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A Racial/Ethnic Performance Disparity on the Facial Recognition Test

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Abstract— **The Facial Recognition Test is a widely used psychometric instrument for assessing visuoperceptual functioning. Only two prior studies have examined the effects of race/ethnicity on this test. Given that the United States has become more culturally diverse since the creation of the test, it is important to re-visit the effects of this demographic variable on performance. Participants were 75 males and 75 females between the ages of 18 and 43 years (*M* = 21.91, *SD* = 5.33). Racial/ethnic categories utilized by the U.S. Census Bureau were equally represented. No gender differences were observed. The race/ethnicity main effect was significant. The gender x race/ethnicity interaction was not significant. The data revealed a clear racial/ethnic performance disparity on the Facial Recognition Test.**

Keywords-Facial Recognition Test, FRT, race, ethnicity

I. INTRODUCTION

The Facial Recognition Test [1] is one of the most widely used tests by clinical neuropsychologists [2]. The Facial Recognition Test (FRT) is a standardized and objective measure of visuoperceptual functioning that requires the identification and discrimination of unfamiliar human faces. Two forms are available: a Long Form and a Short Form (detailed in the Method section below). This study addresses the concern that only White males and females are represented in the standardization and norming of the FRT.

Only two prior studies have investigated the effects of race/ethnicity on FRT performance. Roberts and Hamsher [3] examined performance in a sample of 94 Black/African American males (*n* = 25) and females (*n* = 69). In 1992 a FRT standardization study [1] utilizing 115 Italian males was conducted (by U.S. Census Bureau [4] operational definition, these individuals are considered White). No significant effect was found in either study. Benton et al. [1] concluded that FRT performance was not significantly influenced by race or ethnicity.

Sporer and Horry [5] reported that greater racial/ethnic diversity has occurred worldwide because of a multi-ethnic mix resulting from increased immigration. A consistent finding in the face recognition literature is that ethnic origin impacts recognition accuracy. It has been reported that individuals are more accurate in recognizing faces of persons from their own racial/ethnic group than faces of other racial/ethnic groups [5, 6, 7, 8].

The effects of race/ethnicity on the FRT have not been examined since 1992. Since that time, the demographic profile of the United States has changed and become more racially and ethnically diverse [9]. As competent practitioners, it is essential that we routinely investigate the influence demographic variables have on our psychometric instruments. Not only do we gain a better understanding of the nature and extent demographic variables influence performance, but we are professionally obligated to do so as outlined in the *Standards for Educational and Psychological Testing* [10].

Based on the only two studies that have investigated the issue [1, 3], it would appear that race/ethnicity does not influence FRT performance. However, clinical experience has revealed that non-White examinees have voiced that they have difficulty identifying and differentiating the White individuals in the stimulus booklet. It was hypothesized that a difference in performance on the FRT would be observed as a function of a person's race/ethnicity.

II. METHOD

A. Participants

Participants (15 males and 15 females per racial/ethnic category) were randomly selected from a pool of graduate and undergraduate student volunteers at a large university in the Southeastern United States (*N* = 150). Participants had no self-reported history of cerebral disease/trauma or visual impairment. The age range of our sample was 18 to 43 years (*M* = 21.91, *SD* = 5.33); males 18 to 35 years (*M* = 20.96, *SD* = 3.80) and females 18 to 43 years (*M* = 22.85, *SD* = 6.40). Descriptive statistics of participants' age as a function of gender and race/ethnicity are presented in Table 1. Education

level (years completed) ranged from 12 to 18 years (M = 13.42, SD = 1.36); males 12 to 18 years (M = 13.27, SD = 1.44) and females 12 to 16 years (M = 13.56, SD = 1.28). Visual acuity ranged from 20/20 to 20/30 (M = 20/20.80, SD = 2.32); males 20/20 to 20/30 (M = 20/20.73, SD = 2.13) and females 20/20 to 20/30 (M = 20/20.87, SD = 2.52). Racial/ethnic categories corresponded to those utilized by the U.S. Census Bureau [4].

B. Materials

The Facial Recognition Test [1] is a standardized and objective measure designed to assess visuoperceptual functioning by way of an examinee's ability to differentiate

TABLE I. DESCRIPTIVE STATISTICS OF AGE BY GENDER AND RACE/ETHNICITY

	Total		Males		Females	
Race/Ethnicity	*M*	*SD*	*M*	*SD*	*M*	*SD*
Asian	21.23	4.33	21.20	4.33	21.27	4.48
Black or African American	21.77	5.56	19.73	2.31	23.80	7.05
Hispanic or Latino	20.90	3.56	20.40	3.31	21.40	3.83
Two or More Races	23.90	7.19	22.00	4.61	25.80	8.84
White	21.73	5.14	21.47	4.05	22.00	6.18

TABLE II. DESCRIPTIVE STATISTICE OF LONG FORM SCORES BY GENDER AND RACE/ETHNICITY

	Total		Males		Females	
Race/Ethnicity	*M*	*SD*	*M*	*SD*	*M*	*SD*
Asian	48.47	4.18	47.47	3.80	49.47	4.44
Black or African American	44.87	3.43	45.07	3.59	44.67	3.37
Hispanic or Latino	45.87	3.26	45.47	3.78	46.27	2.71
Two or More Races	46.40	2.86	45.67	2.72	47.13	2.90
White	45.73	2.69	45.07	2.66	46.40	2.64

photographs of unfamiliar human faces. The stimulus booklet is spiral bound and consists of a single photograph (stimulus picture) on the top sheet and six response-choice photographs on the bottom sheet. There are three parts to the test: (1) matching of identical front-view photographs, (2) matching of front-view with three-quarter-view photographs, and (3) matching of front-view photographs under different lighting conditions. The Long Form consists of 54 response items across 22 pages. The Short Form consists of 27 response items from the first 13 pages of the Long Form. A score of one point is assigned for each correct match on the Long Form for a total possible score of 54. For the Short Form, one point is awarded for each correct match for a total of 27 possible points. The Short Form score is then converted to a Long Form score using a score conversion table (provided on the test record form). Finally, a score correction for age and education is added to the Long Form score (a score correction table is provided on the test record form). Corrected Long Form scores are compared to a table of normative standards for classification and percentile rankings. Correlations between the Short Form and the Long Form have been reported to range from .84 to .88 [1].

A Rosenbaum pocket eye vision card was used to assess each participant's visual acuity. A questionnaire was developed for the present study to obtain demographic information on each participant (e.g., age, race/ethnicity, etc.).

C. Procedure

Following acquisition of informed consent, visual acuity was assessed using the pocket visual screening card. Participants then completed the FRT and the demographic questionnaire.

III. RESULTS

Descriptive statistics of participants' Long Form scores by race/ethnicity are presented in Table II. A two-way between-subjects ANOVA was used to analyze the effects of gender and race/ethnicity on Long Form scores. The main effect for gender of participants was not significant, $F(1, 140) = 3.692$, $p = .057$, *partial* $\eta^2 = .026$. A significant race/ethnicity main effect was observed, $F(4, 140) = 4.958$, $p = .001$, *partial* $\eta^2 = .124$. Post hoc pairwise comparisons of the significant race/ethnicity main effect using Tukey's HSD indicated that the Long Form scores of the Asian participants were significantly higher than scores of the White (mean difference = 2.73, $p < .02$), Black/African American (mean difference = 3.60, $p < .001$), and Hispanic/Latino (mean difference = 2.60, $p < .05$) participants. The gender x race/ethnicity interaction was not significant, $F(4, 140) = .567$, $p = .687$, *partial* $\eta^2 = .016$.

A secondary analysis was conducted to examine the degree of relationship between the Short Form and Long Form scores of the sample. The obtained significant high correlation, $r(148) = .87$, $p < .01$, was consistent with prior studies.

IV. DISCUSSION

The purpose of this study was to assess the effects of race/ethnicity on FRT performance. The present data supported the hypothesis in that a clear racial/ethnic disparity was observed.

The detection of a racial/ethnic disparity suggests the need to demographically control for this variable on the FRT. Given the potential significance of the present findings, additional studies are needed to corroborate these results. Should similar findings be obtained, then a re-norming of the FRT would seem necessary.

Future researchers should address several specific issues. First, studies should include the two racial/ethnic subgroups that we were unable to obtain (i.e., American Indian or Alaska Native; and Native Hawaiian and Other Pacific Islander). Second, future studies should include a broader age range. Finally, future studies should include non-student participants in order to form a more ecologically valid sample.

The FRT has an honorable history and certainly has a place in a comprehensive evaluation of higher cerebral functioning. The ethical implications of this study are that the present data clearly demonstrate that this popular test of visuoperceptual functioning requires further investigation in order to adhere to the *Standards of Educational and Psychological Testing*. Not only would such investigations further elucidate how race/ethnicity influences FRT performance, but would ultimately account for changes in racial/ethnic diversity in the United States, and other countries, since the test's original norming in the early 1980s.

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