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Does Self-Stereotyping Affect Performance on the ACT Assessment?

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Abstract

Self-stereotyping, defined as the activation of stereotypes about oneself because of membership in a particular group, has been shown, in certain situations, to enhance or diminish cognitive performance. This study examined the effects of asking African American and Caucasian American high school juniors to indicate their race/ethnicity at selected times before taking the ACT Assessment. The selected times included two weeks before testing and right before testing. Previous studies suggested that African American students would have diminished performance and that Caucasian American students would have enhanced performance if they were reminded of their race/ethnicity before testing. No significant differences in ACT scores were found between experimental groups who were asked their race/ethnicity before testing and control groups asked their race/ethnicity only after testing.

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Does Self-Stereotyping Affect Performance on the ACT Assessment?

Self-stereotyping, defined as the activation of stereotypes about oneself that alter cognitive performance (Levy, 1996), has been examined in several recent studies (Steele & Aronson, 1995; Levy, 1996; Shih, Pittinsky, & Ambady, 1999). Findings in these studies have indicated that self-stereotyping can occur in many populations and can result in either enhanced or diminished performance on cognitive tasks. Enhanced performance was documented when elderly subjects were exposed to positive facts about the elderly before performing a memory task, and diminished performance was documented when the same group was exposed to negative facts (Levy, 1996). Shih, Pittinsky, and Ambady (1999) found that performance by Asian-American women on a mathematics test was enhanced when they were given reminders of their Asian heritage, and was diminished when presented with facts reminding them of their gender.

A series of studies by Steele and Aronson (1995) focused on negative self-stereotyping, referred to as stereotype threat, which is defined as "the discomfort targets feel when they are at risk of fulfilling a negative stereotype about their group" (Swim & Stangor, p. 85, 1998). This discomfort has been reported to interfere with an individual's ability to perform cognitive tasks. Steele and Aronson (1995) found that African American college students' performance on a difficult verbal test was lower, as compared to the performance of Caucasian American students, on the same test when both groups were told the test was a measure of their academic ability. However, when African American subjects were told the test was a measure of problem solving skills, their performance was similar to the performance of Caucasian American students. These

authors concluded that knowing a difficult test measured academic ability was a precursor to stereotype threat for African American subjects.

A subsequent study by Steele and Aronson (1995) examined the effects of priming as a means of inducing stereotype threat and, consequently, affecting performance. "Priming" is exposure to a stimulus, sometimes without awareness, that may alter subsequent behavior. An example of priming on race would involve asking subjects to indicate their race before asking them to perform a task. The authors hypothesized that priming on race prior to taking an academic test would diminish performance even if the test was *not* measuring ability because it would prompt stereotype threat. Results of this study indicated that African American subjects who were primed on race had diminished performance on a difficult verbal test even when they thought the test was assessing only their problem solving skills. In contrast, African American subjects who were *not* primed performed as well on the verbal test as primed and non-primed Caucasian American subjects.

Results of these studies suggest that ability evaluation, task difficulty, and priming can be precursors to stereotype threat. These precursors are, to varying degrees, part of the situational features of standardized tests that, like the ACT Assessment, are designed to assess academic achievement, include difficult items, and incorporate procedures that may present an opportunity for priming. For example, an item in the *Student Profile Section* of the ACT Assessment asks students to identify their race/ethnicity. Therefore, performance on the ACT Assessment could (theoretically) be diminished for certain groups or enhanced for other groups due to possible effects of self-stereotyping.

This study investigated the potential effects of asking race/ethnicity at selected times prior to testing on the ACT Assessment. To examine possible self-stereotyping in relation to the

ACT Assessment, certain alterations were made to the protocols followed in other studies. Previous studies were conducted on students in laboratory settings. To make this study as realistic as possible, the actual ACT Assessment testing environment was simulated and procedures were followed as closely as possible. Consequently, the assessment of academic achievement and the inclusion of items with varying difficulty levels could not be manipulated—they are inherent to the ACT Assessment, and *all* examinees are aware of these facts. However, the timing of asking students to provide their race/ethnicity was manipulated.

Method

Sampling

A random sample of 207 schools in which the African American and Caucasian American average ACT Composite scores were 16 or above was drawn from a file created from the 1996 ACT Assessment graduating class data files and from a file containing high school characteristics created by Market Data Retrieval, Inc. (MDR) of Westport, Connecticut. Schools were selected that had average ACT Assessment scores of 16 or higher for both African Americans and Caucasian Americans to increase the probability that participants would have taken college-preparatory coursework (Laing, J., Engen, H.B., & Maxey, J., 1987) and, therefore, might be actual candidates for college. From this group, 140 schools were selected that had similar numbers of African American and Caucasian American students taking the ACT Assessment in 1995-96. The sample was designed to ensure that it included schools with varying enrollment sizes and schools representing a variety of ACT-tested states. Even though steps were taken to make this sample as representative as possible, this was not a true probability sample of the entire ACT-tested population.

Each of the 140 selected schools was invited to participate in the study. The first 30 schools that responded were retained as the final participant group. In the fall of 1997, contact people at the 30 schools were sent reminder letters, a confirmation form to reaffirm their intent to participate, a fact sheet about the study, and a signup sheet for students. Twenty-four schools responded, reaffirmed their intent to participate, and returned completed student sign-up sheets. Data from two of the 24 participating schools were excluded because of administration problems, leaving usable data from 22 schools.

Demographics of Participating Schools

Table 1 on the following page is a demographic profile of the 22 participating schools.

Geographic Location. 3 schools – Alabama, 2 schools – Illinois, 6 schools – Louisiana, 1 school – Michigan, 5 schools – Mississippi, and 5 schools - Ohio

School Enrollment. Enrollment sizes ranged from 385 to 1,761 students. Seven schools had fewer than 1,100 enrolled students; nine schools ranged in enrollment from 1,100 to 1,300 students; and six schools had more than 1,300 enrolled students.

District Enrollment. The district enrollment sizes ranged from 1,200 to greater than 24,999 students. More than half of the schools (13) were from districts with enrollments in the middle size range of 2,500 to 9,999. Of the remaining schools, one was from a district with a size of 1,200 to 2,499; two were from districts with enrollments of 10,000 to 24, 999; and six schools were from districts with enrollments greater than 24,999.

Community Type. 9 schools - rural, 4 schools - suburban, 9 schools - urban

Poverty Level (defined as the percent receiving reduced-price lunches by district). 15 schools – greater than 25% (which is the highest poverty level); 6 schools - 12% to 25%; and 1 school - 5% to 12%

Table 1
Demographics of Participating Schools

School code	Total enrollment size[1]	District size[1]	Rural/urban status[1]	District poverty level[1]	Percentage of students taking the ACT Assessment in 1996 (African American/Caucasian American)
Alabama					
AL01	859	2,500-4,999	Urban[2]	>25%	68/23
AL02	752	5,000-9,999	Urban	12-24%	28/61
AL03	1192	2,500-4,999	Suburban	12-24%	35/54
Illinois					
IL01	1426	2,500-4,999	Urban	12-24%	36/41
IL02	1256	5,000-9,999	Suburban	>25%	43/46
Louisiana					
LA01	1162	>24,999	Urban	12-24%	49/44
LA02	703	2,500-4,999	Rural	>25%	38/55
LA03	957	5,000-9,999	Rural	>25%	31/59
LA04	385	10,000-24,999	Rural	>25%	54/31
LA05	1139	10,000-24,999	Rural	>25%	53/27
LA06	1233	>24,999	Urban	>25%	36/56
Michigan					
MI01	1447	>24,999	Urban	>25%	48/26
Mississippi					
MS01	585	1,200-2,499	Rural	>25%	59/37
MS02	1385	5,000-9,999	Rural	>25%	33/58
MS03	1279	5,000-9,999	Rural	>25%	67/23
MS04	1237	5,000-9,999	Rural	12-24%	44/48
MS05	615	2,500-4,999	Rural	N/A	54/32
Ohio					
OH01	1290	>24,999	Suburban	>25%	26/64
OH02	1136	2,500-4,999	Suburban	5-12%	48/46
OH03	1761	>24,999	Urban	>25%	83/17
OH04	1336	5,000-9,999	Urban	>25%	20/67
OH05	1328	>24,999	Urban	12-24%	44/38

[1]As reported in the Market Data Retrieval file (MDR)
[2]As reported by the school

Racial Balance. The racial balance of each school was estimated using data provided by 1996 ACT-tested students. (Because of the initial selection procedures, only the African American and Caucasian American representation was considered.) Fourteen of the 22 schools were within 20% of having an equal representation of African American students and Caucasian American students (i.e., between 30% and 70% were African American and between 30% and 70% were Caucasian American). With the exception of one school for which African American and Caucasian American percentages were 83% to 17%, respectively, the seven other schools had African American and Caucasian American percentages ranging from 22% to 78%.

Subjects

All college-bound juniors from the 22 participating schools who had not yet taken the ACT Assessment were asked by school staff to take an ACT Practice Test. From this group, 1,107 high school juniors volunteered to take the ACT Assessment Practice Test. Participating students were randomly assigned to one of four experimental groups.

Experimental Design

This study used a 2 x 3 x 4 factorial design for each test (Reading and Mathematics). The factors were student race/ethnicity (African American or Caucasian American), community type (urban, suburban, and rural), and levels of race priming. Community type was included to examine the potential effects of an imbalance in cell size for certain schools. Race priming levels included 1) students asked to indicate race on a questionnaire of demographics both two weeks prior to testing and right before testing, 2) students asked to indicate race on a questionnaire of demographics only right before taking the test, 3) students asked to indicate race on a questionnaire of demographics only two weeks prior to test administration, and 4) students asked to indicate race only after testing. Groups 1, 2, and 3 were considered to be race primed. Group

4 students who received the race/ethnicity question *only* on the questionnaire after the Practice Test were considered not primed. Because of the procedure selected to administer these questionnaires, Group 1 received the racial/ethnic question twice before testing.

Materials

The Reading and Mathematics tests from a retired form of the ACT Assessment were administered as the Practice Test. These tests were printed in a manner to physically resemble ACT Assessment booklets.

Questionnaires 1 and 2 (see Appendix) were developed to be administered before testing to prime students on race/ethnicity. For both questionnaires, the race/ethnicity question and four other items were selected from the *Student Profile Section* (SPS) of the ACT Assessment. Other than the race/ethnicity item, items were selected for their neutral content with respect to self-stereotyping. For instance, a question concerning distance of school from a student's home was included, but a question asking a student's gender was not included.

Two separate forms were developed for both questionnaires 1 and 2. Form one of both questionnaires included the race/ethnicity SPS question along with four other SPS questions. Form two of both questionnaires contained all questions on the first form *except* the race/ethnicity question.

To determine the race/ethnicity of the students who did not answer a race/ethnicity question before testing, questionnaire 3 (see Appendix) was developed to administer after testing. Only one form was developed for questionnaire 3; it contained the SPS race/ethnic question and other questions developed for this study including an estimate of overall GPA.

Administration Procedure

Schools recruited a test supervisor and additional proctors if needed to accommodate the number of students tested. A supervisor's manual (an edited version of the *ACT Assessment Supervisor's Manual)* was sent to each school's supervisor, who distributed copies to the proctors in schools where additional help was needed.

To simulate actual ACT Assessment registration procedures, questionnaire 1 was administered to participating students two to three weeks before the actual test date. Questionnaires were alternately stacked by type of form; every other questionnaire contained a race/ethnicity question. School personnel were instructed to have students take the top form as they arrived to register for the Practice Test to randomize race priming. Students who completed a form with the race question were considered to have been race primed two weeks prior to testing. Upon completion of questionnaire 1, students were given an admission slip for the Practice Test.

The Practice Test booklets contained questionnaires 2 and 3. Questionnaire 2 was to be completed immediately prior to testing and questionnaire 3 was to be completed immediately after testing. Practice Test booklets were alternately stacked by the form type of questionnaire 2, with every other booklet containing a race/ethnicity question. After all students were seated, the forms were distributed to each student attending the Practice Test. Filling out a form containing a race question on questionnaire 2 constituted priming on race right before the test.

All other ACT Assessment testing procedures were followed. Upon completion of the Practice Test, all students filled out questionnaire 3. Students who received the race/ethnicity question *only* on questionnaire 3 were considered *not* primed.

Data Analysis

Descriptive statistics were calculated by school on all variables in the study. Average Practice Test scores were compared to 1997 ACT Assessment scores for each school. Mean test score differences between priming levels, race, community type, and interactions with the priming levels were examined using 4 (priming levels) x 2 (race/ethnicity) x 3 (community type) ANOVAs with Mathematics and Reading scores as dependent variables. Results were used to examine differences in priming effects for African Americans and Caucasian Americans.

Results

A total of 1,107 students from 22 schools participated in all stages of the study (i.e., completed questionnaires two weeks before testing, right before testing, and immediately after testing). Of these 1,107 students, 1,032 indicated their race/ethnicity on questionnaire 3, with 475 selecting Caucasian American and 557 selecting African American. Due to missing test scores, only 1,030 of these 1,032 students were included in the analyses.

Average Scores and Mean Differences by Schools

Table 2 contains average ACT Practice Test scores, average ACT Assessment scores for the 1997 graduating class, and differences between those scores for African American students and Caucasian American students by school. The purpose of comparing these scores was to determine whether the students taking the Practice Test were similar to the typical students who had taken the ACT Assessment at these schools in the past. Average ACT scores from the *ACT High School Profile Report* for the 1997 High School Graduating Class for each school were used for these comparisons.

Caucasian American students had lower average Mathematics scores on the Practice Test compared to the 1997 ACT Assessment for 14 of the 22 schools, and lower average Practice Test

Table 2
Average Scores and Mean Differences by School

School Code	Average Mathematics score 1997 ACT Assessment		Average Mathematics score ACT Practice Test		Average Reading score 1997 ACT Assessment		Average Reading score ACT Practice Test		Mean differences (Mathematics)		Mean differences (Reading)	
	Caucasian American (N)	African American (N)	Caucasian American (N)	African American (N)	Caucasian American (N)	African American (N)	Caucasian American (N)	African American (N)	ACT Assessment/ Practice Test difference for African Americans	ACT Assessment/ Practice Test difference for Cauc. Americans	ACT Assessment/ Practice Test difference for African Americans	ACT Assessment/ Practice Test difference for Cauc. Americans
Alabama												
AL01	20.8 (13)	16.8 (38)	22.5 (2)	13.9 (26)	21.4 (13)	16.5 (38)	25.5 (2)	15.5 (25)	2.9	-1.7	1.0	-4.1
AL02	23.2 (47)	17.2 (34)	24.0 (36)	18.5 (14)	23.1 (47)	16.4 (34)	24.9 (36)	19.0 (14)	-1.3	-0.8	-2.6	-1.8
AL03	22.8 (53)	17.5 (40)	21.1 (29)	16.9 (23)	25.0 (53)	17.7 (40)	22.3 (28)	17.1 (23)	0.6	1.7	0.6	2.7
Illinois												
IL01	20.8 (48)	17.4 (58)	21.2 (11)	18.0 (6)	20.7 (48)	17.1 (58)	23.5 (11)	18.5 (6)	-0.6	-0.4	-1.4	-2.8
IL02	20.0 (41)	16.7 (23)	20.5 (24)	16.9 (20)	18.9 (41)	18.2 (23)	21.0 (24)	15.1 (20)	-0.2	-0.5	3.1	-2.1
Louisiana												
LA01	19.7 (57)	17.4 (72)	21.2 (5)	18.3 (12)	20.0 (57)	16.2 (72)	23.4 (5)	18.2 (12)	-0.9	-1.5	-2.0	-3.4
LA02	20.3 (38)	15.1 (35)	18.6 (25)	17.5 (6)	19.7 (38)	14.8 (35)	18.9 (25)	16.5 (6)	-2.4	1.7	-1.7	0.8
LA03	19.6 (102)	16.4 (62)	16.7 (23)	15.3 (26)	21.1 (102)	16.8 (62)	20.0 (23)	17.0 (26)	1.1	2.9	-0.2	1.1
LA04	19.3 (26)	17.7 (23)	15.7 (6)	17.3 (9)	17.6 (26)	18.4 (23)	19.7 (6)	18.6 (9)	0.4	3.6	-0.2	-2.1
LA05	18.7 (21)	16.2 (71)	16.4 (7)	16.3 (24)	20.4 (21)	16.3 (71)	20.4 (7)	18.1 (24)	-0.1	2.3	-1.8	0.0
LA06	20.2 (89)	15.9 (41)	21.0 (52)	17.2 (13)	21.3 (89)	15.1 (41)	21.0 (52)	16.6 (13)	-1.3	-0.8	-1.5	0.3
Michigan												
MI01	20.8 (42)	17.4 (54)	17.9 (10)	15.6 (26)	21.2 (42)	17.4 (54)	16.6 (10)	17.4 (26)	1.8	2.9	0.0	4.6

Table 2 (cont'd)
Average Scores and Mean Differences by School

School Code	Average Mathematics score 1997 ACT Assessment		Average Mathematics score ACT Practice Test		Average Reading score 1997 ACT Assessment		Average Reading score ACT Practice Test		Mean differences (Mathematics)		Mean differences (Reading)	
	Caucasian American (N)	African American (N)	Caucasian American (N)	African American (N)	Caucasian American (N)	African American (N)	Caucasian American (N)	African American (N)	ACT Assessment/ Practice Test difference for African Americans	ACT Assessment/ Practice Test difference for Cauc. Americans	ACT Assessment/ Practice Test difference for African Americans	ACT Assessment/ Practice Test difference for Cauc. Americans
Mississippi												
MS01	17.3 (15)	15.8 (35)	17.0 (21)	14.7 (35)	19.5 (15)	16.6 (35)	19.4 (21)	15.3 (35)	1.1	0.3	1.3	0.1
MS02	21.7 (68)	18.5 (48)	16.6 (10)	15.5 (37)	22.6 (68)	19.6 (48)	17.5 (10)	16.4 (37)	3.3	5.1	3.2	5.1
MS03	17.4 (32)	16.0 (96)	16.3 (7)	15.5 (23)	19.2 (32)	17.4 (96)	21.1 (7)	16.2 (23)	-0.5	1.9	1.2	-1.9
MS04	20.2 (84)	16.4 (90)	18.2 (17)	14.6 (21)	22.4 (84)	16.6 (90)	19.1 (17)	15.5 (21)	3.1	2.0	1.1	3.3
MS05	20.0 (47)	16.4 (68)	18.4 (14)	15.2 (45)	21.7 (47)	15.8 (68)	19.1 (14)	15.8 (45)	1.2	1.6	0.0	2.6
Ohio												
OH01	21.1 (94)	18.8 (49)	22.0 (100)	16.1 (50)	24.2 (94)	19.9 (49)	23.0 (100)	17.6 (50)	2.7	-0.9	2.3	1.2
OH02	20.9 (38)	17.6 (65)	18.2 (31)	16.0 (59)	23.2 (38)	18.4 (65)	19.5 (31)	15.7 (59)	1.6	2.7	2.7	3.7
OH03	19.0 (14)	17.8 (91)	16.0 (6)	15.6 (52)	18.3 (14)	17.0 (91)	18.0 (6)	15.1 (52)	2.2	3.0	2.9	0.0
OH04	20.2 (73)	17.3 (32)	19.9 (27)	16.4 (13)	21.4 (73)	18.8 (32)	20.1 (27)	16.7 (13)	0.9	0.3	2.1	1.0
OH05	20.2 (30)	16.7 (43)	22.0 (12)	16.5 (17)	22.2 (30)	17.4 (43)	23.7 (12)	16.9 (17)	0.2	-1.8	0.5	-2.0
Overall Weighted Averages	20.4 (1072)	16.9 (1168)	20.1 (475)	15.9 (557)	22.0 (1072)	17.1 (1168)	21.2 (474)	16.4 (556)	1.00	.30	.70	.80

Reading scores in 12 of the 22 schools. African American students also had lower average scores on the Mathematics Practice Test than on the 1997 ACT Assessment Mathematics test in 14 of 22 schools. However, average Reading scores on the Practice Test were the same or higher than the Reading scores on the 1997 ACT Assessment for 11 of the 22 schools.

The ACT Practice Test was administered to first-semester juniors, whereas, the majority of students included in *1997 ACT High School Profile Report* were seniors or second-semester juniors. Given that students taking the Practice Test had less exposure to coursework, it would be expected that scores on the Practice Test would be lower than the 1997 average ACT Assessment scores. This was not consistently the case. In some cases, the differences between 1997 ACT Assessment scores and Practice Test scores were negative indicating that students taking the Practice Test scored higher than 1997 High School Graduating Class average ACT Assessment scores. However, the overall weighted average differences for the ACT Assessment minus the Practice Test for both African Americans and Caucasian Americans were equal to or less than one scale score unit.

Impact of Priming

There were no statistically significant differences among priming levels (two weeks before and right before, right before, two weeks before, and the not primed group), and no statistically significant interactions between priming levels and race/ethnicity or priming levels and community type for scores on either Mathematics ($F_{(3,1016)}=1.05$, $p < .3696$; $F_{(3,1016)}=1.14$, $p < .3321$; $F_{(6,1016)}=0.82$, $p < .5546$, respectively) or Reading ($F_{(3,1014)}=1.42$, $p < .2339$; $F_{(3,1014)}=0.47$, $p < .7033$; $F_{(6,1014)}=1.16$, $p < .3275$, respectively). The power of these tests would imply that the results are notable.

For Mathematics scores, there were statistically significant differences for race ($F_{(1,1016)}=281.20$, $p < .0001$) and for community type ($F_{(2,1016)}=31.84$, $p < .0001$). For Reading scores, there were also statistically significant differences for race ($F_{(1,1014)}=222.37$, $p < .0001$) and for community type ($F_{(2,1014)}=6.52$, $p < .001$).

Table 3 contains sample sizes, means, and standard deviations for the ACT Practice Test component scores. Relatively equal numbers of African American and Caucasian American students were included in the study. In addition, within racial/ethnic groups, there were moderately equal numbers. Sample sizes and mean ranges for GPA by priming levels were computed using self-reported ranges from questionnaire 3. GPA ranges were similar across prime levels within racial/ethnic group.

For African Americans, the predicted order of scores, from lowest to highest, of the four experimental groups was primed two weeks before and right before, primed right before, primed two weeks before, and not primed. Based on pairwise comparisons using REGWQ multiple comparison procedure, the obtained average scores for African Americans are shown in Figure 1. The different orders of the group outcomes across Mathematics and Reading are evident. For the Mathematics component, the average score for both the *right before* group and the *two weeks and right before* group was 15.6; in contrast, the average score for both the *two weeks before* and *not primed* groups was 16.1. The average scores for the *right before* and *two weeks before and right before* groups were .5 smaller than the *not primed* group.

In contrast, the average Reading score for African Americans in the *right before* group was 15.7; for the *two weeks and right before* group, 17.0; for the *two weeks before group,* 16.4; and for the *not primed* group, 16.7. The group primed twice before taking the test earned the highest average score, but the group primed only right before the test earned the lowest average score.

Table 3
Frequencies, Means, and Standard Deviation for Mathematics Scores, Reading Scores, and Self-Reported GPA by Prime Level and Racial/Ethnic Group

	Mathematics				Reading				GPA		
Racial/Ethnic Group Prime Levels & Totals	%	N	Mean	SD	%	N	Mean	SD	%	N	Mean Range
African American only											
1: 2 weeks and right before	24	133	15.6	3.4	24	133	17.0	4.4	24	132	2.47-2.88
2: right before	25	137	15.6	2.7	25	137	15.7	4.1	25	137	2.48-2.89
3: 2 weeks before	23	128	16.1	2.9	23	128	16.4	4.9	23	128	2.52-2.94
4: not primed	28	159	16.1	3.0	28	158	16.7	4.3	29	159	2.55-2.77
Totals	*54*	*557*	*15.9*	*3.0*	*54*	*556*	*16.4*	*4.4*	*54*	*556*	*2.51-2.92*
Caucasian American only											
1: 2 weeks and right before	26	123	19.7	5.5	26	123	21.3	5.5	26	123	2.91-3.35
2: right before	27	126	20.5	4.8	27	126	20.8	5.6	27	126	2.92-3.35
3: 2 weeks before	23	108	19.8	4.7	23	107	21.8	5.3	23	108	2.92-3.36
4: not primed	25	118	20.4	4.8	25	118	21.2	5.8	25	118	2.95-3.39
Totals	*46*	*475*	*20.1*	*4.7*	*46*	*474*	*21.2*	*5.6*	*46*	*475*	*2.92-3.36*
Caucasian American & African American											
1: 2 weeks & right before	25	256	17.6	4.4	25	256	19.0	5.4	25	255	2.68-3.11
2: right before	25	263	18.0	4.5	25	263	18.2	5.5	25	263	2.69-3.11
3: 2 weeks before	23	236	17.8	4.2	23	235	18.8	5.8	23	236	2.71-3.13
4: not primed	27	277	18.0	4.4	27	276	18.6	5.4	27	277	2.72-3.14
Totals	*100*	*1032*	*17.8*	*4.4*	*100*	*1030*	*18.6*	*5.5*	*100*	*1031*	*2.70-3.13*
All Racial/Ethnic groups											
1: 2 weeks and right before	25	274	17.5	4.3	25	274	18.9	5.3	25	273	2.68-3.11
2: right before	25	280	18.0	4.5	25	280	18.2	5.4	25	279	2.69-3.11
3: 2 weeks before	23	252	17.7	4.2	23	251	18.8	5.7	23	252	2.78-3.13
4: not primed	27	301	17.9	4.4	27	300	18.6	5.5	27	301	2.72-3.15
Totals	*100*	*1107*	*17.8*	*4.3*	*100*	*1105*	*18.6*	*5.5*	*100*	*1105*	*2.70-3.13*

Note: N-counts across tests and groups differ because of missing data.

Figure 1. ACT Practice Test sample means and standard errors for Mathematics and Reading for African American students.

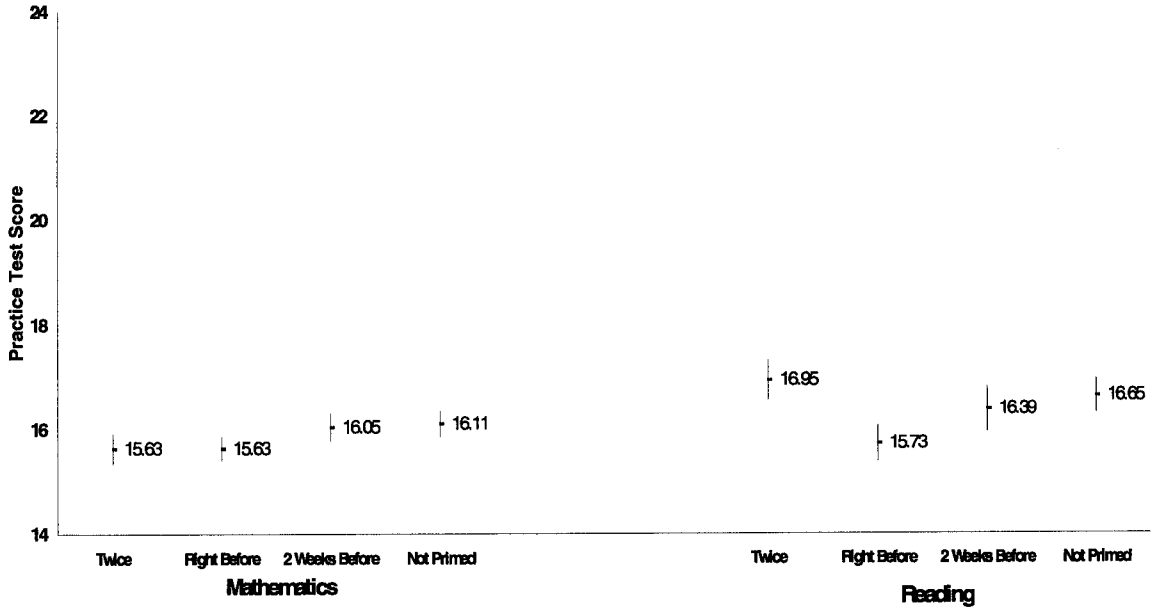
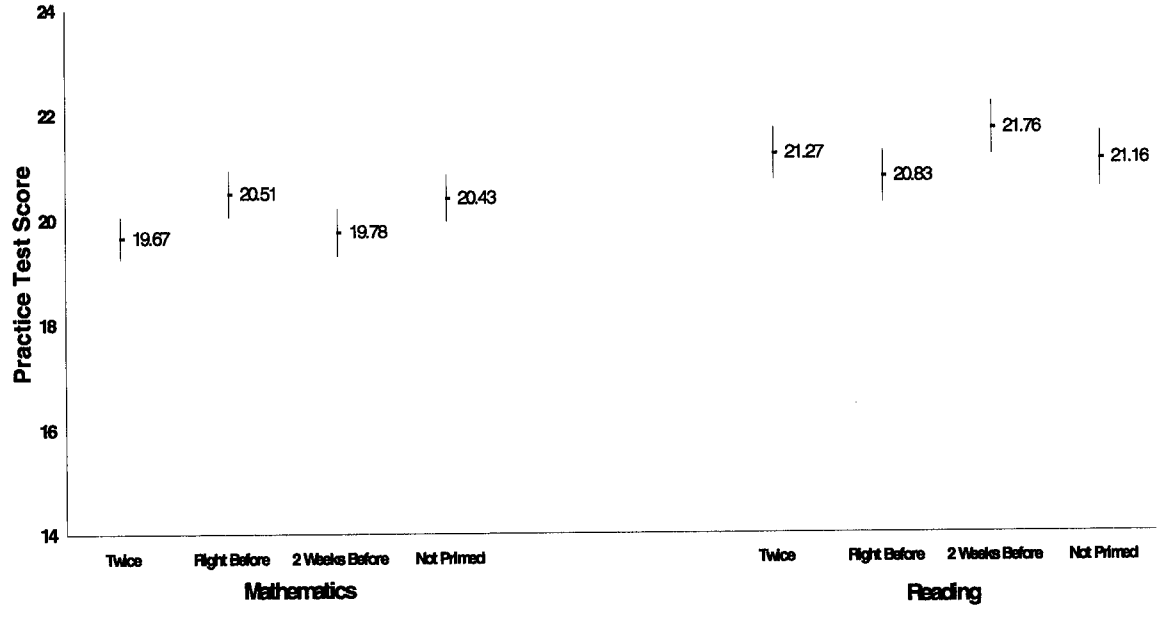


Figure 2. ACT Practice Test sample means and standard errors for Mathematics and Reading for Caucasian American students.



Given the same order of experimental groups (i.e., primed twice, primed right before, primed two weeks before, and not primed), the scores for Caucasian Americans were predicted to range from highest to lowest. A similar order reversal can be seen in Figure 2 for the Caucasian American scores. On the Mathematics component, the highest average scores were achieved by the *right before* and *not primed* groups (20.5 and 20.4, respectively). The two weeks and right before group (19.7) and the two weeks before group (19.8) obtained lower scores. In contrast, on the Reading component, the highest average score (21.8) was achieved by the *two weeks before* group, and the lowest score (20.8) was earned by the *right before* group.

Discussion

This study investigated the impact of asking students about their race/ethnicity before testing (race priming), which, in turn, could provoke stereotype threat effect (Steele & Aronson, 1995). The study also investigated whether the reverse effect (Levy, 1996) might be triggered by race priming; that is, whether some students might perform better after being primed on race. Findings from this study did not support either hypothesis.

On the Mathematics component of the ACT Practice Test, African Americans in the two groups primed right before the test had slightly lower average scores than the groups not primed right before the test; however, these scores were not statistically significantly lower. Furthermore, average scores on the Reading component had conflicting results, with the highest and lowest scores belonging to the two groups primed right before the test. Average scores on the Reading component were also not statistically significantly different for African Americans. Results for Caucasian American participants did not support the hypothesis of enhanced performance due to priming; no significant differences were found on either the Mathematics or Reading tests.

There were differences between this study and previous studies, which might account for the different findings. This study was in a setting similar to a real-world situation (i.e., an ACT Assessment test administration), whereas most previous studies were performed in laboratory settings. Ability evaluation was not manipulated in the present study; all participants knew they were taking an achievement test. Additionally, there was no manipulation of participants' "feelings" about their competence. These differences, or other unidentified factors, could have affected the results.

Overall, both African American and Caucasian American participants had scores on the Practice Test similar to scores earned by students from their schools who completed the ACT Assessment the previous year. All possible efforts were made to reproduce the exact testing environment of the ACT Assessment, but the one element not replicable was the high stakes nature of an ACT Assessment test. Participants were well aware that this was just a practice test.

There were additional differences between the Practice Test and taking the ACT Assessment. Even though staff contacts at the school were asked to recruit students to participate in the Practice Test, students who participated were volunteers. Also, participants took only two of the four ACT Assessment tests.

This study did not provide evidence to support the hypotheses about self-stereotyping and performance on the ACT Assessment. Such effects may exist in other situations or assessment conditions. However, simply asking one's race/ethnicity before testing does not appear to trigger effects from self-stereotyping.

References

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Appendix

Questionnaires 1, 2, and 3

Questionnaire 1 – With Race/Ethnicity Question

ACT Student Profile Questions
for
Participants in the ACT Practice Test

If you have signed up to take the ACT Practice test, please provide the following information.

Full Name (PLEASE PRINT): _____

Social Security Number: _____

For each of the following questions, circle the number next to your **ONE** best answer.

1. I plan to enroll in college as a
   - full-time student 1
   - part-time student 2

2. How long do you think it will take you to complete undergraduate college?
   - 4 years 1
   - 5 years 2
   - 6 or more years 3

3. How much time do you spend studying outside of class?
   - 0-2 hours per week 1
   - greater than 2, but less than 10 hours per week 2
   - 10-20 hours per week 3
   - more than 20 hours per week 4

4. Which of the phrases below best describes your racial/ethnic background? Please select only **ONE** response.
   - African-American/Black 1
   - American Indian, Alaskan Native 2
   - Caucasian-American/White 3
   - Mexican-American/Chicano 4
   - Asian-American, Pacific Islander 5
   - Hispanic origin 6
   - Other 7
   - Multiracial 8

5. What is the highest level of education you expect to complete?
   - Vocational/technical program (less than 2 years) 1
   - Two-year college degree 2
   - Bachelor's degree 3
   - One or 2 years of graduate study (MA, MBA, etc.) 4
   - Professional level degree (PhD, MD, LLB, JD, etc.) 5
   - Other 6

ACT Student Profile Questions
for
Participants in the ACT Practice Test

If you have signed up to take the ACT Practice test, please provide the following information.

Full Name (PLEASE PRINT): _____

Social Security Number: _____

For each of the following questions, circle the number next to your **ONE** best answer.

1. I plan to enroll in college as a:

   full-time student 1
   part-time student 2

2. How long do you think it will take you to complete undergraduate college?

   4 years 1
   5 years 2
   6 or more years 3

3. How much time do you spend studying outside of class?

   0-2 hours per week 1
   greater than 2, but less than 10 hours per week 2
   10-20 hours per week 3
   more than 20 hours per week 4

4. What is the highest level of education you expect to complete?

   Vocational/technical program
   (less than 2 years) 1
   Two-year college degree 2
   Bachelor's degree 3
   One or 2 years of graduate study (MA, MBA, etc.) 4
   Professional level degree (PhD, MD, LLB, JD, etc.) 5
   Other 6

ACT STUDENT PROFILE QUESTIONS

For each of the following questions, circle the number next to your **ONE** best answer.

1. How far away do you live from the college you expect to attend?
   - Less than 10 miles 1
   - 10-25 miles 2
   - 26-100 miles 3
   - More than 100 miles 4
   - I have no particular college in mind yet. 5

2. How do you rate the number and kinds of tests given at your high school?
   I am/have:
   - satisfied, no change necessary 1
   - no strong feelings one way or the other 2
   - dissatisfied, improvement is needed 3
   - no experience with this aspect of the school 4

3. The size of the student body of the college I prefer to attend is:
   - under 1,000 students 1
   - 1,000 to 5,000 students 2
   - 5,000 to 10,000 students 3
   - 10,000 to 20,000 students 4
   - 20,000 students and over 5

4. Which of the phrases below best describes your racial/ethnic background?
   Please select only **ONE** response.
   - African-American/Black 1
   - American Indian, Alaskan Native 2
   - Caucasian-American/White 3
   - Mexican-American/Chicano 4
   - Asian-American, Pacific Islander 5
   - Hispanic origin 6
   - Other 7
   - Multiracial 8

5. I prefer to attend the following type of college:
   - Public college or university (4-year) 1
   - Private college or university (4-year) 2
   - Public community or junior college (2-year) 3
   - Private junior college (2-year) 4
   - Vocational-technical school (2-year or less) 5
   - School of nursing 6

ACT STUDENT PROFILE QUESTIONS

For each of the following questions, circle the number next to your **ONE** best answer.

1. How far away do you live from the college you expect to attend?

   Less than 10 miles 1
   10-25 miles 2
   26-100 miles 3
   More than 100 miles 4
   I have no particular college in mind yet 5

2. How do you rate the number and kinds of tests given at your high school? I am/have:

   satisfied, no change necessary 1
   no strong feelings one way or the other 2
   dissatisfied, improvement is needed 3
   no experience with this aspect of the school 4

3. The size of the student body of the college I prefer to attend is:

   under 1,000 students 1
   1,000 to 5,000 students 2
   5,000 to 10,000 students 3
   10,000 to 20,000 students 4
   20,000 students and over 5

4. I prefer to attend the following type of college:

   Public college or university (4-year) 1
   Private college or university (4-year) 2
   Public community or junior college (2-year) 3
   Private junior college (2-year) 4
   Vocational-technical school (2-year or less) 5
   School of nursing 6

ACT STUDENT PROFILE QUESTIONS

For each of the following questions, circle the number next to your **ONE** best answer.

1. I need help deciding my educational and occupational plans.

   Yes 1
   No 2

2. I need help in expressing my ideas in writing.

   Yes 1
   No 2

3. I need help in improving my reading speed and comprehension.

   Yes 1
   No 2

4. I need help in improving my study skills.

   Yes 1
   No 2

5. I need help in improving my mathematical skills.

   Yes 1
   No 2

6. I used a calculator for this test.

   Yes 1
   No 2

7. The kind of calculator I used on this practice test was:

   _____

8. Which of the phrases below best describes your racial/ethnic background? (Please select only **ONE** response.)

   African-American/Black 1
   American Indian, Alaskan Native 2
   Caucasian-American/White 3
   Mexican-American/Chicano . . . 4
   Asian-American, Pacific Islander 5
   Hispanic origin 6
   Other 7
   Multiracial 8

9. I estimate that my overall grade point average is:

   0.5-0.9 (D- to D) 1
   1.0-1.4 (D to C-) 2
   1.5-1.9 (C- to C) 3
   2.0-2.4 (C to B-) 4
   2.5-2.9 (B- to B) 5
   3.0-3.4 (B to B+) 6
   3.5-4.0 (A- to A) 7