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ABSTRACT

This study focuses on determining whether the learning styles of African American children, as described in the literature, are related to the preference of feeling and the sensing-perceiving temperament as defined by the Myers Briggs Type Indicator (MBTI). Science teachers were particularly interested in understanding influences because science educators are trying to engage more underserved populations in science for both lifelong personal benefits and for careers in science. This study aimed to present type preferences for African American high school students in North Carolina, to identify learning style differences between minority and majority high school males, to compare the learning style preferences of African American high school students to the learning style preferences of male Howard University students, and to compare the learning style preferences of Grade 6 and Grade 11 African American students. Analysis of the data show learning style differences among African American youth and a population of white male students. The learning styles of African Americans have more heterogeneity than previously reported. It is suggested that white Americans must take major responsibility for the underrepresentation of African American students in science careers. (Contains 37 references and results of the MBTI survey.) (DDR)

Learning Styles and Personality Types of African American Children: Implications for Science Education

by

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Abstract

The National Science Education Standards (NSES) state that science should be for all children, yet the document does not tell teachers how to alter their instruction to be more inclusive of minority students than they are today. Myers-Briggs Type Indicator (MBTI) information with accompanying teaching strategies that are aligned with the theory of Black children's learning style strengths provide the instructional practices for science teachers that the NSES lack.

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Minority populations are increasing among students and decreasing among teachers (Atwater, 1989). These changing student and teacher demographics suggest that Caucasian teachers should become familiar with cultural influences on learning styles of children of color (NSTA, 1991). Science teachers are particularly interested in understanding these influences because science educators are trying to engage more underserved populations in science for both lifelong personal benefits and for careers in science. In addition, the National Standards for Science Education (National Research Council, 1996) emphasize science for all Americans, not just for the academically elite. However, research on gender and race suggests that teacher behavior reinforces rather than reduces stylistic differences and preferential treatment (American Association of University Women, 1992; Grossman & Grossman, 1994).

Curry (1983, 1987, 1990, 1991) and Claxton and Murrell (1987) suggested the MBTI as a reliable and valid research tool in science education. Numerous science educators have reported how the MBTI can be used in science teaching (Baker, 1985; Bonnstetter, Harne, & McDonald,1991; Kuerbis, 1988. McCaulley (1977) and Melear (1989) reported types for both science and nonscience majors. To date, science education research has rarely attempted to reconcile cultural learning theorists' ideas with implications for science teaching (Melear, 1995; Melear & Pitchford, 1991; Melear & Richardson, 1994).

Literature Review

Banks (1993) argued that research results are unclear about race and socioeconomic class as separate variables that affect achievement, and he called for more research on learning styles of African American children. Several African heritage learning theorists (Allen & Boykin, 1992; Boykin, 1992; Hale-

Benson, 1986; Hale, 1994; Shade, 1982;) argued for attention to cultural and stylistic differences in the way African American children learn. For example, Hale-Benson suggested that style differences have roots in the West African culture from which African American children came, and Cohen (1969) found that young black children have a more relational, person-oriented learning style than do white children.

Cohen and Hale-Benson (1986) contrasted the analytical style more common among white children and the model upon which classrooms are organized with the relational style, which reflects the strengths of the African culture. Cohen (cited in Hale-Benson) characterized the relational style as self-centered; global; focused on fine descriptive characteristics; affective in responses; using personification to understand the abstract; distractible; emotional; over-involved in all activities; having short attention and concentration spans; gestalt learners; embedding words in context for meaning; using few synonyms; fluently speaking language with strong, colorful expressions; and tending to ignore structure. Cohen contrasted this relational style with traditional schooling patterns that value rules, standardization, conformity, memory for specific facts, regularity, rigid order, "normality," differences equating with deficits, precision, logical reasoning, atomistic, convergent, controlled, universal meanings, linear processing, mechanistic approaches, hierarchical structures, deductive reasoning, and scheduled time arrangements.

Descriptors of traditional science may be contrasted with the Cohen (1969) list of descriptors as follows: science is reductionistic, mechanistic, logical, and orderly. Cohen's relational style that describes African America children's learning style is person-centered, expressive, affective, valuing the unique versus the regular, global, and movement-oriented.

Kiersey and Bates (1984) described four temperaments based on the MBTI and on four Greek gods. A portion of the Hale's (1994) theory of African American children's learning style closely matches the sensing perceiving (SP) temperament description, which includes expressiveness, movement orientation, and a tendency to ignore structure. SP learners hunger for action in the classroom, enjoy hands-on experiences, and need to see the relationship of theory to practice.

Psychological type and learning styles may be measured with the MBTI; there is also value in attempting to measure cultural learning theory with the instrument. This study presents MBTI data and implications for science learning for the largest minority population in the United States.

The current literature (Cohen, 1969; Hale-Benson, 1986; Shade 1982) describing learning styles of Africa American children sounds remarkably similar to the feeling type preference of the MBTI and the sensing perceiving temperaments described by Keirsey and Bates (1984). This study was undertaken to determine if the learning styles of African American children as described by Hale-Benson and others are related to the preference for feeling and the sensing perceiving temperament as identified by the MBTI. The researchers were especially interested in the type descriptions of African American males. The purpose of the study was to present type preferences for African American high school students in North Carolina, to identify learning style differences between minority and majority high school males, to compare the learning style preferences of male African American high school students to the learning style preferences of male Howard University students, and to compare the learning style preferences of 6th grade and 11th grade African American students.

Methodology

The subjects were high school students in Halifax, Hertford, Martin, and Wayne, four predominantly rural counties in eastern North Carolina in which most public school students are African Americans. Three of these counties are the top counties in the state on 11 quality-of-life poverty indicators which means that they have the lowest income, the poorest housing, the worst health characteristics, and the lowest educational attainment. North Carolina has a high concentration of working poor (Ziehr, 1988), suggesting that in addition to a high poverty rate, it also has a low unemployment rate, as well as low percentages of persons who are welfare recipients. Therefore, the state's poor people have jobs, are not on welfare, and still fall below the poverty level.

Of the male populations studied, almost half were enrolled in upper division elective high school science courses. Three teachers, one each from Halifax, Hertford, and Martin counties, collected all the data from their own science classes. All 11th grade students in one school district in Wayne County responded to the instruments in English classes. Data from the 6th graders in Wayne County were collected by their science teacher. All high school students responded to the MBTI Form G, whereas the 6th graders responded to the Murphy Meisgeier Type Indicator for Children (MMTIC; Meisgeier & Murphy (1987).

Results

The total African American high school population in North Carolina is presented in Tables 1, 2, and 3, which will appear in the third edition Atlas of Type Tables (In press). For this study, the African American high school males ($\underline{N}$ = 204) were compared to the MBTI norm group of 3,503 high school students in college prepatory classes (Table 4). The norm group was drawn from Philadelphia and was predominantly white (Myers & Myers, 1980). African

American students were significantly more likely to prefer ISTJ ($p<.05$), ISTP ($p<.01$) and ESTP ($p<.001$) and were less likely to prefer ENFP ($p<.05$). The functions and types of S, T, IS, ST, and TP, as well as the temperament of SP were overrepresented, suggesting that the type and temperament preferences of African American students and white students are not consistent.

A comparison of the male high school sample was also made with Levy, Murphy, and Carlson's (1972) sample (N = 331) of male Howard University students (Table 5). The ESTP and ENTP groups emerged in the high school sample as more represented than the Howard University sample with the ESTP group statistically significantly ($p<.001$) greater. Among the African American high school students, there were fewer EST] and ENFJ types than in the Howard group. Overall, among the African American high school students there were more T, P, IP, EP, and TP type preferences and more SP temperament preferences.

The African American 11th and 6th grade students in one school district were compared (Table 6). Four types of students - ESFJ, ESFP, ENFP, and INFP, with the feeling function in common were overrepresented in the 6th grade relative to the 11th grade. Students who preferred S and T overrepresented in the 11th grade (ISTJ , $p <. 001$; ISTP, ESTJ, and INTP, $p <.05$)

Conclusions

This study shows learning style differences among African American youth and a population of white male students; additionally, learning styles of African Americans were shown to have more heterogeneity than has been reported previously (Campbell, 1996; Levy et al., 1972), when high school African American males were compared to African American college males. Finally, one study of 6th and 11th grade students in one school district found

that 6th grade youth were more likely to prefer F than their 11th grade cohorts. The 6th grade data support Hale-Benson's (1986) claim that young black children have a person-oriented, affective, learning style which was described in Melear (1995). High school data for the African American students show preferences for ST and SP. P was preferred among high school students in a comparison with Levy et al.'s (1972) study of Howard University students, thus providing greater diversity of preferences among African American students than previously reported. High school data did not support Hale-Benson's (1986) claim for the affective and relational learning style; however data from the comparison of 11th grade and 6th grade students (both male and female) with the F preference in common did support support Hale's (1996) hypothesis. F types may be among the students who drop out before reaching upper-level high school; Thus they may not be present to measure. It may be that the relational learning style of African American males described by Hale is characteristic of only the younger child and thus may be undetectable in older youth. Longitudinal studies and type development studies will be necessary to confirm the dynamic of more students reporting T than F preferences at the high school level. Certainly until more evidence is available from MBTI studies of young children, the theory proposed in Hale-Benson and by other African heritage researchers should not be abandoned.

These studies support the idea that differences exist among African American students and white students. Significant populations of young black children who prefer F are present in 6th grade and by the 11th grade, the preference is no longer evident. Several questions are raised by this finding. For example, what is the impact of type development and type dynamics? Do more students with the F preference drop out of school before reaching high school?

Although no clear group preferences for E or I were reported, there were more African American high school males who preferred P over J. Jensen (1987) stated that Ps tend to view learning as a freewheeling, flexible quest. They care less about deadlines and the completion of tasks, prefer open and spontaneous learning environments, and feel "imprisoned" in a highly structured classroom. They also like discovery type tasks and can manage emerging problems. They like to work in flexible ways, following their impulses and engaging in informal problem solving (Lawrence, 1984, 1984). This difference supports Hale's (1994) claims about the structure of schools. Schools are known for rules, conformity, rigid order, schedules, and other descriptors that are the of what Ps prefer. The National Sciences Education Standards (NRC, 1996) call for teachers to use inquiry learning with open-ended experiments. This standard can provide a match for the students who report P as the preferred mode of learning and lifestyle.

Implications

Levy et al. (1972) reported that the lack of diversity in MBTI types in their study in which 40% of the male Howard students were SJ types may be caused by living in a "majority" dominated world. The social milieu may impose constraints on the development of "innate" preferences for intuitive, perceptive modes of experience among African American children. Levy et al. explained that the concreteness and need-for-closure of the SJ orientation is diametrically opposed to the imagination and perception needed for academic achievement.

Jensen (1987) reported that F types are most motivated when given personal encouragement and when shown the human angle of a topic. Feeling types think to clarify their values and to establish networks of values. Even when their expressions seem syllogistic, they usually evolve from some

personally held beliefs and values. Perhaps as students move up the schooling ladder, there may be more selective pressure T orientations in science classes. Also subjects other than science may be more attractive to F types.

Implications for Science Teaching

Elementary and Middle School

A most intriguing aspect of this study is the evidence for the type difference between the 6th and 11th graders among the African American youth, which may or may not be caused by development. The F-type preferences in the 6th grade and the T-type preferences in the high school upper division grades have implications for teachers. The young black children, with a relational learning style that includes an affective component similar to the F preference, should have their preferences addressed, and the school environment should not become so depersonalized that black children with an F preference get lost. Barnes (1992) reported that African American males report that techniques that would have prevented them from dropping out of school include extra help with school work, compliments on their work, and more attention from their teachers. These techniques reflect the F preference in a learning situation.

High School

This study supports valuing differences of African American males in upper-level science classes, differences identified as S, T, and P. Science classes already support the first two functions in that S focuses on details, observation using the senses, and precision, and T focuses on the logical use of data to come to conclusions and analysis. Historically, students who are "freedom-loving," as Ps are have been seen as trouble makers needing to be reigned in or changed. Teachers with a greater degree of maturity and life experience and more

flexibility are called upon to ensure that the needs of the African American males are met in the upper-level classes.

Primarily what teachers can do for P students is to offer options in assignments, processes for completion of activities, and product forms for assignments. These suggestions are in line with assessments recommended in the National Science Education Standards (NRC, 1996). Making students aware that the teacher is willing to meet individual needs, whenever possible, sends a caring message that honors individuals' learning and type preferences. Allowing all students options does not differentiate experiences for students by race or gender. Offering students who prefer P some some teacher-imposed structure may assist them to develop their own internal structures. A fine line must be walked by teachers to allow students to choose some options, while simultaneously providing loose structure.

College

The findings of the present study have some direct implications for teaching minority college students, particularly students who prefer E and P. Melear (1989) found three MBTI types (ESTP, ESFP, and ENTP) whose semester grades were the lowest of the 16 MBTI types. Melear's population (N = 657) consisted of nonscience undergraduate majors enrolled in a nonmajors biology course. Two of the low scoring groups had ESP in common, whereas all three of the low scorers were EPs. ESFP was also the type most different from the science major sample of comparison (Myers & Myers, 1980).

The logical, analytical nature of many science instructors may seem cold and removed from the kind of interactive instruction some students find more comfortable and productive. Problem-oriented learning might be more palatable if a tactical adjustment were made. Students who are E and P may benefit from a shared approach to studying science. The social interaction may provide a

support system that is cooperative in nature. Teachers could support these students by promoting shared studying as a technique, allowing partners to turn in a single set of homework problems or providing a rationale for why some students may learn more effectively with a partner in a shared studying approach.

Historically black colleges and universities provide encouragement through professors who believe in students' abilities to succeed in science. These black institutions continue to provide most of the science professionals of color. Bryant (1990) stated that if college science teachers in predominantly white institutions want to foster African American student achievement in science, they must exhibit a posture of caring and encouragement and use of cultivating strategies rather than weeding-out strategies. Bryant further suggested that white Americans must take major responsibility for the underrepresentation of African American students in science careers.

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African-American

Upper division high school students

N = 452

SENSING THINKING	SENSING FEELING	INTUITION FEELING	INTUITION THINKING	
ISTJ N= 54 %= 11.95	**ISFJ** N= 27 %= 5.97	**INFJ** N= 6 %= 1.33	**INTJ** N= 9 %= 1.99	INTROVERSION JUDGMENT
ISTP N= 31 %= 6.86	**ISFP** N= 32 %= 7.08	**INFP** N= 8 %= 1.77	**INTP** N= 19 %= 4.20	INTROVERSION PERCEPTION
ESTP N= 56 %= 12.39	**ESFP** N= 42 %= 9.29	**ENFP** N= 24 %= 5.31	**ENTP** N= 24 %= 5.31	EXTRAVERSION PERCEPTION
ESTJ N= 66 %= 14.60	**ESFJ** N= 26 %= 5.75	**ENFJ** N= 11 %= 2.43	**ENTJ** N= 17 %= 3.76	EXTRAVERSION JUDGMENT

	N	%
E	266	58.85
I	186	41.15
S	334	73.89
N	118	26.11
T	276	61.06
F	176	38.94
J	216	47.79
P	236	52.21
IJ	96	21.24
IP	90	19.91
EP	146	32.30
EJ	120	26.55
ST	207	45.80
SF	127	28.10
NF	49	10.84
NT	69	15.27
SJ	173	38.27
SP	161	35.62
NP	75	16.59
NJ	43	9.51
TJ	146	32.30
TP	130	28.76
FP	106	23.45
FJ	70	15.49
IN	42	9.29
EN	76	16.81
IS	144	31.86
ES	190	42.04
ET	163	36.06
EF	103	22.79
IF	73	16.15
IT	113	25.00
S dom	179	39.60
N dom	63	13.94
T dom	133	29.42
F dom	77	17.04

Note: ■ = 1% of sample

94249002

Data collected by Dr. Claudia T. Melear of East Carolina University during 1991-1992 using Form G. The subjects were 45% male and 55% female. The highest level of education achieved by the sample was high school grades 10-12. Th from high school students in Halifax, Hertford, Martin, and Wayne counties of Eastern North Carolina. enrolled in college prep science classes and the other half in 11th grade english. No other demographic inform: These data are used with permission and have not been published elsewhere to date.

African-American

Upper division high school students--male

N = 204

SENSING THINKING	SENSING FEELING	INTUITION FEELING	INTUITION THINKING	
ISTJ N= 26 %= 12.75 ■■■■■■■■■■■■	**ISFJ** N= 10 %= 4.90 ■■■■■	**INFJ** N= 2 %= 0.98 ■	**INTJ** N= 5 %= 2.45 ■■	INTROVERSION JUDGMENT
ISTP N= 21 %= 10.29 ■■■■■■■■■■	**ISFP** N= 7 %= 3.43 ■■■	**INFP** N= 4 %= 1.96 ■■	**INTP** N= 16 %= 7.84 ■■■■■■■■	INTROVERSION PERCEPTION
ESTP N= 35 %= 17.16 ■■■■■■■■■■■■■■■■■	**ESFP** N= 12 %= 5.88 ■■■■■■	**ENFP** N= 7 %= 3.43 ■■■	**ENTP** N= 11 %= 5.39 ■■■■■	EXTRAVERSION PERCEPTION
ESTJ N= 27 %= 13.24 ■■■■■■■■■■■■■	**ESFJ** N= 8 %= 3.92 ■■■■	**ENFJ** N= 3 %= 1.47 ■	**ENTJ** N= 10 %= 4.90 ■■■■■	EXTRAVERSION JUDGMENT

	N	%
E	113	55.39
I	91	44.61
S	146	71.57
N	58	28.43
T	151	74.02
F	53	25.98
J	91	44.61
P	113	55.39
IJ	43	21.08
IP	48	23.53
EP	65	31.86
EJ	48	23.53
ST	109	53.43
SF	37	18.14
NF	16	7.84
NT	42	20.59
SJ	71	34.80
SP	75	36.76
NP	38	18.63
NJ	20	9.80
TJ	68	33.33
TP	83	40.69
FP	30	14.71
FJ	23	11.27
IN	27	13.24
EN	31	15.20
IS	64	31.37
ES	82	40.20
ET	83	40.69
EF	30	14.71
IF	23	11.27
IT	68	33.33
S dom	83	40.69
N dom	25	12.25
T dom	74	36.27
F dom	22	10.78

Note: ■ = 1% of sample

94249004

Data collected by Dr. Claudia T. Melear of East Carolina University during 1991-1992 using Form G. The subjects were 45% male and 55% female. The highest level of education achieved by the sample was high school grades 10-12. T from high school students in Halifax, Hertford, Martin, and Wayne counties of Eastern North Carolina enrolled in college prep science classes and the other half in 11th grade english. No other demographic inform These data are used with permission and have not been published elsewhere to date.

Table 2

African-American
Upper division high school students--female

N = 248

SENSING THINKING	SENSING FEELING	INTUITION FEELING	INTUITION THINKING	
ISTJ N= 28 %= 11.29	**ISFJ** N= 17 %= 6.85	**INFJ** N= 4 %= 1.61	**INTJ** N= 4 %= 1.61	INTROVERSION JUDGMENT
ISTP N= 10 %= 4.03	**ISFP** N= 25 %= 10.08	**INFP** N= 4 %= 1.61	**INTP** N= 3 %= 1.21	INTROVERSION PERCEPTION
ESTP N= 21 %= 8.47	**ESFP** N= 30 %= 12.10	**ENFP** N= 17 %= 6.85	**ENTP** N= 13 %= 5.24	EXTRAVERSION PERCEPTION
ESTJ N= 39 %= 15.73	**ESFJ** N= 18 %= 7.26	**ENFJ** N= 8 %= 3.23	**ENTJ** N= 7 %= 2.82	EXTRAVERSION JUDGMENT

	N	%
E	153	61.69
I	95	38.31
S	188	75.81
N	60	24.19
T	125	50.40
F	123	49.60
J	125	50.40
P	123	49.60
IJ	53	21.37
IP	42	16.94
EP	81	32.66
EJ	72	29.03
ST	98	39.52
SF	90	36.29
NF	33	13.31
NT	27	10.89
SJ	102	41.13
SP	86	34.68
NP	37	14.92
NJ	23	9.27
TJ	78	31.45
TP	47	18.95
FP	76	30.65
FJ	47	18.95
IN	15	6.05
EN	45	18.15
IS	80	32.26
ES	108	43.55
ET	80	32.26
EF	73	29.44
IF	50	20.16
IT	45	18.15
S dom	96	38.71
N dom	38	15.32
T dom	59	23.79
F dom	55	22.18

Note: ■ = 1% of sample

94249003

Data collected by Dr. Claudia T. Melear of East Carolina University during 1991-1992 using Form G. The subjects were 45% male and 55% female. The highest level of education achieved by the sample was high school grades 10-12. The from high school students in Halifax, Hertford, Martin, and Wayne counties of Eastern North Carolina. enrolled in college prep science classes and the other half in 11th grade english. No other demographic informa These data are used with permission and have not been published elsewhere to date.

Table 3

African American Male High School North Carolina, vs Myers, College Prep Males, GD, p.31,Fig.3

African American Male High School, North Carolina

compared with

Myers, H.S. Males in Gifts Differing, p.31,Fig.3 N = 3503

N = 204

ISTJ	ISFJ	INFJ	INTJ
N = 26	N = 10	N = 2	N = 5
% = 12.75	% = 4.90	% = 0.98	% = 2.45
I = 1.58*	I = 1.24	I = 0.46	I = 0.52
nnnnnnnnnn nnn	nnnnn	n	nn
ISTP	**ISFP**	**INFP**	**INTP**
N = 21	N = 7	N = 4	N = 16
% = 10.29	% = 3.43	% = 1.96	% = 7.84
I = 2.00**	I = 0.79	I = 0.47	I = 1.31
nnnnnnnnnn	nnn	nn	nnnnnnnn
ESTP	**ESFP**	**ENFP**	**ENTP**
N = 35	N = 12	N = 7	N = 11
% = 17.16	% = 5.88	% = 3.43	% = 5.39
I = 2.22***	I = 0.92	I = 0.48*	I = 0.68
nnnnnnnnnn nnnnnnn	nnnnnn	nnn	nnnnn
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**
N = 27	N = 8	N = 3	N = 10
% = 13.24	% = 3.92	% = 1.47	% = 4.90
I = 0.84	I = 0.61	I = 0.42	I = 0.74
nnnnnnnnnn nnn	nnnn	n	nnnnn

	N	%	I
E	113	55.39	0.90
I	91	44.61	1.16
S	146	71.57	1.24***
N	58	28.43	0.67***
T	151	74.02	1.20***
F	53	25.98	0.68***
J	91	44.61	0.87
P	113	55.39	1.13
IJ	43	21.08	1.12
IP	48	23.53	1.20
EP	65	31.86	1.09
EJ	48	23.53	0.73**
ST	109	53.43	1.46***
SF	37	18.14	0.85
NF	16	7.84	0.46***
NT	42	20.59	0.82
SJ	71	34.80	1.02
SP	75	36.76	1.55***
NP	38	18.63	0.74*
NJ	20	9.80	0.58**
TJ	68	33.33	0.95
TP	83	40.69	1.52***
FP	30	14.71	0.67*
FJ	23	11.27	0.70
IN	27	13.24	0.78
EN	31	15.20	0.60**
IS	64	31.37	1.46**
ES	82	40.20	1.11
Sdom	83	40.69	1.55***
Ndom	25	12.25	0.56**
Tdom	74	36.27	1.09
Fdom	22	10.78	0.58**

Note: n = 1% of sample.

Print date: 3/13/97

* < .05, ** < .01, *** < .001

Base total N = 3503. Groups are independent.

Calculated values of Chi Square *or* Fisher's exact probability (underlined).

Type Table Significance

5.49	0.44	0.32	0.17
9.99	0.41	0.14	1.19
22.59	0.09	4.10	1.67
0.87	2.13	0.16	0.96

E	3.05	IJ	0.63	SJ	0.03	IN	1.89
I	3.05	IP	1.83	SP	17.94	EN	10.40
S	14.92	EP	0.67	NP	4.40	IS	10.80
N	14.92	EJ	6.90	NJ	7.18	ES	1.25
T	12.27	ST	23.22	TJ	0.26	Sd	20.51
F	12.27	SF	1.12	TP	18.86	Nd	10.50
J	3.34	NF	11.65	FP	6.20	Td	0.70
P	3.34	NT	2.17	FJ	3.37	Fd	7.84

African American Male High School North Carolina, vs Levy et al. (1972) Howard University Male College

African American Male High School, North Carolina

compared with

Howard University Male College Students (Levy et al., 1972)

N = 204

ISTJ	ISFJ	INFJ	INTJ
N = 26 % = 12.75 I = 0.86 nnnnnnnnnn nnn	N = 10 % = 4.90 I = 0.60 nnnnn	N = 2 % = 0.98 I = 0.36 n	N = 5 % = 2.45 I = 0.51 nn
ISTP	**ISFP**	**INFP**	**INTP**
N = 21 % = 10.29 I = 2.84** nnnnnnnnnn	N = 7 % = 3.43 I = 2.27 nnn	N = 4 % = 1.96 I = 0.50 nn	N = 16 % = 7.84 I = 1.85 nnnnnnnn
ESTP	**ESFP**	**ENFP**	**ENTP**
N = 35 % = 17.16 I = 3.55*** nnnnnnnnnn nnnnnnn	N = 12 % = 5.88 I = 2.16 nnnnnn	N = 7 % = 3.43 I = 0.76 nnn	N = 11 % = 5.39 I = 3.57* nnnnn
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**
N = 27 % = 13.24 I = 0.54** nnnnnnnnnn nnn	N = 8 % = 3.92 I = 0.52 nnnn	N = 3 % = 1.47 I = 0.29* n	N = 10 % = 4.90 I = 0.90 nnnnn

	N	%	I
E	113	55.39	0.99
I	91	44.61	1.02
S	146	71.57	1.06
N	58	28.43	0.88
T	151	74.02	1.16*
F	53	25.98	0.72*
J	91	44.61	0.61***
P	113	55.39	2.06***
IJ	43	21.08	0.69*
IP	48	23.53	1.77**
EP	65	31.86	2.34***
EJ	48	23.53	0.55***
ST	109	53.43	1.12
SF	37	18.14	0.91
NF	16	7.84	0.48**
NT	42	20.59	1.29
SJ	71	34.80	0.63***
SP	75	36.76	2.90***
NP	38	18.63	1.31
NJ	20	9.80	0.54**
TJ	68	33.33	0.67***
TP	83	40.69	2.87***
FP	30	14.71	1.16
FJ	23	11.27	0.48***
IN	27	13.24	0.84
EN	31	15.20	0.91
IS	64	31.37	1.12
ES	82	40.20	1.02
Sdom	83	40.69	1.33*
Ndom	25	12.25	0.90
Tdom	74	36.27	0.96
Fdom	22	10.78	0.59*

Note: n = 1% of sample.

Print date: 3/13/97

* < .05, ** < .01, *** < .001

Base total N = 331. Groups are independent.

Calculated values of Chi Square *or* Fisher's exact probability (underlined).

Type Table Significance

0.44	2.08	0.22	0.18
9.70	0.23	0.31	3.11
22.22	3.35	0.39	0.02
9.89	2.88	0.03	0.07

E	0.03	IJ	5.71	SJ	20.62	IN	0.61
I	0.03	IP	9.29	SP	42.82	EN	0.19
S	0.90	EP	25.79	NP	1.85	IS	0.65
N	0.90	EJ	20.09	NJ	6.87	ES	0.02
T	6.09	ST	1.64	TJ	13.51	Sd	5.79
F	6.09	SF	0.26	TP	48.14	Nd	0.20
J	43.63	NF	7.96	FP	0.44	Td	0.12
P	43.63	NT	1.81	FJ	12.45	Fd	5.24

Table 6. African American Sixth and Eleventh Grade, Wayne Cty., N. C.

African American Sixth Grade Students N = 214

compared with

African American Eleventh Grade Students N = 208

ISTJ	ISFJ	INFJ	INTJ
N = 29	N = 17	N = 3	N = 5
% = 13.94	% = 8.17	% = 1.44	% = 2.40
I = 3.32***	I = 1.94	I = 3.09	I = 5.14
ISTP	ISFP	INFP	INTP
N = 17	N = 10	N = 2	N = 10
% = 8.17	% = 4.81	% = 0.96	% = 4.81
I = 2.50*	I = 0.64	I = 0.19*	I = 3.43
ESTP	ESFP	ENFP	ENTP
N = 26	N = 14	N = 7	N = 9
% = 12.50	% = 6.73	% = 3.37	% = 4.33
I = 1.78	I = 0.42**	I = 0.25***	I = 0.84
ESTJ	ESFJ	ENFJ	ENTJ
N = 31	N = 16	N = 4	N = 8
% = 14.90	% = 7.69	% = 1.92	% = 3.85
I = 1.77*	I = 0.41***	I = 0.51	I = 4.12

	N	%	I
E	115	55.29	0.75***
I	93	44.71	1.68***
S	160	76.92	1.11
N	48	23.08	0.75
T	135	64.90	2.10***
F	73	35.10	0.51***
J	113	54.33	1.32**
P	95	45.67	0.78**
IJ	54	25.96	2.78***
IP	39	18.75	1.08
EP	56	26.92	0.65**
EJ	59	28.37	0.89
ST	103	49.52	2.16***
SF	57	27.40	0.59***
NF	16	7.69	0.34***
NT	32	15.38	1.94*
SJ	93	44.71	1.26
SP	67	32.21	0.96
NP	28	13.46	0.53**
NJ	20	9.62	1.71
TJ	73	35.10	2.50***
TP	62	29.81	1.77**
FP	33	15.87	0.38***
FJ	40	19.23	0.71
IN	20	9.62	1.29
EN	28	13.46	0.58**
IS	73	35.10	1.83***
ES	87	41.83	0.84
Sdom	86	41.35	1.32*
Ndom	24	11.54	0.59*
Tdom	66	31.73	2.26***
Fdom	32	15.38	0.44***

Note: ■ = 1% of sample.

Print date: 4/25/97

* < .05, ** < .01, *** < .001

Base total N = 214. Groups are independent.

Calculated values of Chi Square *or* Fisher's exact probability (underlined).

Type Table Significance

12.20	2.87	0.37	0.12
4.73	1.30	0.02	0.05
3.63	8.77	14.03	0.15
4.33	11.09	0.38	0.06

E	15.04	IJ	20.14	SJ	3.72	IN	0.62
I	15.04	IP	0.15	SP	0.10	EN	6.87
S	3.22	EP	10.06	NP	9.34	IS	13.59
N	3.22	EJ	0.58	NJ	2.42	ES	2.84
T	49.06	ST	32.44	TJ	25.40	Sd	4.60
F	49.06	SF	16.10	TP	9.98	Nd	5.23
J	7.37	NF	18.71	FP	35.04	Td	18.83
P	7.37	NT	5.69	FJ	3.67	Fd	21.55

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