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Abstract

Divergent African American skin tones have led to negative stereotypes and outcomes regarding darker-skinned African Americans in many domains, including educational and occupational (Hill, 2002). This study assessed the effects of skin tone and stereotype threat (Steele and Aronson, 1995; Steele, 1997) on cognition in younger and older African Americans. A 2(Skin Tone: light, dark) X 2(Age: young, old) X 2(Stereotype Threat: Threat, Non-Threat) between subjects design was used. Seventy-four African American adults ranging in age from 18 to 86 years completed a battery of cognitive measures. Darker-skinned adults performed more poorly on three tests of intelligence, a paired-associates memory task, and intellectual self-efficacy. These main effects were qualified by two-way interactions involving skin tone and age, and skin tone and stereotype threat. The implications of African American skin tone effects on cognitive functioning are discussed.

I certify that I have read this thesis and find that, in scope and quality, it satisfies the requirements for the degree of Master of Arts in Psychology.

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"Paper Sack Brown:" Effects of Age, Skin Tone, and Stereotype Threat on Cognitive Performance and Self-Efficacy Among African Americans

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"Paper Sack Brown":
Late-Life Effects of Stereotype Threat on Cognitive Performance and Self-Efficacy Among African Americans

Light-skin color preferences have a long and sordid history within the African American community. Historically, lighter-skinned African Americans have attained higher levels of education, held higher paying work positions, and have enjoyed a heightened sense of social status relative to their darker cohorts (Keith & Herring, 1991; Russell, Wilson, & Hall, 1992; Hill, 2000; Thompson & Heith, 2001). Myriad labels have been attached to the shades of darkness found within the Black race. In an assertion of the recognition of skin color within the African American community, Parrish (1946) states that Blacks are affected by racial stereotypes: "In popular ditties, in songs about 'brownskin gals', in 'off color' jokes and indelicate stories there are numerous suggestions of the names which, from time to time, have been used to describe the various color shades and of the stereotyped conceptions of what each shade or color group is like" (pg. 13). Because skin tone can have such a negative influence on people's perception of African Americans (McRoy & Grape, 1999; Hill, 2002; Maddox & Gray, 2002), it is important to deconstruct the levels of influence that this heavily stereotyped characteristic may exert on the socially based manifestations of discrimination as well as possible influences it may exert on cognitive functioning. The purpose of this study was to incorporate a within-race component to the typical between-race stereotype threat framework and to assess any cognitive differences apparent between younger and older, lighter and darker-skinned African Americans.

Steele (1997) proposes that one plausible explanation for a stigmatized group's underperformance on tests of intelligence may be best explained as the salience of a specific, pervasive stereotype surrounding the group - what he calls *stereotype threat.* Stereotype threat indicates: "...apprehension over confirming, or eliciting the judgment that the stereotype is self-characteristic (Steele and Aronson, 1995, pg. 810)." Because Steele (1997) proposes that the targeted group must be somewhat identified with the specific domain in which the stereotype has its effect, the apprehension that African Americans have regarding intellectual performance (McKay et al., 2002), and that older adults have regarding memory performance (Stein et al. 2002) have been significant predictors of performance on such tasks. As such, it is important to assess the level of stereotype identification possessed by darker-skinned and older individuals. The present study aimed to extend the stereotype threat framework to include a within-race component and to assess the level of influence that skin tone may play on depressed intellectual performance and self-efficacy under the influence of a within-race stereotype.

Color bias

The injustices faced by African Americans during the years of enslavement in the United States may have had a lingering effect on within-race relations. Lighter skin tones, particularly those that resulted from a mixture of European and African ancestry, were greatly revered during slavery. For instance, when recounting the writings of Edward Reuter's early 20th Century study of mixed-race individuals, Hill (2000) indicates that *mulattoes* were highly trained servants. There are relevant references to this point about mulattoes in the book, "A Lesson Before Dying" by Ernest Gaines (1993). While

describing a scene in which a group of mulatto skilled workers are overheard criticizing darker-skinned African Americans, Gaines wrote: "... and I knew that like so many other mulattos in this part of the state, they did bricklaying or carpentry, and possibly some housepainting. All this by contract. And all this to keep from working in the field side by side with the niggers." (pg. 198) Mulattoes acted as a buffer between the posh lifestyle of the slave owners and the darker-skinned slaves (Hill, 2000). Light skin afforded them privileges in education, culture, and also easier labor duties. It seems reasonable, then, that current biases towards lighter skin tones have their roots in slave history.

To accommodate the color preferences of the dominant Caucasian American culture, many post-slavery African Americans possessing more Eurocentric phenotypic characteristics chose to abandon the rigors of minority status altogether by passing as White. Although passing as White may have opened up employment, social, and educational opportunities for post-slavery African Americans, the pressure to identify with one race is a source of anxiety for many contemporary African Americans. For instance, Keith and Herring (1991) found that skin tone was of greater consequence in determination of educational attainment and income than was family background and parental socioeconomic status.

In a seemingly internalized acceptance of the American ideal of color preference, the early 1900s found African American social clubs and organizations excluding participation based on a test of skin color similarity to a brown paper sack. Hill (2002) asserts, "Believing that refinement and emotional restraint were embodied in persons most resembling the dominant white population, these elite African American groups

established color bars, such as the 'brown bag test,' to restrict admittance to fraternities, churches, and social clubs: persons darker than a brown paper bag were denied entrance" (pg. 78). Consistent with this stratified sense of color bias, Breland (1998) found that when assessing individual competence as stratified by social, financial, and educational attainment, Caucasian Americans are more likely to view lighter-skinned individuals as being more competent and even more attractive.

Breland reasons that this could be one of the core issues that exacerbate darker-skinned females' feelings of inadequacy and lighter-skinned females' feelings of objectification within their African American social networks. Other recent studies suggest that there is still substantial color bias in modern society. Hall's (1998) study on skin color and perception of attractiveness suggested that there was a strong relationship between a person's perception of their skin tone and how attractive they felt, with lighter-skinned participants having an elevated sense of personal beauty.

Studies of children have uncovered negative biases against darker skin tones manifesting early on in the developmental process. In a study of children's preferences for friends, Verna (1982) found that White male children were more motivated to choose a White friend rather than a Black friend regardless of the presentation of the experimental manipulation of good vs. bad White or Black persons to befriend, which was defined on basic terms stratified by race. Similarly, a Fu and Fogel (1982) study of African American and Caucasian American children uncovered a preference for the color white over the color black in preschool children across races, such that the color white was considered to have more positive attributes than the color black as measured by basic

black and white colored cards. Neto and Paiva (1998) discovered a pro-White/anti-Black color bias and a preference for light skin tone among biracial, White, and African American children. Taken together, these studies indicated that racial color bias is apparent even among those who possess the phenotypic characteristics being assessed. These studies also hearken back to the themes presented in the classic Clark and Clark (1947) study, which used either a Black or White doll and a battery of evaluative questions (e.g., which doll is good/bad) to assess which doll would elicit more positive attributions from children aged 3 – 7 years. Sixty percent of the African American Children endorsed more positive characteristics as belonging to the White doll rather than the Black doll. This study further exemplified the internalization of negatively held ideals among mid-20th Century African Americans.

Stereotype threat

Stereotypes of African Americans have been characterized around negative qualities such as "ambitionless, no college education, unmannerly, lower class, antagonistic, loud, muscular criminal, and athletic" (Niemann, Jennings, Rozelle, Baxter, and Sullivan, 1994, pg. 382). Such strong stereotypes must play some larger role in African American daily functioning. Stereotype threat is a situation-activated state of performance anxiety and is expressed in situations in which the need to perform at a level much greater than expected of a stereotyped group becomes so salient, and the fear of confirming the said stereotype of the group becomes so overwhelming, that the performance mimics that of the stereotype and not that of the actual ability of the threatened individual (Steele and Aronson, 1995; Steele, 1997). It should be noted that

stereotypes might affect any group that is associated with a level of stigma. For instance, to test the effects of stereotype threat in people of varying income levels, Croizet and Claire (1998) measured socioeconomic status (SES) among students and found that when students from low SES were given tests that purported to be diagnostic of intellectual ability, their performance was significantly poorer than students from low SES who were given the same task but were not told the tasks were diagnostic of intellectual ability, thus exemplifying how stereotype threat is applicable on many different levels.

Steele's theory of *domain identification* hinges on the principle that a stereotyped group will respond to an anxiety-laden situation that is activated by a negative stereotype with a sub-par performance because the situation "threatens diminishment in a domain that is self-definitional" (Steele, 1997, pg. 614). Therefore, if the domain is important to the person's self-concept, performance is threatened and, thus, lowered. Intelligence and memory are two concrete domains in which persons of target groups (e.g., African Americans: Intelligence, Older Adults: Memory) have a vested interest in performing well (Levy, 1996; Steele, 1997). In-group/out-group studies add to this reasoning, such that out-group members show a tendency to value domains in which higher status groups excel. Perhaps this is because out-group members "believe those domains have great utility for gaining rewards associated with higher status and perhaps because they believe that the average performance of an in-group member underestimates their own ability in a domain" (Schmander, Major, Eccleston, and McCoy, 2001, pg. 793).

In a test of stereotype threat and domain identification, Oswald and Harvey (2001) investigated the ways in which a "hostile environment" may adversely affect a

female's performance in math. They found that when the threat of underperformance was activated, their female participants performed significantly worse on a math task than when not exposed to a threatening environment. Similarly, Quinn and Spencer's (2001) study assessing women's problem solving strategies found that women in the non-threat condition performed at a higher level of competence than did those exposed to a threatening condition. Brown and Josephs (1999) found that when women were placed under the anxiety of having their performance on a math task stated to be indicative of their natural abilities, that performance was relatively weak in comparison to men.

Stone, Sjomeling, Lynch, and Darley (1999) found that both Black and White participants' athletic performance could be hindered when a threatening condition was apparent, thus offering another example of the applicability of stereotype threat in daily life. Black participants showed decreased performance on a golf task when it was explained to be diagnostic of sports intelligence, which differs from natural ability in that it requires higher cognitive ability over physical prowess. White participants were found to under-perform when the golf task was explained to be diagnostic of natural ability. This study suggests the universality of stereotype threat, such that the theory of domain specificity applies to not only African Americans, but to any group that feels that their performance on a specific task is indicative of their innate ability.

Aging and stereotypic threat

Stereotypes of older adults may also be relevant to the construct of stereotype threat. Because of commonly held stereotypes (e.g., senile, decrepit, slow) "they assume that their life will follow a downward trajectory regardless of what actions they take, and

as a result, they encounter even more negative changes in physical and cognitive functioning than would otherwise be the case" (Whitbourne and Sneed, 2002, pg. 263). Older adults in America are faced with a host of stereotypes regarding their declining intellectual, memory, and physical abilities (Schmidt and Boland, 1986; Hummert, 1990). Levy, Ashman, and Dror (1999) found that when aging participants were primed with negative or positive aging stereotypes and then asked to report on their willingness to accept life-prolonging intervention if necessary, those participants who were negatively primed were less likely to accept the intervention than were those in the positive prime condition. Aging stereotypes have also been found to adversely affect acute aspects of health among older adults. Levy, Hausdorff, Hencke and Wei (2000) found that when priming older adults to a negative or positive stereotype prior to verbal and quantitative tasks, the stress created by the negatively primed condition caused an increase in cardiovascular response. Because cardiovascular reactivity has been shown to adversely affect the health of these older participants (McEwen, 1998), aging stereotypes can be seen as hazardous to healthy aging.

It has been suggested that stereotypes regarding memory deficits in the aging adult population may have negative effects on memory processes. Although much of the research in the field of aging suggests that memory abilities, in general, decline over the life-span (Shaw & Craik 1989; Berry, 1993; Hertzog, Saylor, Fleece, & Dixon, 1994), there has been very little attention paid to the process of stereotype activation and its role in this decline. Levy (1996) found that when an aging stereotype of diminished memory capabilities was activated, older adult's memory performances were significantly

impaired. Rahhal, Hasher, and Colcombe (2001) suggested that the manner in which older adults are instructed to complete a memory task can have an effect on their performance which is similar to that found when participants are placed under a threatening stereotypical condition. When emphasis is placed on the importance of memory, the participants tended to have an impeded performance relative to a condition where memory ability was not emphasized (i.e., where "knowledge" was emphasized). Hess, Auman, Colcombe, and Rahhal (in press) have extended these findings. They observed that when older adults are placed in a threat condition similar to that of Steele and Aronson (1995), their performance on a recall memory task was significantly impaired in comparison to that of younger adults and older adults in a non-threat condition.

Self-efficacy

Self-efficacy theory stands at the heart of Albert Bandura's social cognitive theory, which views people as self-regulatory rather than shaped by their environment. Self-efficacy (Bandura, 1977; Bandura, 1986) refers to "people's judgments of their capabilities to organize and execute courses of action required attaining designated types of performances" (p. 391). Without a strong sense of self-efficacy, a person has very little reason to initiate an appropriate response to any difficult task or situation. Therefore, self-efficacy beliefs serve as a building block for human motivation and serves as a reasonable extension of the stereotype threat framework, such that individuals holding negative aging stereotypes are likely to perform more poorly on measures of self-efficacy

because of the doubts the individual may have regarding their ability to perform well on the task at hand (e.g., intelligence or memory).

The present study

Research on stereotype threat has been primarily used to assess between-race differences in intellectual performance. The goal of the present study was to examine whether stereotype threat is relevant to within race and between age distinctions, on tests of intellectual and memory abilities. We expected that older, darker-skinned participants would be more influenced by threats to their performance on cognitive tests than would younger, lighter-skinned participants.

Three main effects were expected (i.e., age, skin tone, and threat condition). A three-way interaction between these variables was also expected, such that older, darker participants in the threat condition would have the poorest overall performance on the vocabulary, Digit Symbol, Verbal Paired Associates and Block Design tasks. It was also expected that older, darker participants in the threat condition would have lower intellectual self-efficacy scores than the younger, lighter participants.

Method

Participants

Between March and June of 2003, seventy-four community-dwelling African American adults from the greater Richmond, VA area were recruited for the study via print media, local churches, and other civic organizations with strong ties to the African American population. The design of the study called for four distinct groups defined by two endogenous variables: Age -- younger (n = 41) and older (n = 33) adults, and Skin

Tone -- lighter toned (n = 36) and darker toned (n = 38) adults. These variables combined to yield the following subgroups: Younger, lighter-skinned participants (n = 19), younger, darker-skinned participants (n = 22), older, lighter-skinned participants (n = 17), and older, darker-skinned participants (n = 16). Half of the participants in each subgroup were assigned to the experimental condition (Stereotype Threat) and half were assigned to the control condition (No Stereotype Threat). The 8 cells of the three-factor between-subjects design were: Younger, lighter participants in the threat condition (n = 9), younger, darker participants in the threat condition (n = 13), older, lighter participants in the threat condition (n = 9), older, darker participants in the threat condition (n = 8), younger, lighter participants in the non-threat condition (n = 10), younger, darker participants in the non-threat condition (n = 9), older, lighter participants in the non-threat condition (n = 8), and older, darker participants in the non-threat condition (n = 8).

Relatively equal numbers of male (n = 32) and female (n = 42) participants were recruited for the study; this variable was not analyzed as a separate factor in the design. Education was measured on a scale from 1 (some high school) to 7 (holding a doctoral degree). Any participant with higher or lower educational attainment noted so in the "other" column. Most participants had at least some college education (M level = 3.18 SD = 1.55). Younger participants (M = 3.35; SD = .24) and older participants (M = 2.95; SD = .26) had statistically non-significant differences in mean education attainment. Lighter participants' educational attainment (M = 3.24; SD = .26) and darker participants' education attainment (M = 3.05; SD = .24) did not differ significantly either. The correlation between skin tone and education was r = - 0.12, p = .303. Thus, any

differences between skin tone groups on the dependent variables, Block Design and Verbal Paired-Associates, are not likely to be due to differences in education attained. Interestingly, the lighter-skinned participants had a smaller range of education level attained from 1 (some high school) to 6 (masters) than the darker-skinned participants who ranged from 1 (some high school) to 8 (Ph.D.). There was one Medical Doctor among the darker participants. Thus, although their mean levels of education were not different, the darker-skinned adults were more likely to report a greater range of education than the lighter-skinned adults overall.

Basic intellectual abilities were assessed with the Ekstrom Vocabulary Test (ETS vocabulary; Ekstrom, 1976), a measure of crystallized intelligence, and with the Digit Symbol Subtest of the Wechsler Adult Intelligence Scale – Revised (WAIS-R; Wechsler, 1981), a measure of fluid intelligence. A 2(skin tone; lighter/darker) x 2(age group; younger/older) multivariate analysis of variance (MANOVA) for the ETS Vocabulary and Digit Symbol scores indicated a significant two-way interaction between skin tone and age, F (2, 65) = 10.94, p = .000 for both ETS Vocabulary scores, F (1, 66) = 5.74, p = .019, and for Digit Symbol performance, F (1, 66) = 21.88, p = .000.

Tests of simple effects for skin tone x ETS Vocabulary performance were run to aid in interpreting the significant skin tone x age interaction. An independent samples t-test indicated that ETS Vocabulary performance among older, lighter-skinned participants (M = 26.51, SD = 5.41) was significantly poorer than was younger, lighter-skinned participants' performance (M = 31.03, SD = 4.76), t (33) = 2.62, p = .013. However, older, darker-skinned participants (M = 22.91, SD = 6.32) and younger, darker-

skinned participants (M = 21.16, SD = 6.92) did not differ significantly on the ETS Vocabulary task, t (37) = .32, p = .421.

Simple effects tests for Digit Symbol task indicated that performance among older, lighter-skinned participants (M = 41.94, SD = 7.34) was significantly poorer than that of younger, lighter-skinned participants (M = 79.84, SD = 8.78), t (33) = 13.70, p = .000 (see Figure 1). Older, darker-skinned participants (M = 37.65, SD = 9.32) also performed significantly more poorly on the Digit Symbol task than did younger, darker-skinned participants (M = 53.32, SD = 12.18), t (37) = 4.40, p = .000. The interaction is apparently due to a larger difference in scores between age groups in the lighter-skinned group than in the darker-skinned group, but both younger groups outperformed the older groups on this highly age-sensitive test of fluid intelligence.

The MANOVA also indicated a significant main effect for skin tone, F (2, 65) = 23.12, p = .000. Univariate analyses revealed significant results for vocabulary scores, F (1, 66) = 22.30, p = .000, and for Digit Symbol scores, F (1, 66) = 41.17, p = .000. Darker-skinned participants had lower scores on both vocabulary (M = 21.92, SD = 6.64)) relative to lighter-skinned participants (M = 28.96, SD = 5.49), and Digit Symbol (M = 46.49, SD = 13.44) tasks relative to lighter-skinned participants scores (M = 62.51, SD = 20.78).

The MANOVA also revealed a significant main effect for age, F (2, 65) = 73.03, p = .000. Although the univariate statistics indicate no significant age differences on vocabulary performance, there was a significant effect for Digit Symbol performance, F (1, 66) = 134.38, p = .000. Older participants performed more poorly on the Digit Symbol

task (M = 39.73, SD = 8.57) relative to the younger participants' performance (M = 65.61, SD = 17.08).

Materials

Participant consent was gathered via the use of a University of Richmond approved form notifying potential subjects of their rights as a research participant (See Appendix A), and also laying out the nature of the study. The consent form was signed and dated by all participants. Participants then completed a demographics form that sought information on age, sex, race, self-rated skin tone and highest level of education attained (see Appendix B). Participants also received a general directions sheet (see Appendix C), which introduced them to the tasks.

Several hierarchical theories of intelligence have been disseminated during the 20th century (Hebb, 1942; Horn and Cattell, 1966; and Carroll, 1993). These theories tend to differentiate between an individual's ability to reason in novel situations and their ability to relay information that has been learned over the course of the life span. Horn and Cattell (1966) termed these two categories of intelligence *fluid* (basic processing ability that is most likely genetically based), which tends to decline with age, and *crystallized* (an individual's ability to preserve learned knowledge that has been enhanced by educational opportunities), which remains relatively constant across the life span (Beier & Ackerman, 2001). In the current study, the advanced test of vocabulary skills from the Kit of Factor-Referenced Cognitive Tests (Ekstrom, French, Harman, & Derman, 1976; see Appendix D) was used to assess participants' crystallized intelligence (Lachman and Leff, 1989). Fluid intelligence was assessed with the Digit Symbol subtest

of the WAIS-R (See Appendix E). This test measures visual-motor speed of processing and concentration skills of the participant. It consists of nine different symbols matched to the numbers 1 – 9. Participants were expected to quickly and accurately write down the correct symbol corresponding to each number in a 90-second timed test. Albert, Duffy, and Naeser (1987) reported that the WAIS-R Digit Symbol subtest tends to show a strong negative decline in late life. The results of the present study replicate earlier research on the classic decline in fluid intelligence and relative maintenance of crystallized abilities observed in primarily Caucasian or mixed race samples in an exclusively African American sample, and as such, represent a significant contribution to the cognitive aging literature.

The manipulation of stereotype threat was achieved using methods similar to other researchers, including McKay, Doverspike, Bowen-Hilton, and Martin (2002), Steele (1997), and Study 3 from Steele and Aronson (1995). Half of the participants in each age X skin tone cell were assigned to the experimental manipulation condition and half to the control condition. The instructions for Threat (experimental) versus Non-Threat (control) conditions are given in Appendix F. These paragraphs were designed to elicit a negative or more salient view of the participants' perceived threat. These paragraphs are similar to those used in Steele and Aronson (1995) that have only been altered to reflect the importance of skin tone rather than race (see Appendix F).

Participants completed the Block Design Self-Efficacy Questionnaire (BDSEQ; see Appendix G) immediately following the manipulation paragraphs. This questionnaire was developed specifically for this study, following general guidelines for constructing

self-efficacy scales as outlined by Bandura (1995). An individual's belief about their self-efficacy abilities is suggested to be a good predictor of subsequent performance (Bandura, 1986). The importance of self-efficacy to the current study was its potential to predict subsequent performance on the fluid intelligence task. We also predicted that self-efficacy would be lower in older and darker-skinned participants than in younger and lighter skinned participants. The Block Design subtest of the WAIS-R consists of 9 cubes that have 2 red sides, 2 white sides, and 2 red-and-white mixed sides, split on the diagonal of the side (see Appendix J). The test assesses how quickly an abstract red and white geometric pattern can be constructed with the blocks. The BDSEQ consisted of 9 items that are similar to the nine designs of the Block Design subtest of the WAIS-R.

Each of these designs was presented on a separate page of the BDSEQ and participants were required to give a yes/no rating followed by a confidence rating that ranged from 10% - 100%. Participants who felt they were able to complete a design like the one presented at the top of the page were instructed to circle yes and then give a confidence rating of their perceived ability to complete such design within the allotted time constraints. Participants who felt incapable of completing such a design within the allotted time frame were instructed to circle no and move on to the next item. The BDSEQ was adapted from the Memory Self-Efficacy Questionnaire (MSEQ), which consists of 50 items that attempt to access a participant's confidence level in his or her memory abilities. Berry, West, and Dennehey (1989) tested the reliability and validity of this measure. They concluded that the MSEQ has strong internal validity and that this measure could be a useful tool for determining self-evaluation changes related to

cognitive aging. Others have used similar measures to assess age-related differences in cognitive self-efficacy. For example, Artistico, Cervone, and Pezzuti (2003) have recently demonstrated the older adults have poorer problem solving self-efficacy for the Tower of Hanoi task, but better problem solving self-efficacy for old-age-relevant problems, compared to younger adults.

The Verbal Paired Associates subtest from the Wechsler Memory Scale-Revised (WMS-R; Wechsler, 1987) consists of six presentations of word pairs. Participants are read a group of word pairs and subsequently read the first word of each of those word pairs and asked to recall the matching word. The testing procedure from the instruction manual of the WMS-R was strictly followed. This test served as a measure of episodic memory. It was expected that older participants would perform significantly more poorly on this task relative to younger participants.

A posttest questionnaire developed by MacKay (1999) was used to assess the attitudinal effects of stereotype threat, and as a manipulation check. The Posttest Attitudinal Survey (PAS; see Appendix H) consists of 6 items, 5 of which are presented in a 1 (strongly disagree) to 5 (strongly agree) Likert-style format. The sixth item probes for the participant's understanding of the type of test that she/he has just completed: " What kind of test did you just complete?" Participants have a choice of Memory, Verbal, IQ, Visual, or Pattern Completion. The first five items are attitudinal statements such as the following: "A negative opinion exists about how people from my race perform on that type of test" (McKay et. al., 2002, pg. 773). For the present study, these statements were changed to reflect within-race rather than between-race comparisons, i.e., "A negative

opinion exists about how people of my skin tone perform on that type of test." The purpose of this questionnaire was to assess the salience of thoughts about one's race during the testing. McKay et al. (2002) used the PAS as a manipulation check in their study assessing the effects of stereotype threat on African Americans' performance on the Raven's Progressive Matrices relative to Whites. They found that African Americans in the threat condition were more apt to negatively endorse those items that attended to discriminatory biases against them than were Whites or African Americans in the non-threat condition. We adapted the PAS for our tests of attitudes and the manipulation check related to within-race stereotype threat effects.

Design and Procedure

The project employed a 2(lighter-skinned, darker-skinned) x 2(younger, older) x 2(threat, non-threat) design. The three independent variables (i.e., skin tone, age, and threat condition) were between-subjects factors. The two dependent variables were Verbal Paired Associates and Block Design performance. Participants were randomly assigned to either the control or experimental conditions based on their skin tone and age. Data were collected in Richmond Hall, or at homes, offices, or other convenient locations for participants who lacked transportation to the University of Richmond campus or who were recruited at an off-site location. Each participant was given an individual 1-hour time slot for which to complete the experiment. The average participant took 45 minutes to complete all of the tasks. All participants signed and dated the informed consent prior to beginning the study. All questions that participants had about the tasks were answered to the best of the researcher's ability as they arose.

The participant's skin tone was assessed immediately after signing the informed consent. The experimenter placed the skin tone measuring color strip (see Appendix I) across the participant's forehead and then recorded the number of the color on the color strip that most accurately reflected the color of the participant's forehead. The forehead was used because it was the most accessible flat surface of facial skin on most participants. The experimenter then placed the skin tone color strip in the participant's folder and conspicuously wrote the number of the participant's skin tone on the inner fold of that folder.

Participants were not informed of their skin tone as measured with the skin tone color strip as to avoid any potential problems that may have arisen from discrepancies between the participant's self-rated skin tone and their actual skin tone as measured by the device. The correlation between self-rated skin tone and skin tone as measured by the measuring strip was high, $r = .90$, $p = .000$. This suggests that our experimenter-observed rating of skin tone was relatively accurate.

Participants were then handed the demographics survey to complete. After completing the demographics survey, the participants were handed the general directions to the study. After reading the general directions, the researcher handed the participants the ETS Vocabulary task. The ETS Vocabulary task allows four minutes to complete each section. The researcher tracked this time limit for both sections of the ETS Vocabulary task and stopped any participants who ran out of time before completing the task.

Participants were next handed the stereotype threat manipulation paragraph with either threatening or non-threatening instructions to read silently for approximately 2 minutes. Participants were asked if they completely understood what was expected of them. If they answered no, the experimenter allowed them an additional 2 minutes to read the manipulation paragraph. If participants still did not understand the instructions, the experimenter read them aloud. All participants acknowledged understanding the directions before moving on to the next task and the experimenter proceeded with the next phase of the study.

The participants were then introduced to the Block Design Self-Efficacy Questionnaire (BDSEQ; see Appendix G). Participants read the directions silently and then the experimenter provided additional explanation and elaboration of the task requirements. After the participants completed the BDSEQ, the Verbal Paired Associates task was administered. The experimenter placed the answer key to the Verbal Paired Associates task on a clipboard and angled the clipboard so that the participants could not follow how they were being scored. The experimenter followed the directions in the WMS-R manual to administer the task. Participants were allowed all 6 presentations of the 8 word pairs although only the first three presentations are actually scored.

The last cognitive task presented was the Block Design subtest of the WAIS-R. This task was presented after the memory task so that participants would be less likely to remember the Block Designs presented in the BDSEQ, so as to avoid any possible proactive interference or practice effects from the BDSEQ on the Block Design subtest itself. The experimenter again used a clipboard angled, such that the participants could

not follow their scores on the answer key. The experimenter timed each of the presentations of designs according to the directions in the WAIS-R administration manual.

The last measure administered in this experiment was the PAS. The experimenter informed the participants to read the directions carefully and to answer each of the six questions to the best of their knowledge. After completing the PAS, the experimenter informed the participants that they had completed the study. Those participants who wanted feedback were given their scores on the Verbal Paired Associates and Block Design tasks. When participants wished to know their scores, and scored in the lower range, the experimenter shared this information as sensitively as possible. The experimenter then requested the participants' phone number and address in order to contact them if they were chosen from the total sample to receive one of the ten $100.00 cash gifts that were used as a recruitment incentive. Participants were debriefed. The general experimental procedure is depicted in Appendix J.

Results

We predicted that under the threat of evaluative cognitive testing, lighter-skinned participants would outperform darker-skinned participants, across age groups, on tests of intelligence and have higher intellectual self-efficacy. We also predicted that younger participants would outperform older participants on tests of intelligence and also have higher self-efficacy scores than would older participants. Because issues of skin tone were more prominent in the earlier part of the 20th Century, we predicted greater skin

tone effects in the older cohort relative to the younger cohort on cognitive tests and self-efficacy.

To test the hypotheses, a 2(skin tone; lighter/darker) x 2(age group; younger/older) x 2(threat condition; threat/non-threat) multivariate analysis of variance (MANOVA) with Verbal Paired Associates and Block Design scores as the dependent variables was conducted. The three-way interaction effect was not significant, thus failing to support our main hypothesis. However, a significant two-way interaction between skin tone and threat condition was obtained, F (2, 65) = 4.06, p = .022. At the univariate level, a significant effect for Verbal Paired Associates performance was obtained, F (1, 66) = 67.27, p = .013 (see Figure 2), but the univariate effect for Block Design performance was non-significant. The darker-skinned participants in the threat condition performed more poorly (M = 12.24, SD = 2.95) on the Verbal Paired Associates task than did the darker-skinned participants in the non-threat condition (M = 16.06, SD = 3.95). The lighter-skinned participants in the threat (M = 20.11, SD = 4.03) and non-threat (M = 19.59, SD = 3.04) conditions performed comparably on the Verbal Paired Associates task. Tests of simple effects were run to interpret the interaction between skin tone and threat condition, however.

Consistent with our hypothesis, threat had a greater effect on darker-skinned than lighter-skinned participants. An independent samples t-test indicated no significant difference on Verbal Paired Associates between the threatened (M = 20.11, SD = 4.03) and non-threatened (M = 19.59, SD = 3.04) lighter-skinned participants, t (33) = .43, p = .669. Darker participants in the threatened condition (M = 12.24, SD = 6.06) did perform

significantly worse on the Verbal Paired Associates task than did darker participants in the non-threat condition (M = 16.06, SD = 3.95), t (37) = -3.45, p = .001.

We expected lighter-skinned participants would outperform darker-skinned participants across age groups and threat conditions. Significant main effects for skin tone, F (2, 65) = 35.20, p = .000 supported this prediction at the multivariate level. The univariate results were significant for both Verbal Paired Associates performance, F (1, 66) = 53.40, p = .000, and for Block Design performance, F (1, 66) = 59.29, p = .000. Darker-skinned participants performed more poorly on the Verbal Paired Associates task (M = 14.00, SD = 3.91) relative to lighter-skinned participants (M= 19.86, SD = 3.54; see Figure 2). Block Design performance followed a similar pattern, such that darker-skinned participants performed significantly poorer (M = 18.87, SD = 1.40) than did lighter-skinned participants (M = 34.53, SD = 1.47; see Figure 3).

The MANOVA also yielded a significant main effect for age, F (2, 65) = 17.90, p = .000. Univariate analyses indicated significant age effects for Verbal Paired Associates performance, F (1, 66) = 13.68, p = .000, and for Block Design performance, F (1, 66) = 36.30, p = .000, see Figures 2 and 3. The older participants performed more poorly on the Verbal Paired Associates task (M = 15.41, SD = .56) relative to younger participant's performance (M = 18.22, SD = .51). The older participants also performed more poorly on the Block Design task (M = 20.58, SD = 1.5) than did the younger participants (M = 32.83, SD =1.4). These results support our hypothesis that younger participants would outperform older participants on memory and fluid intelligence tasks.

The main effect of threat condition was significant at the multivariate level, F (2, 65) = 5.03, p = .009. Univariate analyses indicated significant threat effects on both the Verbal Paired Associates task, F (1, 66) = 7.58, p = .008 and on the Block Design task, F (1, 66) = 8.53, p = .005. Participants in the threat condition performed more poorly on the Verbal Paired Associates task (M = 15.87, SD = 5.26) than did participants in the non-threat condition (M = 17.77, SD = 3.92). Further, those participants in the threat condition performed significantly poorer on the Block Design task (M = 23.74, SD = 1.42) than did participants in the non-threat condition (M= 29.67, SD = 1.46).

Self-Efficacy Analyses

An ANOVA with self-efficacy confidence scores (averaged across all items to form a total composite score) as the dependent variable and skin tone and age as the independent variables was conducted. The two-way interaction effect was not significant but the main effects for skin tone, F (1, 66) = 13.57, p = .000, and for age, F (1, 66) = 241.92, p = .000 (see Figure 4) were significant. Lighter participants had significantly higher confidence ratings (M = 55.45%, SD = 24.69) than did darker participants (M = 45.67%, SD = 25.58). Older participants reported significantly lower self-efficacy confidence ratings (M = 25.93%, SD = 8.93) than did younger participants (M = 69.92%, SD = 15.35). These results are consistent with the hypotheses of the current study, which state that lighter participants will have higher self-efficacy than will darker participants, and that younger participants will have higher self-efficacy than older participants. It should be noted that there was a significant correlation between BDSEQ confidence ratings and Block Design performance scores (r = .58, p = .000).

Manipulation Check

A MANOVA on the first five PAS items was conducted with stereotype threat as the independent variable. The multivariate F-test was non-significant, F (6, 67) = .97, p = .453, indicating that the experimental (Threat) and control (Non-threat) groups did not differ in their perceptions of the tests and manipulation. We followed up with a test of the effects of skin tone on the five PAS items because skin tone emerged as an important variable in the tests of the main hypotheses reported earlier in this paper. A 2(skin tone: lighter and darker) x 2(threat condition: threat and non-threat) MANOVA for the first five PAS items was conducted. Although there was not a significant interaction between skin tone and threat condition, nor a significant main effect for threat condition, there was a significant main effect for skin tone, F (5, 66) = 22.171, p = .000. Univariate statistics indicated significant effects of skin tone on all five items, all Fs (1,70) $\geq$ 6.23, all ps $\leq$ .015 (see Table 1). Darker-skinned participants had more negative attitudes towards the meaning of the tests for people of their skin tone than did lighter-skinned participants.

Additional analyses were conducted on the first five items of the PAS. Cronbach's alpha coefficient indicated good internal consistency for the items, α = .85. We collapsed the five items into one composite attitude variable summed by the averaging the five PAS items. The third item of the PAS was reverse-scored. An ANOVA was conducted with skin tone and threat condition as the independent variable and the composite PAS score as the dependent variable. The interaction between skin tone and threat condition, and the main effect for threat condition, were non-significant. However, there was a significant main effect for skin tone, F (1, 70) = 56.11, p = .000.

Darker participants were more likely to hold more negative attitudes towards the tasks (M = 3.90, SD = .84) than were the lighter-skinned participants (M = 2.53, SD = .69).

Discussion

Although the expected three-way interaction for skin tone, age, and threat condition was not significant, there was a significant two-way skin tone x threat condition interaction, such that darker participants in the threat condition had significantly poorer Verbal Paired Associates scores than did lighter participants in the threat condition. There were no significant differences between the lighter and darker participants in the non-threat condition. There were no significant interaction effects for Block Design scores. There were significant main effects for skin tone, age, and threat condition. The skin tone main effect showed that darker-skinned participants performed significantly more poorly than lighter-skinned participants on both Verbal Paired Associates and Block Design tasks. The main effect for age indicates poorer performance among the older participants relative to the younger participants on both tasks. Finally, participants in the threat condition performed significantly more poorly than those in the non-threat condition. These results are consistent with previous studies that demonstrate poor memory test performance as a function of stereotype threat among older adults (e.g., Levy et al., 1999; Levy et al., 2000; and Rahhal et al., 2001).

A significant three-way interaction between skin tone, age, and threat condition for block design self-efficacy scores (BDSEQ) was predicted in the current study. Although there were no significant interaction effects, there were main effects for skin tone and for age. Lighter-skinned participants had significantly higher BDSEQ

confidence ratings than did darker participants. Thompson and Keith (2001) found that darker females had lower self-esteem than did darker males, but that darker males had significantly lower self-efficacy than did darker females. These results are consistent with the skin tone effects obtained in the current study. Consistent with previous studies (e.g., Cornelius and Caspi, 1988; Berry, 1993; Marquie and Huet, 2000; West, Welch, and Knabb, 2002), older participants had significantly lower self-efficacy confidence ratings than did younger participants. One plausible explanation for the age main effect for the BDSEQ scores could lie in the participant's motivation to successfully complete such tasks as Block Design. Bandura (1977, 1986) would suggest that without a defined sense of self-efficacy, an individual would have no intrinsic motivation to accomplish any such specific task to the fullest of their ability. It is, then, plausible that the array of threats that older adults are faced with regarding cognitive decline (e.g., Levy, Ashman, and Dror, 1999; Whitbourne and Sneed, 2002) serve to lower their beliefs regarding their ability to perform such tasks as Block Design.

A MANOVA was conducted as a manipulation check on the stereotype threat manipulation. The first five items of the PAS were analyzed separately and in composite form. A significant main effect for skin tone was obtained but there were no differences between threat groups. Thus, this measure failed to show the intended test-taking attitudinal differences between the threat and non-threat experimental groups. Results indicated that darker participants held more negative attitudes toward the testing situation than did lighter participants.

Tests of Crystallized and Fluid Intelligence

Darker participants performed significantly poorer on the vocabulary task than did lighter participants. Age differences were obtained on vocabulary scores among lighter-skinned but not darker-skinned participants. Older, lighter-skinned adults had poorer scores than younger, lighter-skinned adults. The Vocabulary task represented crystallized intelligence and the Digit Symbol task represented fluid intelligence in this study. Although crystallized intelligence has been shown to remain constant, or even increase over the life span (Schaie, 1996), older, lighter-skinned participants in the current study performed more poorly on the vocabulary task than did younger, lighter-skinned participants, but among darker participants, no age differences in vocabulary emerged. However, age-related Digit Symbol results are consistent with previous research that suggests declines in fluid intelligence over the life span (e.g., Zimprich & Martin, 2002).

The results of the current study provide preliminary evidence that within-race effects may play an important role in cognitive functioning and self-efficacy among African Americans. In general, skin tone effects proved to be more relevant to performance on the cognitive tasks, the self-efficacy questionnaire, and the post-test attitudinal manipulation check than the stereotype threat manipulation. Due to the smaller-than-targeted sample size (N=74), the current study lacked sufficient power to attain the predicted three-way interaction between skin tone, age, and threat (N = 120). However, the analyses did yield several important main effects and two-way interaction effects, including effects with the threat factor, that should be followed up in prospective

studies involving skin tone and different age cohorts, and better manipulations of stereotype threat.

Limitations and Strengths

While recruiting the African American sample for the current study, there were numerous challenges to overcome. Most notably, recruiting this population required networking with organizations (i.e., churches and civic clubs) that have a readily accessible population of African Americans. In order to successfully recruit from these populations, the researcher was obligated to attend Sunday school classes, bible studies, prayer meetings and business meetings in order to explain the study in detail to the potential population. Gaining the trust of the population was important and essential to recruitment. In doing so, the integrity of the research may have been slightly compromised because of the need to divulge more information about the purpose of the research in order to gain participants. However, previous studies (e.g., Levy et al., 1999; Quinn and Spencer, 2001; and Steele and Aronson, 1995) have intentionally employed priming cues to intensify the effect of the threat condition. Thus, it could be possible that the recruitment practices in this study served as a method of priming the participants for a negative stereotype, but this is purely speculative.

We predicted that participants in the threat condition would have more negative attitudes towards the testing situation than participants in the non-threat condition. This difference failed to emerge on our manipulation check measure, the PAS, but significant skin tone effects indicated that darker participants endorsed more negative items regarding skin tone and testing than did lighter-skinned participants. It is plausible that

the wording of the PAS made it difficult for participants to distinguish between being asked about their belief in relation to other races (e.g., Caucasian), or to other African Americans. If this were the case, lighter-skinned participants' responses would have been consistent with the view that, according to Breland (1998), is commonly held among other races (i.e., lighter skin equates with higher levels of competence and self-worth). Thus, better, more precise wording of the PAS items may have helped differentiate the threat/non-threat groups because the wording used for the current study may not have been strong enough to yield the desired threat differences.

The sample of participants in the current study was well matched on relevant demographic information. There were no differences between the threat/non-threat groups in years of education, and there were only 10 fewer males than females who participated in the study, indicating roughly equal gender representation in the study. There was a relatively low attrition rate (N = 3). Those three participants who chose not to complete the study did so immediately after reading the section of the informed consent that outlined the goals of the research as stratified by skin tone. One such participant commented on his/her unwillingness to participate in such studies, citing the complaint that the study may be "digging up old ghosts" (i.e., bringing to the forefront issues that plagued the African American community openly in the earlier part of the 20th Century). Those subjects who chose to end participation in the study were debriefed and allowed to leave.

Future Directions

We believe that this is the first empirical study to obtain cognitive performance effects due to skin tone differences among African Americans. Additional research should be conducted to confirm or disconfirm our findings. Past research on stereotype threat and race has been applied to between race differences rather than within-race differences on intellectual tasks. The current study attempted to extend the stereotype threat framework to include a new variable, skin tone, and to test whether stereotype threat effects could be obtained within the African American community between members of varying skin tones. Future studies addressing the relevance of skin tone on cognitive decline could serve to help clarify the within-race effects that are apparent within the African American community. Similar to the Puerto Rican cultural milieu, skin color rather than racial category tends to play a significant role in discriminatory thought and the negative ramifications of such thought that could potentially manifest in cognitive differences (Hall, 2002).

Extending the current findings to include a measure of black identity would represent a natural theoretical and empirical extension toward better understanding the within-race effects that we obtained. Measures such as the Multidimensional Inventory of Black Identity (MIBI; Sellars et al., 1997) could reveal possible race identification differences between those lighter and darker-skinned individuals who, in turn, might be hypothesized to be more or less affected by threatening conditions. The MIBI is commonly used to assess an individual's level of affiliation with the African American race. It has been suggested (e.g., Penn, Gaines, and Phillips, 1993) that the stronger the affiliation an individual has to the African American community and customs, the more

at risk they are of feeling threatened by the stigma attached to being African American. This closely relates to the theory of stereotype threat, such that lighter-skinned individuals could be less affected by the threat because they may feel less affiliation with the African American identity. These are speculations that would be interesting to test in future research.

The emergence of skin tone as an important variable in assessing cognitive performance among African Americans was secondary to the main goal (stereotype threat effects) of this study. However, the importance of skin tone as a socially recognized grouping variable is not new to psychology (e.g., Keith & Herring, 1991; Breland, 1998; Hill, 2000). This study attempted to extend stereotype threat to include a within-race factor, skin tone. Although stereotype threat was not a key factor in most of the current study's findings, it would seem important for future investigators to consider addressing the within-race effects of stereotype threat on African Americans. Such investigations would need valid and reliable measures of stereotype threat and could possibly lead to a better understanding of the mechanism by which stereotype threat actually works.

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Table 1

Means and p values of Each Item of the Post-Test Attitudinal Survey

Items Values	Mean PAS Scores		p
	Darker	Lighter	
Item 1:			
Tests, like the one that I just took, have been used to discriminate against people with my skin tone (Color).	4.21	2.49	.000
Item 2:			
A negative opinion exists about how people of my skin tone (Color) perform on that type of test.	4.41	2.37	.000
Item 3:			
Taking tests, like the one I just completed, makes me feel good about myself.	2.44	3.60	.000
Item 4:			
During the test, I wanted to show that people of my skin tone (Color) could perform well on it.	3.54	2.86	.015
Item 5:			
As the test got difficult, I worried about confirming the negative opinion(s) about the test performance of people of my skin tone (Color).	3.72	2.52	.000

Figure Captions

Figure 1 : Digit Symbol Scores by Age x Threat x Skin Tone Groups

Figure 2 : Verbal Paired Associates Scores by Age x Threat x Skin Tone Groups

Figure 3 : Block Design Scores by Age x Threat x Skin Tone Groups

Figure 4 : Block Design Self-Efficacy Questionnaire Scores by Age x Threat x Skin Tone Groups

Figure 1:

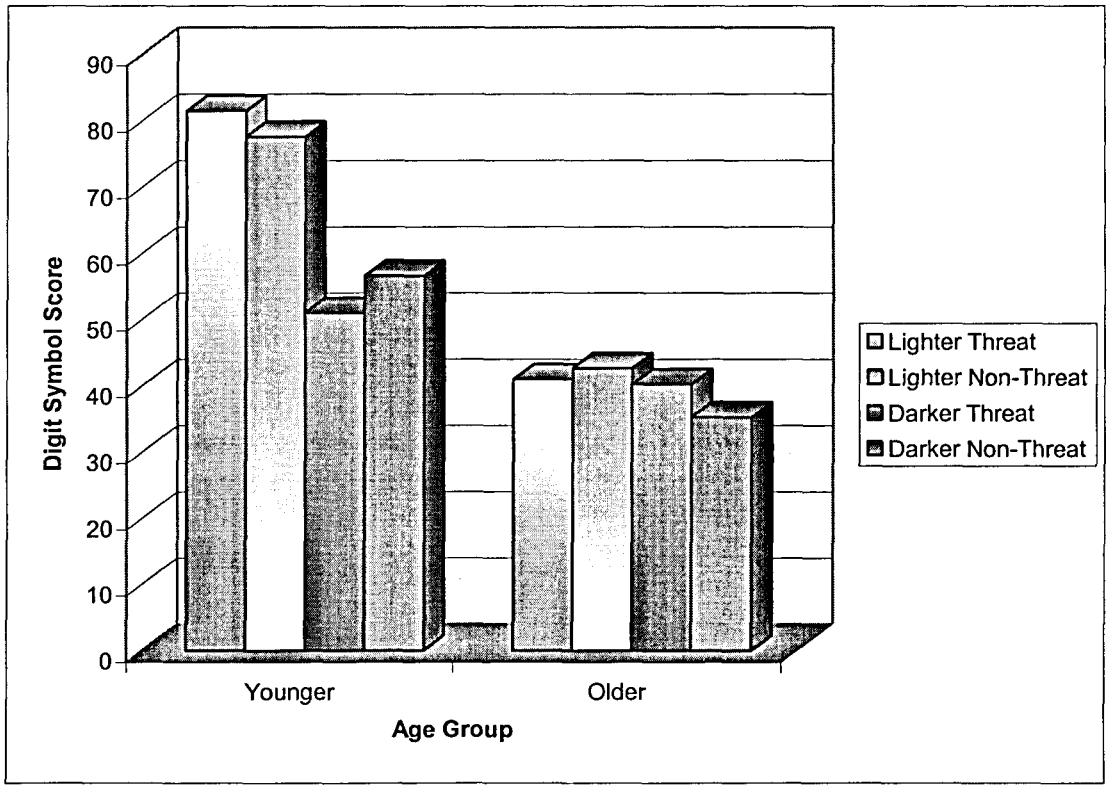

90
80
70
60
50
40
30
20
10
0
Digit Symbol Score
Younger
Older
Age Group
Lighter Threat
Lighter Non-Threat
Darker Threat
Darker Non-Threat

Figure 2:

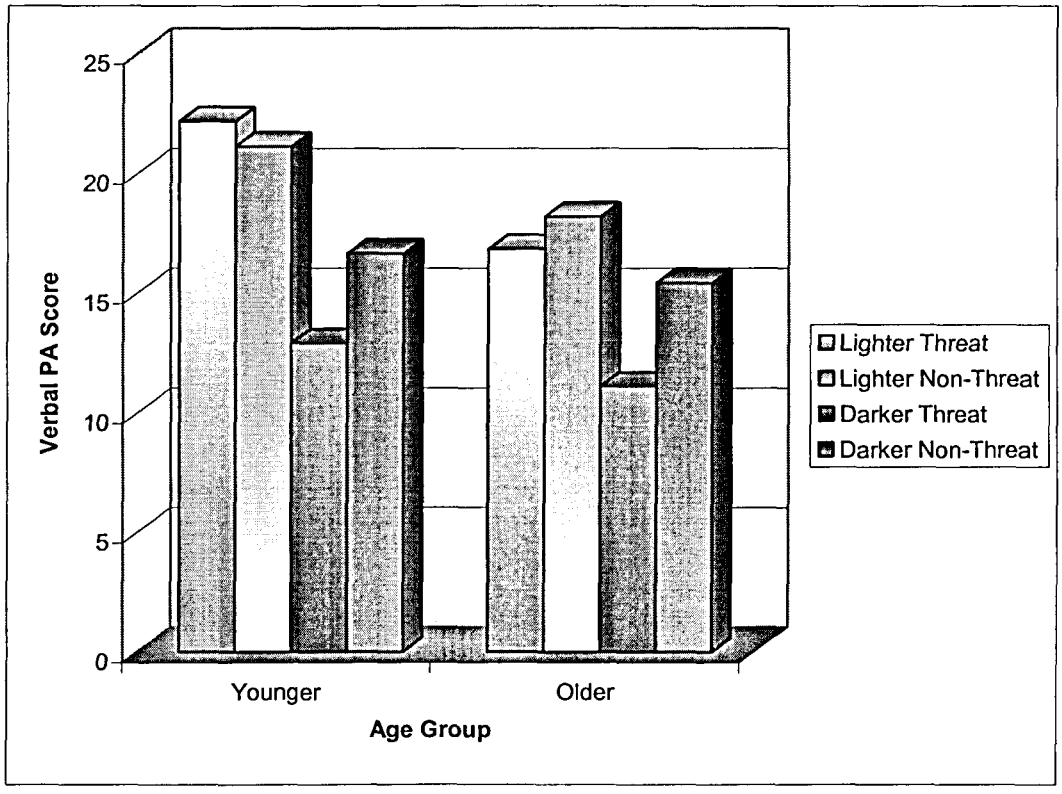

25
20
15
10
5
0
Verbal PA Score
Younger
Older
Age Group
Lighter Threat
Lighter Non-Threat
Darker Threat
Darker Non-Threat

Figure 3:

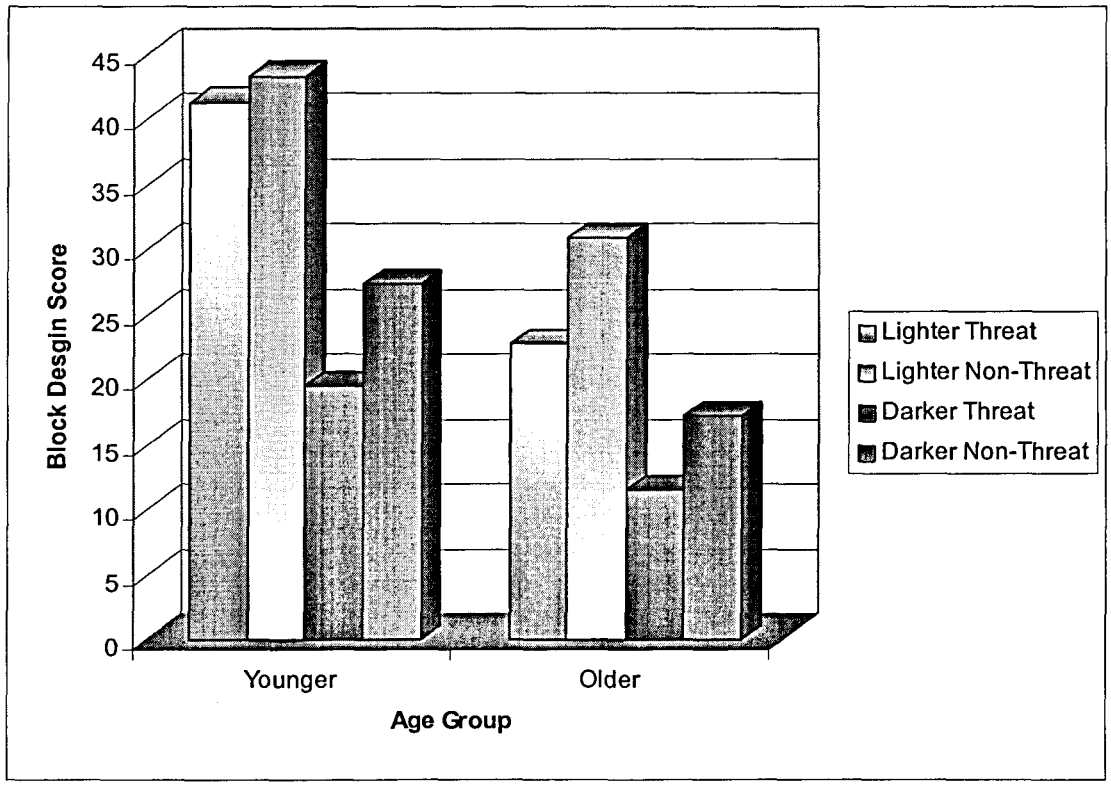
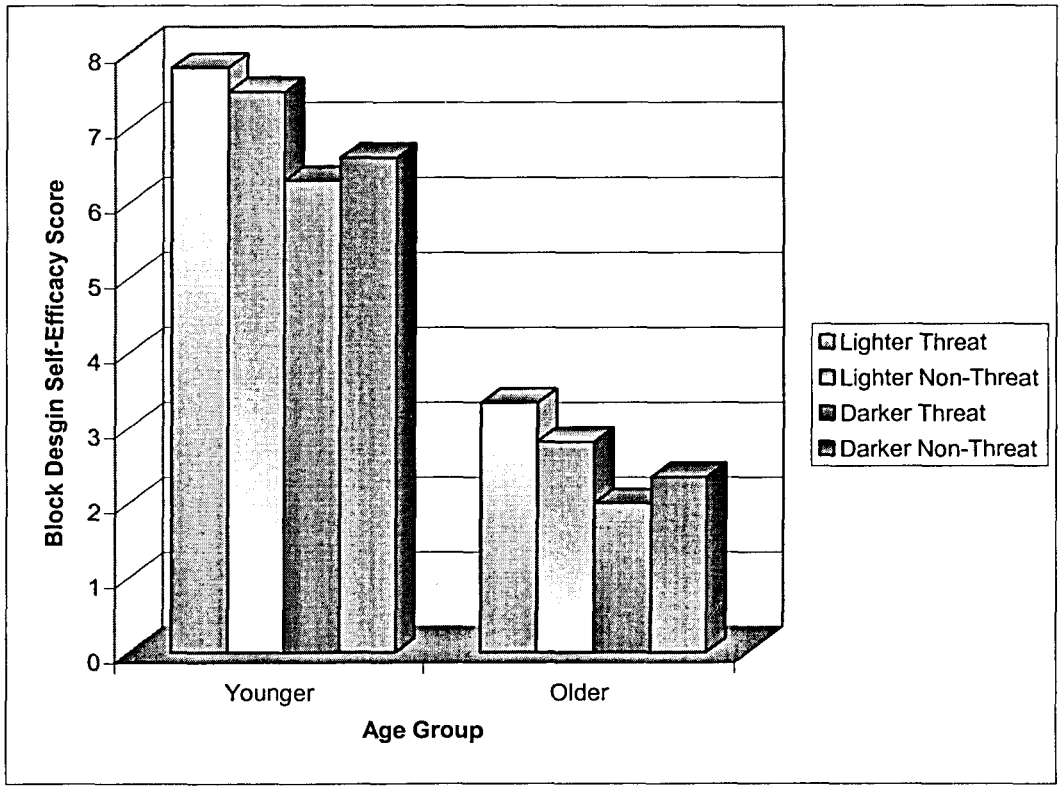

45
40
35
30
25
20
15
10
5
0
Block Desgin Score
Younger
Older
Age Group
Lighter Threat
Lighter Non-Threat
Darker Threat
Darker Non-Threat

Figure 4:


Block Desgin Self-Efficacy Score
0
1
2
3
4
5
6
7
8
Younger
Older
Age Group
Lighter Threat
Lighter Non-Threat
Darker Threat
Darker Non-Threat

Appendix A

Participant Consent

Project Description:
The purpose of this study is aimed at understanding what effect skin tone may have on intellectual and memory performance and self-efficacy of African Americans. You will be given a series of questionnaires to complete. The researcher will also administer a battery of tasks to assess your performance abilities in these areas. This project will take approximately 1 hour to complete. When you have completed these tasks, you will be placed into a random drawing for one of ten $100.00 cash gratuities.

Principal Investigator :
Breonte Guy is the principal investigator on this study. Breonte is a graduate student in the department of psychology at the University of Richmond and is supervised by Jane Berry, Ph.D. If any questions or concerns should arise, please contact Breonte Guy by email at breonte.guy@richmond.edu or by phone at (804) 287-6851. Dr. Jane Berry can be reached at jberry@richmond.edu or (804) 289-8130.

Voluntary Participation:
Your participation in this study is completely voluntary. By participating in this study, you are in no way obligating yourself to complete it. You are free to end your participation at any time during the research process.

Confidentiality of Records:
Because the information that you will provide is of a personal nature, your responses to the specific items will be filled away in congruence with strict protocol. Your confidentiality will be well protected by these procedures. Only the primary investigators will view your responses. You will be assigned a number that will be the only method of identification available to the researchers. This information will be stored in a locked cabinet to which only the primary investigators have keys. All papers showing any personal identification will be destroyed after the study.

Participants Rights:
If you have any questions concerning your rights as a research participant, you may contact the Chair of the University of Richmond's Institutional Review Board for the Protection of Research Participants at (804) 289-8417.

Participant's Consent:
The study has been described to me and I understand that my participation is voluntary. I also understand that I am free to withdraw my consent and discontinue my participation at any time without penalty. If I do find that I am experiencing any emotional distress caused by this study,

I am encouraged to contact the University of Richmond counseling center, CAPS, at (804) 289-8119.

I also understand that the results of the study will be treated in strict confidence and reported publicly only as the entire body of participants in the study. I understand that if I have any questions or concerns about this experiment, I may pose them to Breonte Guy (804) 287-6851 and Dr. Jane Berry (804) 289-8130.

I have read and understand the above information and I consent to participate in this study by signing below.

_____

Signature

_____

Date

_____

Signature of Investigator

_____

Date

Appendix B:

Demographics

Please check all that apply

1.) Age Group:

( ) 18 – 35
( ) 36 – 65
( ) 66 – 85
( ) Other (please specify) _____

2.) Sex:

( ) Male
( ) Female

3.) Race:

( ) African American/Black
( ) Other (please specify) _____

4.) Skin Tone:

( ) Very Light Skin
( ) Medium Light Skin
( ) Light Skin
( ) Dark Skin
( ) Medium Dark Skin
( ) Very Dark Skin

5.) Education:

( ) Some High School
( ) High School Graduate
( ) Some College
( ) College Graduate
( ) Some Masters Level Work
( ) Masters Graduate
( ) Ph.D.
( ) Other (please specify) _____

Appendix C:

General Directions

General Directions

You have agreed to participate in a study assessing the relationship between intellectual and memory performance and self-efficacy. You will first complete a short vocabulary test. Then, you will be guided through a battery of intelligence and memory tasks by the experimenter. Lastly, you will complete a questionnaire that will be given to you by the experimenter. Please read each form and follow the directions carefully. This process should take about 1 hour to complete. Remember, your participation is completely voluntary and may be terminated at any point during the study.

Appendix D:

Advanced Vocabulary II from the Kit of Factor-Referenced Cognitive Tests

VOCABULARY TEST II – V-2

This is a test of your knowledge of word meanings. Look at the sample below. One of the five numbered words has the same meaning or nearly the same meaning as the word above the numbered words. Mark your answer by putting an X through the number in front of the word that you selected.

Jovial

1 – refreshing
2 – scare
3 - thickness
4 – wise
x5 – jolly

The answer to the sample item is number 5; therefore, an x has been put through the number 5.

Your score will be the number of marked correctly minus a fraction of the number marked incorrectly. Therefore, it will not be in your advantage to guess unless you are able to eliminate one or more of the answer choices as wrong.

You will have 4 minutes for each of the two parts of this test. Each part has one page. When you have finished Part 1, STOP. Please do not go on to Part 2 until you are asked to do so.

Part 1

1. Handicraft
1 – cunning
2 – fast boat
3 – utility
4 – manual skill
5 – guide

2. Resistant
1 – confusing
2 – conjunctive
3 – systematic
4 – assisting
5 – opposing

3. Ejection
1 – restoration
2 – expulsion
3 – reformation
4 – bisection
5 – exposition

4. Yawl
1 – tropical storm
2 – foghorn
3 – carouse
4 – sailboat
5 – turn

5. Listless
1 – aggressive
2 – adaptable
3 – indifferent
4 – sorrowful
5 – ugly

6. Acceptable
1 – affected
3 – attractive
4 – genial
5 – noteworthy

7. Unobservant
1 – analytic
2 – conclusive
3 – heedless
4 – uniformed
5 – timid

8. Perambulator
1 – coffeepot
2 – drunkard
3 – baby carriage
4 – liar
5 – camel

9. Masticate
1 – chew
2 – massage
3 – manufacture
4 – create
5 – pollute

10. Poignancy
1 – peignoir
2 – gloominess
3 – keenness
4 – gluttony
5 – barony

11. Salaam
1 – salivation
2 – salmon
3 – salutation
4 – ransom
5 – brigand

12. Compatible
1 – abridged
2 – congenial
3 – compelling
4 – related
5 – combined

13. Inclement
1 – balmy
2 – happy
3 – righteous
4 – severe
5 – apprehensive

14. Access
1 – abundance
2 – evaluation
3 – approach
4 – extremes
5 – foes

15. Bland
1 – disagreeable
2 – pale
3 – soothing
4 – empty
5 – musical

16. Collusion
1 – nerve
2 – rest
3 – prayer
4 – conspiracy
5 – disguise

17. Degrade
1 – lower in rank
2 – bend downward
3 – disagree
4 – sort
5 – uplift

18. Evolve
1 – develop gradually
2 – spin
3 – end suddenly
4 – implicate
5 – include

STOP

19. Dreg
1 – pulled
2 – worthless leftover
3 – wooden pin
4 – wheel spoke
5 – liquid

20. Crescendo
1 – repeat
2 – treble clef
3 – decrease time
4 – eight note
5 – increase in loudness

21. Trilogy
1 – set of four
2 – a pair
3 – vibration
4 – interjections
5 – set of three

22. Budget
1 – civil government
2 – capital punishment
3 – calendar
4 – bulletin
5– financial plan

23. Gritty
1 – frigid
2 – windy
3 – adhesive
4 – granular
5 – unwieldy

24. Alignment
1 – formation
2 – accusation
3 – emblem
4 – brightness
5 – buoyant

25. Morbid
1 - moral
2 – attractive
3 – gruesome
4 – caustic
5 – mysterious

26. Malignant
1 – deliberate
2 – superior
3 – delirious
4 – malicious
5 – fragrant

27. Hauteur
1 – discordancy
2 – arrogance
3 – languor
4 – ignorance
5 – utility

28. Nihilism
1 – psychology
2 – optimism
3 – anarchism
4 – biology
5 – chauvinism

29. Insipid
1 – benign
2 – changeable
3 – poisonous
4 – colorless
5 – tasteless

30. Droll
1 – serious
2 – argument
3 – dwarf
4 – brogue
5 – laughable

31. Complacent
1 – friendly
2 – smug
3 – jealous
4 – angry
5 – uncivil

32. Archaeology
1 – obsolete language
2 – study of ancient cultures
3 – structure
4 – lineage
5 – study of rocks

33. Canvass
1 – crack
2 – flower
3 – elect
4 – wild bird
5 – examine

34. Correlate
1 – ceremony of crowing
2 – relate closely
3 – distant relative
4 – overweight
5 – group of soldiers

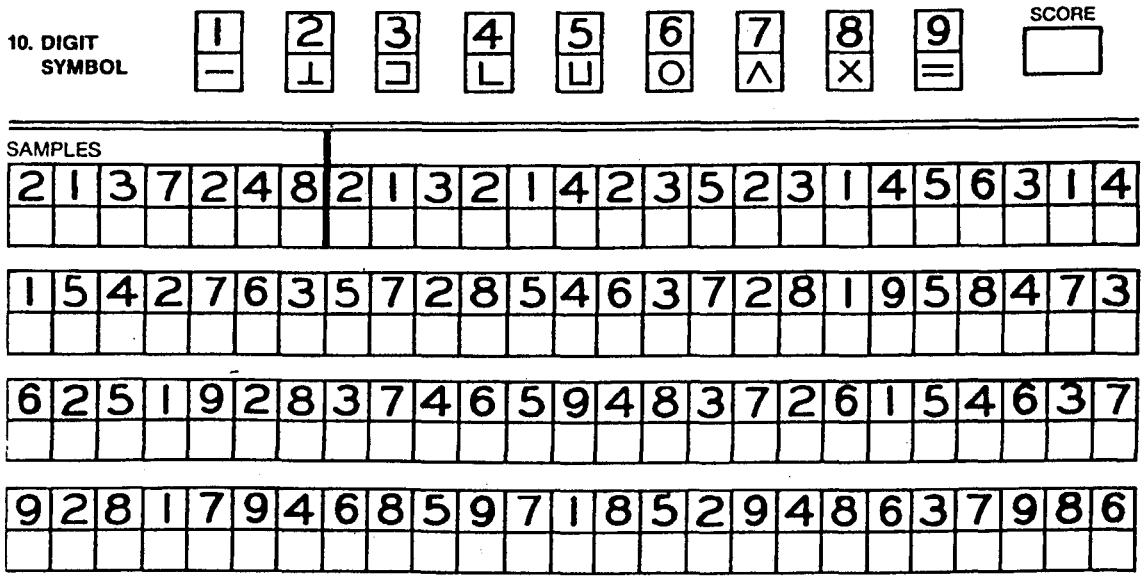
35. Edifice
1 – small insect
2 – heir
3 – front
4 – large building
5 – learning

36. Flabby
1 – lacking firmness
2 – giddy
3 – talkative
4 – noisy and boastful
5 – affluent

STOP

Appendix E:

Digit Symbol



Appendix F:

Threat and Non-Threat Manipulation Paragraphs

Threat:

We would like to get a clear picture of your individual ability to perform well on the following intelligence tests. It is very important that you perform at the highest level of quality that you can on these diagnostic tests so that we may gain a better understanding of your inherent intellectual abilities. We will be happy to provide you with feedback on how your performed was better or worse relative to other African Americans

Non-Threat:

Your individual performance on the following intelligence tests is not being evaluated diagnostically, so it is important that you do feel comfortable while working on the task. Please do perform at the highest level that you can, but do not feel that you are in any danger of being evaluated negatively. We appreciate your good-faith attempt at performing well on these tasks. You are welcome to ask for feedback on your performance after the study has ended.

Appendix G:

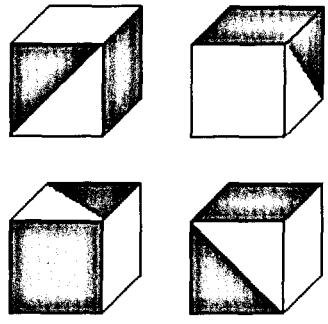
Block Design Self-Efficacy Questionnaire

BDSEQ

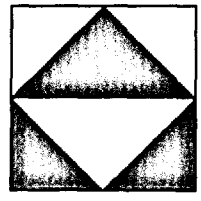
The following statements are in reference to your ability to put together a puzzle-like set of blocks to form a pre-determined picture. You do not need to complete the example items.

Examples:

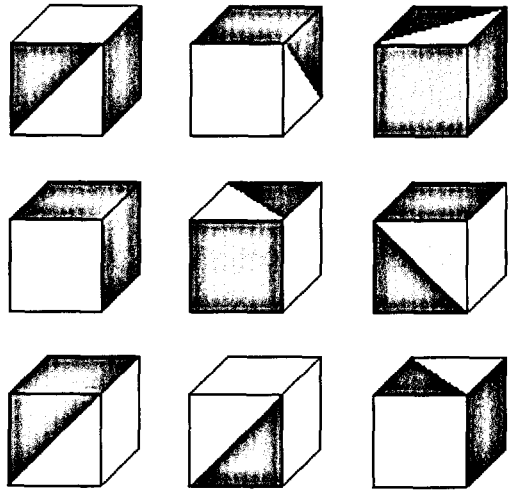
Look at the 4 blocks below. These blocks are made with identical abstract patterns of red and white on each block.



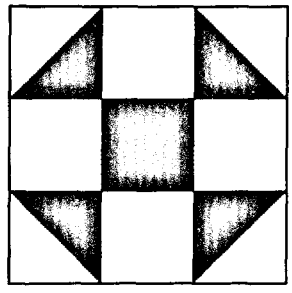
Now look at the object below. This object is made using the 4 blocks with identical abstract patterns of red and white on each seen above.

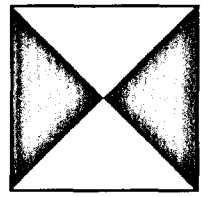


Now look at the 9 blocks below. These blocks are made with identical abstract patterns of red and white on each block.



Now look at the object below. This object is made using the 9 blocks with identical abstract patterns of red and white on each seen above.





Design 1

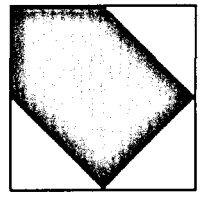
Please circle NO or YES for each item below.

If you circle YES, please rate how sure you are that you can make the design.

10% = NOT VERY SURE and 100% = VERY SURE.

1a) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **0-60 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



Design 2

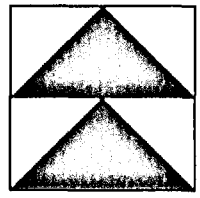
Please circle NO or YES for each item below.

If you circle YES, please rate how sure you are that you can make the design.

10% = NOT VERY SURE and 100% = VERY SURE.

1a) If I were asked to use four red and white cubes to make the design above, I could make this pattern in 0-60 seconds.

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



Design 3

Please circle NO or YES for each item below.

If you circle YES, please rate how sure you are that you can make the design.

10% = NOT VERY SURE and 100% = VERY SURE.

1a) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **16-60 seconds.**

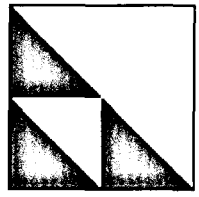
NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1b) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **11-15 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1c) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **less than 10 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



Design 4

Please circle NO or YES for each item below.

If you circle YES, please rate how sure you are that you can make the design.

10% = NOT VERY SURE and 100% = VERY SURE.

1a) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **16-60 seconds.**

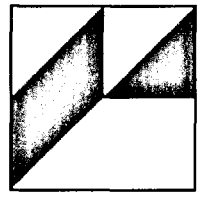
NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1b) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **11-15 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1c) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **less than 10 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



Design 5

Please circle NO or YES for each item below.

If you circle YES, please rate how sure you are that you can make the design.

10% = NOT VERY SURE and 100% = VERY SURE.

1a) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **21-60 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1b) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **16-20 seconds.**

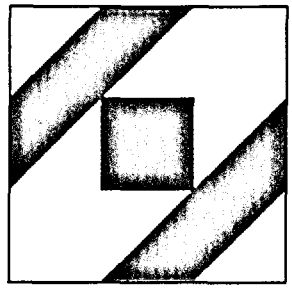
NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1c) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **11-15 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1d) If I were asked to use four red and white cubes to make the design above, I could make this pattern in **less than 10 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



Design 6

Please circle NO or YES for each item below.

If you circle YES, please rate how sure you are that you can make the design.

10% = NOT VERY SURE and 100% = VERY SURE.

1a) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **36 seconds-2 minutes.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1b) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **26-35 seconds.**

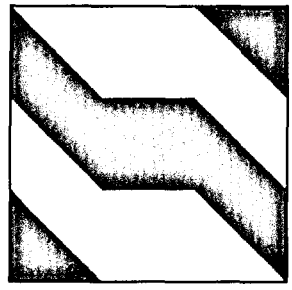
NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1c) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **21-25 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1d) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **less than 20 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



Design 7

Please circle NO or YES for each item below.

If you circle YES, please rate how sure you are that you can make the design.

10% = NOT VERY SURE and 100% = VERY SURE.

1a) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **1-2 minutes.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1b) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **46 seconds to 1 minute.**

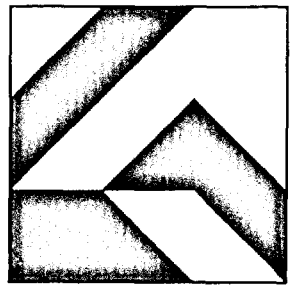
NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1c) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **31-45 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1d) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **less than 30 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



Design 8

Please circle NO or YES for each item below.

If you circle YES, please rate how sure you are that you can make the design.

10% = NOT VERY SURE and 100% = VERY SURE.

1a) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **1 minute, 16 seconds – 2 minutes.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1b) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **56 seconds – 1 minute, 15 seconds.**

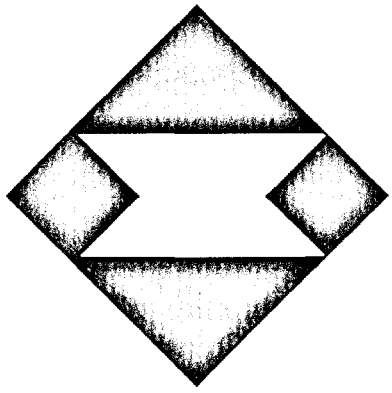
NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1c) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **41-45 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1d) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **less than 40 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%



Design 9

Please circle NO or YES for each item below.

If you circle YES, please rate how sure you are that you can make the design.

10% = NOT VERY SURE and 100% = VERY SURE.

1a) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **1 minute, 16 seconds – 2 minutes.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1b) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **56 seconds – 1 minute, 15 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1c) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **41-45 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

1d) If I were asked to use nine red and white cubes to make the design above, I could make this pattern in **less than 40 seconds.**

NO YES 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Appendix H:

Post-Test Attitudinal Survey (PAS)

PAS

Directions: Please answer the following questions **in reference to the tests that you have just completed**. There are no right or wrong answers, and be sure to answer as honestly as you can. Circle the number of the response that best describes how you feel about each question.

1. Tests, like the one that I just took, have been used to discriminate against people with my skin tone (color).

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

2. A negative opinion exists about how people of my skin tone (color) perform on that type of test.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

3. Taking tests, like the one I just completed, makes me feel good about myself.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

4. During the test, I wanted to show that people of my skin tone (color) could perform well on it.

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

5. As the test got difficult, I worried about confirming the negative opinion(s) about the test performance of people of my skin tone (color).

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

6. What kind of test did you just complete?

1	2	3	4	5
Strongly Disagree	Disagree	Uncertain	Agree	Strongly Agree

Appendix I:

Skin Color Measurement Device with Mean Skin Colors