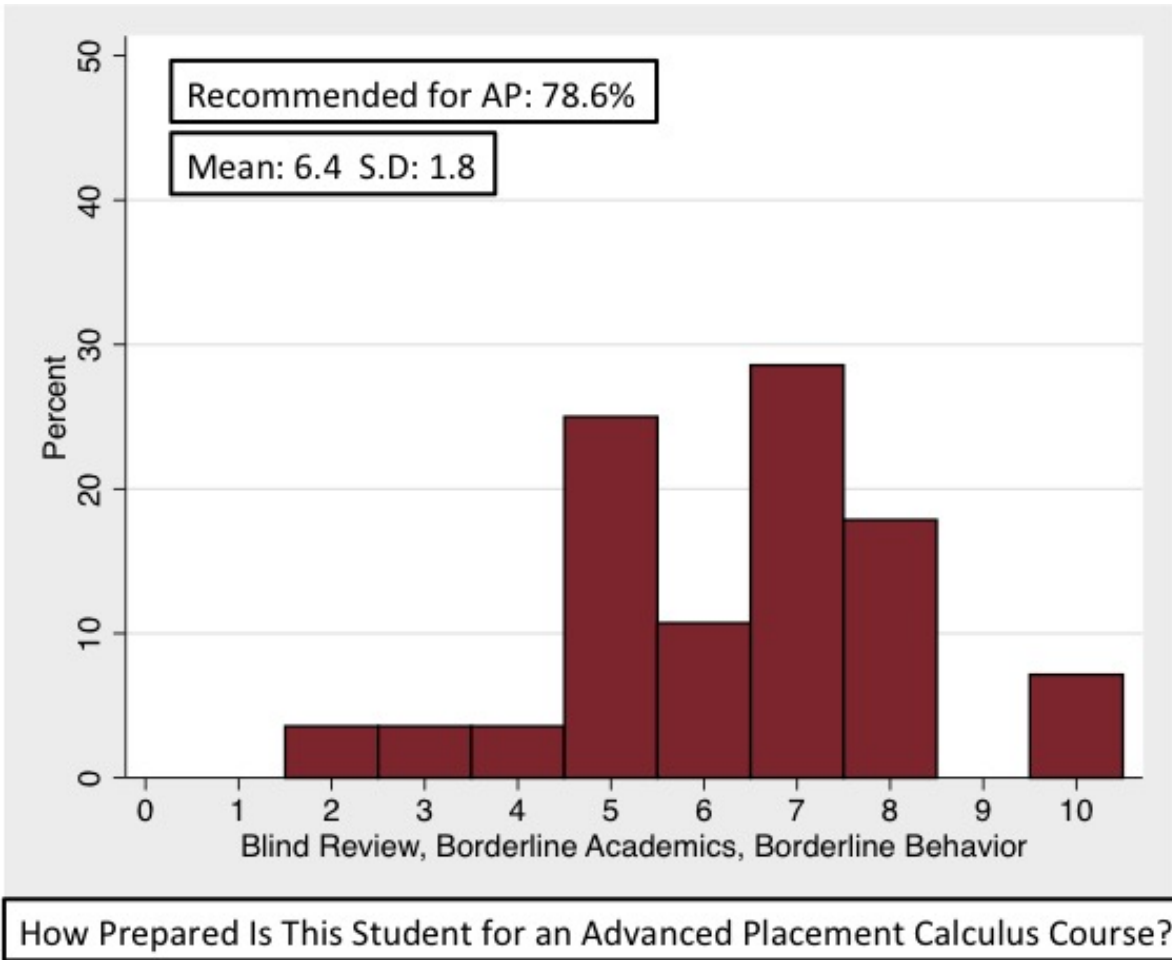
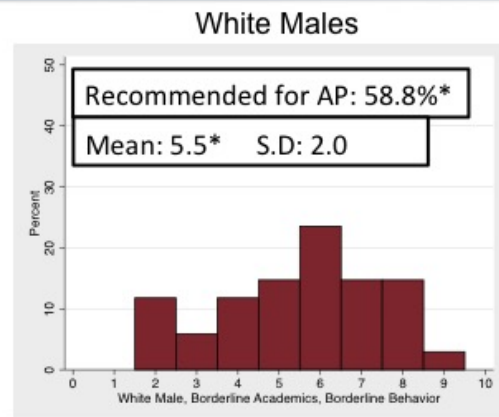
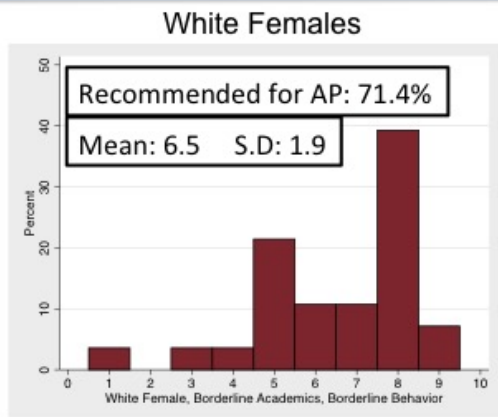
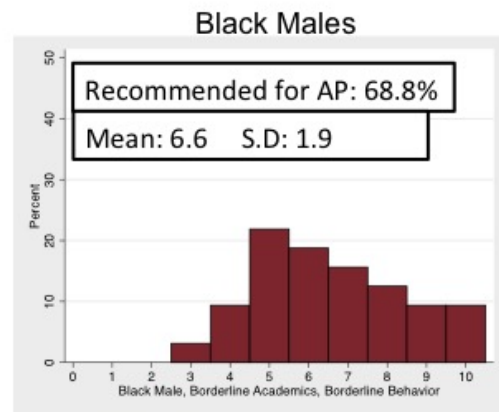
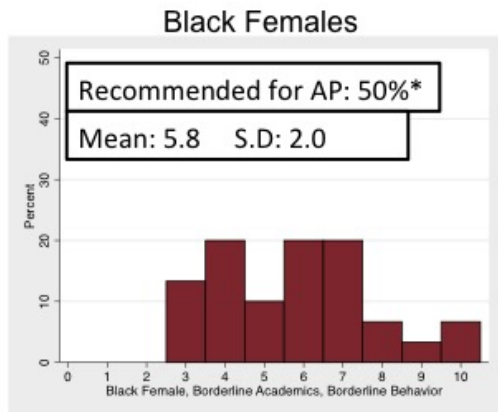


Figure A13: Preparation Score Distribution for Blind Evaluation of Borderline Academics, Borderline Behavior Profile



Note: Significant difference from corresponding values for the blinded transcript indicated by \*  $p < 0.1$ .

Figure A14: Preparation Score Distribution for Subgroup Evaluations of Borderline Academics, Borderline Behavior Profile

Table A1: Likelihood of Recommendation for AP Calculus by Race/Gender of Transcript Holder  
- Full Sample

	Pooled	SASB	BASB	SABB	BABB
Black Female	-0.087** (0.0346)	-0.212*** (0.0155)	0.0832*** (0.0167)	0.0865*** (0.0181)	-0.140*** (0.0149)
White Female	-0.023 (0.0347)	-0.0285 (0.0167)	0.0877*** (0.0165)	-0.0809** (0.0184)	0.0511** (0.0166)
Black Male	-0.024 (0.0345)	-0.0249 (0.0138)	0.0459* (0.0172)	-0.0550** (0.0161)	0.0382* (0.0160)
White Male	-0.026 (0.0346)	-0.0197 (0.00934)	0.0462** (0.0144)	-0.0151 (0.0219)	-0.104*** (0.0116)
Constant	0.485** (0.694)	0.756*** (0.163)	0.340 (0.188)	0.663** (0.149)	0.183 (0.256)
Controls?	Yes	Yes	Yes	Yes	Yes
Observations	268	268	268	268	268
R-squared	-	0.167	0.130	0.145	0.167

Controls include: Counselor is Female, Counselor is Black, Counselor is Hispanic, Baseline Transcript 1 and Baseline Transcript 2  
Robust standard errors clustered at the survey batch level in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table A2: Preparedness Rating by Race/Gender of Transcript Holder - Full Sample

	Pooled	SASB	BASB	SABB	BABB
Black Female	-0.626*** (0.1902)	-1.650*** (0.0499)	0.304*** (0.0424)	0.00143 (0.0209)	-0.566*** (0.0368)
White Female	-0.176 (0.1903)	-0.0755 (0.0425)	-0.0374 (0.0828)	-0.464*** (0.0276)	0.158*** (0.0162)
Black Male	-0.146 (0.1901)	-0.235*** (0.0341)	0.0606*** (0.0129)	-0.664*** (0.0386)	0.650*** (0.0556)
White Male	-0.2470 (0.1902)	-0.193*** (0.0200)	0.0936*** (0.0124)	0.185** (0.0441)	-0.590*** (0.0605)
Constant	3.065*** (0.417)	4.180*** (0.587)	1.936*** (0.339)	4.231*** (0.648)	1.326* (0.622)
Controls	Yes	Yes	Yes	Yes	Yes
Observations	268	268	268	268	268
R-squared	-	0.404	0.257	0.228	0.400

Robust standard errors clustered at the survey batch level in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Controls include: Counselor is Female, Counselor is Black, Counselor is Hispanic, Baseline Transcript 1 and Baseline Transcript 2

Table A3: Likelihood of Recommendation for AP Calculus by Race/Gender of Transcript Holder  
- No Baseline Transcript Controls

	SASB	BASB	SABB	BABB
Black Female	-0.233*** (0.0280)	-0.139*** (0.00406)	0.0107 (0.00507)	-0.292*** (0.0111)
White Female	-0.0135 (0.0181)	-0.132*** (0.00830)	-0.0109 (0.00824)	-0.0455** (0.0101)
Black Male	-0.0148 (0.0175)	-0.0443*** (0.00672)	-0.0624*** (0.00725)	-0.0923*** (0.0135)
White Male	-0.0320*** (0.00350)	-0.0806*** (0.0121)	-0.0892*** (0.00946)	-0.227*** (0.0186)
Constant	1.012*** (0.0164)	0.880*** (0.132)	1.034*** (0.0263)	0.795*** (0.0799)
Controls?	Yes	Yes	Yes	Yes
Observations	152	152	152	152
R-squared	0.212	0.053	0.071	0.079

Robust standard errors clustered at the survey batch level in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Controls include: Counselor is Female, Counselor is Black, Counselor is Hispanic

Table A4: Preparedness Rating by Race/Gender of Transcript Holder - No Baseline Transcript Controls

	SASB	BASB	SABB	BABB
Black Female	-1.591*** (0.115)	-0.0140 (0.0716)	0.267*** (0.0305)	-0.511*** (0.0750)
White Female	-0.00148 (0.0506)	-0.579*** (0.0647)	-0.0553 (0.0338)	0.335*** (0.0442)
Black Male	0.302*** (0.0455)	0.237** (0.0769)	-0.292*** (0.0569)	0.318*** (0.0655)
White Male	0.107* (0.0410)	-0.0256 (0.0575)	0.0625 (0.0486)	-0.921*** (0.0437)
Constant	8.263*** (0.246)	6.516*** (0.375)	7.745*** (0.297)	6.229*** (0.454)
Controls	Yes	Yes	Yes	Yes
Observations	152	152	152	152
R-squared	0.238	0.059	0.046	0.100

Robust standard errors clustered at the survey batch level in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Controls include: Counselor is Female, Counselor is Black, Counselor is Hispanic

Table A5: Likelihood of Recommendation for AP Calculus by Race/Gender of Transcript Holder  
- Duration Controls

	SASB	BASB	SABB	BABB
Black Female	-0.200*** (0.0102)	-0.0674*** (0.00767)	0.0338** (0.0110)	-0.233*** (0.00767)
White Female	0.0118 (0.00998)	-0.0675*** (0.0120)	-0.00107 (0.00925)	0.0360* (0.0167)
Black Male	-0.00428 (0.00849)	-0.0150 (0.0140)	-0.0359** (0.00885)	0.0367 (0.0202)
White Male	-0.0230 (0.0115)	-0.0629** (0.0144)	-0.0510** (0.0136)	-0.0906** (0.0249)
Duration (seconds)	-1.38e-06 (5.51e-05)	0.000276 (0.000275)	8.51e-05 (0.000289)	-0.000373 (0.000273)
Constant	0.797*** (0.141)	0.358 (0.296)	0.875*** (0.146)	0.253 (0.437)
Controls	Yes	Yes	Yes	Yes
Observations	152	152	152	152
R-squared	0.249	0.156	0.124	0.261

Robust standard errors clustered at the survey batch level in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Controls include: Counselor is Female, Counselor is Black, Counselor is His-panic, Baseline Transcript 1 and Baseline Transcript 2

Table A6: Preparedness Rating by Race/Gender of Transcript Holder - Duration Controls

	SASB	BASB	SABB	BABB
Black Female	-1.372*** (0.107)	0.0856 (0.0873)	0.232** (0.0523)	-0.641*** (0.0625)
White Female	0.0572 (0.0449)	-0.292** (0.103)	-0.0853* (0.0387)	0.183** (0.0499)
Black Male	0.248** (0.0654)	0.103 (0.0803)	0.00975 (0.0927)	0.510*** (0.0175)
White Male	0.0672 (0.0470)	-0.163 (0.0835)	0.160** (0.0471)	-0.399*** (0.0388)
Duration (seconds)	-1.61e-05 (0.00102)	0.000800 (0.00134)	-0.00143* (0.000630)	-0.00141 (0.000809)
Constant	4.557*** (0.450)	1.711 (0.827)	4.843*** (1.032)	1.011* (0.441)
Controls	Yes	Yes	Yes	Yes
Observations	152	152	152	152
R-squared	0.461	0.361	0.249	0.498

Robust standard errors clustered at the survey batch level in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Controls include: Counselor is Female, Counselor is Black, Counselor is His-panic, Baseline Transcript 1 and Baseline Transcript 2

Table A7: Likelihood of Recommendation for AP Calculus by Race/Gender of Transcript Holder  
- Duration Split Sample

Panel A - Above Median Survey Completion Time				
	SASB	BASB	SABB	BABB
Black Female	-0.303** (0.0663)	-0.0331 (0.0630)	0.155*** (0.0174)	-0.421*** (0.0508)
White Female	-0.0607 (0.0787)	-0.129* (0.0564)	0.118** (0.0330)	-0.116** (0.0360)
Black Male	-0.0848 (0.0718)	-0.0349 (0.0249)	0.0693 (0.0326)	-0.0566 (0.0860)
White Male	-0.0391 (0.0348)	-0.0782 (0.0570)	0.0731 (0.0443)	-0.175* (0.0812)
Constant	0.716** (0.250)	0.655* (0.304)	1.135*** (0.122)	0.349 (0.479)
Controls	Yes	Yes	Yes	Yes
Observations	77	77	77	77
R-squared	0.461	0.182	0.142	0.283
Panel B - Below Median Survey Completion Time				
	SASB	BASB	SABB	BABB
Black Female	-0.127** (0.0320)	-0.105* (0.0389)	0.0172 (0.0248)	-0.139*** (0.0118)
White Female	0.0379 (0.0469)	0.00535 (0.0173)	-0.0273 (0.0332)	0.158*** (0.0329)
Black Male	0.00472 (0.00965)	0.00278 (0.0330)	-0.0382 (0.0203)	0.0388 (0.0405)
White Male	-0.0530 (0.0542)	-0.105* (0.0474)	-0.0983*** (0.0206)	-0.0829 (0.0394)
Constant	1.106*** (0.0742)	0.441 (0.633)	0.636 (0.462)	-0.0739 (0.169)
Controls	Yes	Yes	Yes	Yes
Observations	75	75	75	75
R-squared	0.164	0.226	0.348	0.303

Robust standard errors clustered at the survey batch level in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Controls include: Counselor is Female, Counselor is Black, Counselor is His-panic, Baseline Transcript 1 and Baseline Transcript 2

Table A8: Preparedness Rating by Race/Gender of Transcript Holder - Duration Split Sample

Panel A - Above Median Survey Completion Time				
	SASB	BASB	SABB	BABB
Black Female	-1.963*** (0.218)	0.582** (0.194)	0.405*** (0.0683)	-1.039*** (0.116)
White Female	-0.0638 (0.189)	-0.613** (0.204)	-0.184 (0.153)	0.280*** (0.0584)
Black Male	-0.248 (0.162)	0.278** (0.0975)	0.255 (0.189)	0.651*** (0.120)
White Male	0.0860 (0.106)	-0.1000 (0.167)	0.311* (0.132)	-0.443* (0.160)
Constant	4.173*** (0.778)	1.155 (1.267)	2.758*** (0.594)	-0.435 (0.406)
Controls	Yes	Yes	Yes	Yes
Observations	77	77	77	77
R-squared	0.654	0.479	0.375	0.623
Panel B - Below Median Survey Completion Time				
	SASB	BASB	SABB	BABB
Black Female	-0.864*** (0.141)	-0.129 (0.174)	0.468** (0.151)	-0.284 (0.230)
White Female	-0.0834 (0.0986)	0.211 (0.234)	0.121 (0.215)	0.114 (0.177)
Black Male	0.537** (0.158)	-0.0478 (0.0969)	-0.111 (0.148)	0.466** (0.108)
White Male	-0.197*** (0.0364)	-0.288 (0.144)	0.0970* (0.0451)	-0.359*** (0.0709)
Constant	4.924** (1.251)	2.801 (1.454)	6.075** (1.447)	1.669 (0.819)
Controls	Yes	Yes	Yes	Yes
Observations	75	75	75	75
R-squared	0.325	0.317	0.240	0.417

Robust standard errors clustered at the survey batch level in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
Controls include: Counselor is Female, Counselor is Black, Counselor is Hispanic, Baseline Transcript 1 and Baseline Transcript 2