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ABSTRACT

Studies were undertaken in four counties in North Carolina to determine if the learning styles of African American children described by J. Hale (formerly Hale-Benson) (1986) could be identified among African American high school males through the use of the Myers Briggs Type Indicator (MBTI). Learning style differences between minority (n=184) and majority (norm group of predominantly white students) youth were studied, and learning styles of the same male high school students were compared with those of 332 male African American college students. In addition, learning styles of African American 6th and 11th graders of both sexes were compared. Results support the findings that differences do exist between African American students and other populations. Specifically, young African American children have a more relational, person-oriented style than do White students. However, significant populations of students who prefer feeling as a decision-making strategy in 6th grade no longer show this preference by grade 11. The differences support some of Hale's claims that African American children have a different learning style than majority children, particularly that male African American high school students are more Sensing than Intuitive. High school data do not support Hale's claims for the affective and relational learning styles, but data from the comparison of students in grades 6 and 11 do support the hypothesis. Implications for science teaching are discussed. Four tables summarize study findings. (Contains 24 references.) (SLD)

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Learning Styles of African American Children Which Correspond to the MBTI

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ABSTRACT

Extant literature (Hale-Benson, 1986 and Shade, 1982) which describes learning styles of African American children sound remarkably similar to the Feeling and Sensing-Perceiving preferences of the MBTI. A study of middle and high school students in Eastern North Carolina captured some of these descriptions of African American children's learning style using the MBTI. In addition, Intuition and Perception emerged among high school students in a comparison with Levy, Murphy, and Carlson's 1972 study of Howard University students.

INTRODUCTION

Minority populations are increasing among students and decreasing among teachers (Atwater, 1989). These changing student and teacher demographics suggest that white teachers become familiar with cultural influences upon African American student learning styles (NSTA, 1991). Science teachers are particularly interested in knowing what these influences are because science educators are trying to engage more minority students in science for both life long personal benefits and for careers in science. Research reports on gender and race tell us that teacher behavior reinforces rather than reduces stylistic differences and preferential treatment (AAUW, 1992).

Shade (1992) and Hale (formerly Hale-Benson) (1986) argue for attention to cultural and stylistic differences from teachers in early childhood education for African American youth. Hale says that young Black children have a more relational, person-oriented learning style than do white children. She contrasts the analytical style, common in regular classrooms, to the relational style, a style which reflects the strengths of the African culture. Characteristics of the relational style listed by Hale (pp. 32 & 33) are: self-centered, global, fine descriptive characteristics, identifies unique and discrete, responses tend to be affective, field is perceived as responding to the person, personification of the abstract, distractible, emotional, over-involved in all activities, short attention and concentration span, gestalt learners, words embedded in context for meaning, few synonyms, fluent spoken language with strong, colorful expressions, and tends to ignore structure. Hale (p. 35) contrasts this relational style with the conflict produced in schools

which value rules, standardization, conformity, memory for specific facts, regularity, rigid order, "normality", differences equal deficits, precision, logical, atomistic, convergent, controlled, meanings are universal, linear, mechanistic, hierarchical, deductive and scheduled. Many of the elements of the relational style are similar to some MBTI preferences.

Studies in four counties were undertaken to determine if learning styles of African American children as described by Hale could be captured by the MBTI, especially the Feeling preference and the Sensing-Perceiving temperament.

These studies show learning style differences among African American youth (both male and female) and several different populations of white students. One study of sixth and eleventh grade students in one school district sought to determine if learning style differences could identify students at-risk to drop out of school. Sixth grade youth who were Feeling oriented, according to the MMTIC, were in higher numbers than their eleventh grade cohorts. The sixth grade data support Hale-Benson's (1986) claims that young Black children have a person-oriented, affective, and relational learning style. High school data show preponderances of Sensing, Thinking, and Sensing-Perceiving preferences and temperaments, as hypothesized. Finally, Intuition and Perception emerged among high school students in a comparison with Levy, Murphy, and Carlson's 1972 study of Howard University students, thus showing greater diversity of preferences among African American students than previously reported.

CONTENT DESCRIPTION

A study was undertaken determine if learning style elements, described by Hale (1986), could be identified among African American high school males, according to a leading learning style instrument, the Myers-Briggs Type Indicator (MBTI). The purposes of the study were: to identify learning style differences between minority and majority high school youth; to compare the learning style of male African American high school students to male Howard University students; and to compare sixth grade with eleventh grade African American ~~males~~ students.

Learning Style Measures and Correlates with Hale's Descriptors

The learning styles were measured by the Myers-Briggs Type Indicator (MBTI). Numerous authors support the use of the MBTI to measure learning style (Bonnstetter, Horne, & McDonald, 1991; Curry, 1983; Claxton & Murrell, 1987; Keirsey & Bates, 1984; Kuerbis, 1988; Lawrence, 1982; Myers, 1980; McCaulley, 1977).

The MBTI is based on Carl Jung's theory of psychological types. Jung (1921) said that there are fundamental differences in the way that persons perceive the world, make decisions, and operate in our orientation or attitude to the world. Isabel Myers and Katherine Briggs designed an instrument to measure Jung's types. To date, cultural bias has not been charged against the MBTI. Indeed, Jung was the first to claim individual differences based solely on criteria other than race or ethnicity. Individuals of a certain MBTI type display similar characteristics, no matter whether black or white.

Attitude toward the world is described by Jung (1921) and Myers (1980) as either Extraverted (E) or Introverted (I). The Extraverted individual chooses to be outgoing and to "think out loud" by talking. The introverted individuals style is more one of reflection, of speaking when asked, and of thinking before speaking. Some Hale descriptors are associated with Extraversion, for example, fluent spoken language.

Perceptual differences, according to Jung are measured by the Sensing (S), or Intuition (N), functions; that is, whether we perceive with our senses (S), observing details and specifics with our senses - or whether we perceive with a "hunch" (N), basing our perceptions on big picture or conceptual data. Sensing (S) and intuition (N) match some elements described by Hale (1986) as the relational style.

Decision making differences are described by Jung as either Thinking (T) or Feeling (F). Thinkers use logic and analysis in coming to decisions and are less person

influenced. Whereas, Feeling types tend to take personal data into account in coming to a decision. They seem to use the prevailing "field" to make decisions. They are concerned with subjectivity to a greater extent than are Thinkers. Again, characteristics listed in Hale (1986) as a part of the relational style seem to coincide with the Myers-Briggs Type Indicator descriptors of the Feeling type.

A dimension explained by Myers (1980) was added to complete the MBTI, that of lifestyle and described as either Judging (J) or Perceiving (P). Judgers organize, plan and generally prefer an orderly lifestyle. Whereas, Perceivers prefer a spontaneous existence. Hale's descriptors of the African American relational style match more the Perceiving lifestyle of Myers. Perceivers value freedom and flexibility above order. Hale's school description matches the Judging lifestyle. Keirsey & Bates (1984) report that most school teachers prefer the Judging function.

Descriptors of traditional science could be contrasted with the Hale list of descriptors: Science is reductionistic, mechanistic, logical and orderly. Hale's relational style which describes African American children's learning style is person-centered, expressive, affective, values the unique versus the regular, is global and movement oriented.

Murphy-Meisgeier Type Indicator for Children (MMTIC)

The MMTIC was developed in an effort to acknowledge and identify type differences in children and is built upon the same foundation and developed within the same conceptual framework as the MBTI (Meisgeier & Murphy, 1987). The MMTIC is a 70-item forced choice, self-report instrument which may be used from grades two through eight and has a reading level of grade 2 (Meisgeier, Murphy, & Swank, 1987).

To allow for the developmental nature of student preferences, the authors assigned an undetermined or U-band to encompass one standard error of measurement on either side of the midpoint for each scale. This represents an undetermined area of personality growth not identified on the MBTI, which was designed to be administered to more mature subjects (Meisgeier & Murphy, 1987). After the investigators discussed this study with Murphy, she suggested that for research purposes the U-Band not be used.

Temperament Theory

Kiersey & Bates (1984) describe four temperaments based on the MBTI, because learning 16 MBTI types can be overwhelming. Learning the four temperaments is easier. These four temperaments correspond to four Greek gods; the temperaments use only two of the MBTI letters to profile individuals. Whereas Myers (1980) has described two letter combinations as SF, ST, NF, & NT, the Kiersey & Bates schema uses SP, SJ, NF, & NT. A portion of the Hale theory for African American children's learning style closely matches the SP description, that of expressiveness, movement oriented, and tends to ignore structure. Sensing Perceiving (SP) learners hunger for action in the classroom involving hand-on experiences; they need to see the relationship of theory to practice. Sensing Judging (SJ) learners prefer lessons to be presented in step-by-step procedures; their learning may decrease when asked to speculate, invent, or improvise. Intuitive Thinking (NT) learners thrive on independent learning that requires inspiration and quickness of thought. Intuitive Feeling (NF) learners need a classroom atmosphere where personal attention is possible and where ideas and feelings are shared. The four temperaments and characteristics of each type are presented in Table 1.

Population

High school students in four counties in Eastern North Carolina (Halifax, Hertford, Martin, and Wayne) were measured for their learning styles. These four counties are largely rural and most public school students are African American. Three of the counties rank in the top third on eleven quality-of-life poverty indicators, meaning that they have the lowest income, the poorest housing, health characteristics, and educational

attainment. The fourth county, Wayne, ranks among the top third; however, the school tested in this study has 79% of the children on the National School lunch program.

North Carolina has a high concentration of working poor (Ziehr, 1988). That is, while North Carolina has 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 population 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 these data from their own science classes. All eleventh grade students in one school district (Wayne County) were measured in English classes. The sixth graders in Wayne County were measured by one of the authors in her own class.

Results

Two populations of African American males were compared to other groups.

The African American high school males ($n = 184$) were compared with the MBTI norm group of 3,503 high school students in college prep classes. The norm group was drawn from Philadelphia and was predominantly white (Myers, 1980). Two types showed significantly more African American students than would be expected: ESTP ($p < .001$) and ISTJ ($p < .001$). The learning styles and temperaments of Sensing, Thinking, Sensing-Thinking, Sensing-Perceiving, Thinking-Perceiving, and Introverted-Sensing are overrepresented. This argues against the hypothesis that learning style elements between African American students and white students are consistent.

A comparison of the male high school sample ($n = 184$) was made with Levy, Murphy, & Carlson's 1972 sample of male Howard University students ($n = 332$). Two E_ TP groups emerge in the high school sample as being more represented than the Howard University sample: ESTP ($p < .001$) and ENTP ($p > .01$)*. In addition, among the high school students, there are fewer ESTJ types among the high school students. Overall, among the high school students there are more Thinking, Perceiving, Extraverted-Perceiving, Sensing-Perceiving, and Thinking-Perceiving learning style preferences. Numerous other interesting significant elements of learning style occur which show a greater diversity of learning style elements than those reported in 1972 by Levy et al. (more Perceiving, Intuitive Thinking, and Thinking-Perceiving types).

One population of African American students of both sexes were compared

African American eleventh and sixth grade students in one school district were compared. Four types of students (ESFJ, ESFP, (both $p < .01$) ENFP ($p < .001$) and INFP ($p < .05$)* with the Feeling (F) dimension in common were identified as present in sixth grade and absent in eleventh grade. Students who were Sensing (S) and Thinking (T) were seen in higher numbers in the eleventh grade (ISTJ, ($p < .001$) ISTP, ESTJ, (both $p < .05$) as well as one NT type, INTP ($p < .05$)*).

Tables of all results are available from the author.

CONCLUSIONS

This study supports that differences exist among African American students and other populations, purportedly white. In addition, significant populations of young Black children who prefer feeling (F) as a decision making strategy are present in sixth grade and by the eleventh grade, no longer demonstrate this Feeling preference. The significance of this inability to measure African American students with the Feeling preference after middle school could mean that these are the students who drop out of school before reaching high school. Differences were measured by the Myers-Briggs Type Indicator (MBTI), an instrument without reported racial or ethnic bias. Indeed Black researchers (Levy, et. al 1972) have reported studies using the MBTI.

The differences reported in this study support some of Hale's (1986) claims that African American children have a different learning style than majority children.

Specifically, the data in this study support that African American pre-high school males report more Feeling than Thinking preferences than their eleventh grade African American cohorts. High school African American males are more Sensing (S) than Intuitive. Jensen (1987) reports that Sensing types learn best when they move from the concrete to the abstract in a step-by-step progression. They value knowledge that is practical.

High school data do not support Hale's claims for the affective and relational learning style. However, data from the comparison of eleventh grade and sixth grade students do support Hale's hypothesis. Feeling (F) types may be among the students who drop out of school before reaching upper level high school. These data show that upper level African American students are primarily Thinking (T). It may be that the relational learning style type of African American male, described by Hale, is characteristic of the younger child. However, in upper level high school classes, the Thinking type, characterized by the logical, objective learning approach predominates in these Eastern North Carolina students. Longitudinal studies could confirm these initial data. The implication for primary and middle grade educators is to address the learning needs of the child who prefers Feeling (F) in decision making. Jensen (1987) says that Feeling 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.

No strong Extraversion-Introversion differences were shown. However, there was a greater number of African American high school males who showed a lifestyle preference for Perceiving (P) over Judging (J). This difference among males shows that these students prefer a more flexible approach to learning. Jensen (1987) states that Ps tend to view learning as a freewheeling, flexible quest. They care less about deadlines and the completion of tasks. They prefer open and spontaneous learning environments and feel "imprisoned" in a highly structured classroom. This difference supports Hale's claims regarding the structure of schools. Schools are known for rules, conformity, rigid order, schedules and other descriptors that are the antitheses of the preferences of Perceiving individuals.

Learning style differences exist among African American students and other populations, purportedly white. These differences are not deficits because MBTI differences are the same no matter whether a person is majority or minority. These differences cannot claim for sure to be purely racial differences; indeed they may be social and or economic class differences, or they may even be interest differences. Banks (1993) says that achievement differences in Black students and white students cannot be completely explained by social class differences. Also, because of previous claims for a culturally induced cognition and a strongly supported theory for a learning style based on cultural differences described by Hale (1986), some of these differences may be unique to African American youth. Especially since the MBTI may be detecting some of the differences Hale has described.

In addition, different elements of MBTI learning style of African American males emerge from those reported by Levy et al. (1972). Levy et al. (1972) say that the lack of diversity in MBTI types in their reported study (40% of the male Howard students were Sensing-Judging types), may be due to living in a "majority" dominated world. The social milieu may impose massive constraints upon the development of "innate" preferences for intuitive, perceptive modes of experience among African American children. Levy et al. explains that the concreteness and need-for-closure of the SJ orientation is diametrically opposed to the counterparts of imagination and perception needed for academic achievement. This study presents greater diversity of type among eleventh graders, especially the diversity of the Perceiving (P) function.

The differences reported in this study support some of Hale's (1986) claims that African American children have a different learning style than majority children. Specifically, the data in this study support that African American high school

males are more Sensing (S) than Intuitive and more Thinking (T) than Feeling (F). Jensen (1987) reports that Sensing types learn best when they move from the concrete to the abstract in a step-by-step progression. They value knowledge that is practical. Thinking (T) types learn best when material is presented to them in a logical and sequential format. The Sensing and Thinking frequency, previously reported by Levy et al. (1972) among college age male African Americans, is verified among high school African American males in this study.

In addition, some high school data support Hale's claims for components of the relational learning style. Expressiveness is exemplified by the Extraverted element and is observable when high school students are compared to Howard college students. Probably as students move up the schooling ladder there is more selective pressure for Introversion and, in science classes, for the Thinking dimension. Thus, classes other than science may be more attractive to Feeling types, because they are not predominant in these science classes in Eastern North Carolina.

Some Extraversion-Introversion differences were shown. There was a significant number of African American high school males who showed a lifestyle preference for Perceiving (P) over Judging (J). This difference among males shows that these students prefer a more flexible approach to learning. Jensen (1987) states that Ps tend to view learning as a freewheeling, flexible quest. They care less about deadlines and the completion of tasks. They 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 in informal problem solving (Lawrence, 1984). This difference supports Hale's claims regarding the structure of schools. Schools are known for rules, conformity, rigid order, schedules and other descriptors that are the antitheses of the preferences of Perceiving individuals.

IMPLICATIONS FOR SCIENCE TEACHING

Elementary School/Middle School

The most interesting and revealing result of this series of studies is the discovery that a type difference exists from sixth grade to eleventh grade among African American youth, which may or may not be due to development. Feeling types are in high concentration in sixth grade and thinking types are in high concentration in upper division high school grades. These data are true when African American youth are compared to each other. If not due to development alone, the implications for teachers are profound. Hale's thesis may in fact be true. These young Black children indeed may have a relational learning style, including an affective component measured by the Feeling dimension of the MBTI, that either: may not be honored in schools and thus they drop out; or the school environment itself may become so depersonalized as progression in grades increases that somehow Black children with a Feeling preference get lost. Barnes (1992) reports that African American males report that techniques which would have prevented them dropping out of school include extra help with school work, compliments on their work, and more attention from their teachers. All of these reasons given by these students have an affective component and indicate, at least in part, a Feeling orientation.

High School

This study support valuing differences of African American males in upper level science classes, differences identified as Sensing, Thinking and Perceiving. Science classes already support the first two: Sensing, with focus on details, observation using the senses and precision; and Thinking, with focus on logic, use of data to come to logical conclusions, and analysis. However, the Perceiving difference needs to be addressed. Because most teachers are the opposite (Judging), this difference is problematic. Historically, students who were "freedom-loving" were seen as trouble makers and needed reining in, or changing. With this data from this study, teachers can bring new

understanding to the nature of heretofore viewed recalcitrance or reluctance among students who are Perceiving, including some male African American learners. Jung's theory states that our differences are inborn and involuntary, so no student should be viewed as difficult if the differences between teacher and student is one of lifestyle and observed as a need, or lack of need, for order. Rather, teachers, with the greater degree of maturity and life experience than students, and hopefully more ability to be flexible, are called upon to change in order to address the needs of the African American male in upper level classes.

Primarily what teachers can do is to offer options in type, time, and completion date of tasks. Let students know that you are flexible and that you want to meet their unique and individual needs, whenever possible. Provide students with more project and assignment options. Probably it is not sensible to differentiate assignments by race and gender; therefore, whenever you have a class with a lot of African American males in it, use this approach for all students, then differentiate for students who need something else. Students of the Perceiving (P) preference do need a lot of teacher imposed structure. Their internal lack of structure shows a need for it coming from an external source. There is a point at which the Perceiving individual rebels, though. Finding just the right balance, so that students perceive that they have some choice and some help, and that the requirements are not so structured that they feel fenced in or fenced out from their own preferences, is the challenge for teachers.

College

The findings of the present study have some direct implications for teaching minority college students, particularly for those who tend to be more Extraverted or affective and Perceptive. The logical, analysis oriented nature of many science instructors may seem cold and removed from the kind of interactive instruction these students find most comfortable and productive. Problem oriented learning might be more palatable if a tactical adjustment were made. Minority students who are Extraverted, and Perceptive (whether feeling or not) may benefit from a shared approach to studying science. Pairing a student with a compatible partner might increase his or her commitment to learning abstract and difficult concepts. It would make the process more like social interaction and provide a support system that is cooperative in nature. Instructors could support these students by promoting shared studying as a technique, allowing partners to turn in a single set of homework problems, or giving out 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 by their professors and belief in students' ability to succeed in science. These black institutions continue to provide most of the science professionals of color. Bryant (1990) states 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 says that white Americans must take major responsibility for the phenomenon of underrepresented African American students in science. Presumably, if white instructors knew how to change instruction to foster achievement of underrepresented groups, they would do it.

* Indicates a probability rather than a true statistic. It is due to insufficient numbers in a cell.

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Table 1
TEMPERAMENT THEORY
 Characteristics of the SP, SJ, NT and NF (% in general population).

ISTP, ESTP, ISFP, ESFP
SP, Dionysian
 "Freedom" (38%)

ISFJ, ESFJ, ISTJ, ESTJ
SJ, Epimethean
 "Useful" (38%)

Action-oriented, Doers
 Impulsive, leaps before looks
 Do well in crises, stamina
 Love tools (from chisel to scapel)
 Free spirit
 Exciting, Optimistic, cheerful
 light-hearted & fun
 Like jokes & variety
 View goals differently, process oriented
 Many virtuosos of art, entertainment
 and adventure
 Great painters, vocalists, dancers,
 photographers, athletes, hunters
 Construction, heavy machinery,
 aircraft, entrepreneurs,
 police

Belonging is important
 Giver, desire to serve
 "Supposed to do", parental
 Feels obligated, work ethic
 Believes in hierarchy
 Theme of pessimism
 "Be prepared" (boy scout)
 Chicken Little
 Fundamentals
 Antecedents
 Extremely responsible
 Vulnerable to depression
 Pillars of society
 Business, education,
 pharmacy, secretary,
 accounting, dentistry

INTP, ENTP, INTJ, ENTJ
NT, Promethean
 "Desire f/Power f/Competence" (12%)

INFJ, ENFJ, INFP, ENFP
NF, Apollonian
 "Search for Self" (12%)

Capable, able
 Ruthless self-criticism, self-doubting
 Must be competent, monitors progress
 in skill & knowledge acquisition
 Questions authority
 Individualistic, intellectual "Eccentric genius"
 Communicates abstractly sometimes
 Recreation-skill improvement
 Expects others to achieve, can be demanding
 Passion for knowing - "Work is play &
 play is work"
 Focus on future, preoccupied
 Scientific principles, Engineering
 Architecture, math/science teaching,
 management, criminology,
 cardiology, philosophy

Understands others, misunderstood
 Who am I? Seeks self-actualization
 Needs recognition & meaning
 Strives for integrity, authenticity
 Wants to "make a difference"
 "To be or not to be" Hamlet
 Wield tremendous influence because
 professions they choose:
 Writers, Journalists, dramatists
 They inspire & persuade, "Causes"
 Seek relationships, interaction
 Psychiatry, psychology, teaching,
 ministry, Peace corp
 Empathy, sometimes unrealistic
 Places too large time demands on self
 for others

Adapted from Keirsey & Bates (1984)

Source of data

Group tabulated:

MBTI Type Table
Center for Applications
of Psychological Type

Form G
Tabulated African-American
Males in 4 Eastern NC
Counties (N=184)

African-Amcr HS Male
in East NC Counties:
Halifax Martin Wayne
Hertford

Legend: % = percent of
total choosing this group
who fall into this type.
I = Self-selection index:
Ratio of percent of type
in group to % in sample.

Melear, 1992

N = 184

| SENSING types with THINKING | | INTUITIVE types with THINKING | | N | % | I |
|-----------------------------------|---------|-------------------------------------|---------|-----|-----|------------------|
| ISTJ * | ISFJ | INFJ | INTJ | J | E | 104 56.52 0.92 |
| N= 29 | N= 10 | N= 1 | N= 4 | U | I | 80 43.48 1.13 |
| Z= 15.76 | Z= 5.43 | Z= 0.54 | Z= 2.17 | D I | S | 134 72.83 1.26 * |
| I= 1.95 | I= 1.37 | I= 0.26 | I= 0.46 | G N | N | 50 27.17 0.64 * |
| ----- | | | | I T | T | 134 72.83 1.18 # |
| ISTP | ISFP | INFP | INTP | N R | F | 50 27.17 0.71 # |
| N= 13 | N= 7 | N= 4 | N= 12 | G O | J | 88 47.83 0.93 |
| Z= 7.07 | Z= 3.80 | Z= 2.17 | Z= 6.52 | V | P | 96 52.17 1.07 |
| I= 1.37 | I= 0.87 | I= 0.52 | I= 1.09 | P E | I J | 44 23.91 1.27 |
| ----- | | | | E R | I P | 36 19.57 1.0 |
| ESTP * | ESFP | ENFP | ENTP | R T | E P | 60 32.61 1.12 |
| N= 31 | N= 11 | N= 7 | N= 11 | C S | E J | 44 23.91 0.74 " |
| Z= 16.85 | Z= 5.98 | Z= 3.80 | Z= 5.98 | E | S T | 99 53.80 1.47 * |
| I= 2.18 | I= 0.93 | I= 0.53 | I= 0.76 | P | S F | 35 19.02 0.90 |
| ----- | | | | T | N F | 15 8.15 0.48 # |
| ESTJ | ESFJ | ENFJ | ENTJ | I E | N T | 35 19.02 0.76 |
| N= 26 | N= 7 | N= 3 | N= 8 | V X | S J | 72 39.13 1.14 |
| Z= 14.13 | Z= 3.80 | Z= 1.63 | Z= 4.35 | E T | S P | 62 33.70 1.42 # |
| I= 0.90 | I= 0.59 | I= 0.46 | I= 0.65 | S R | N P | 34 18.48 0.73 " |
| ----- | | | | A | N J | 16 8.70 0.51 # |
| ISTJ * | ISFJ | INFJ | INTJ | J V | T J | 67 36.41 1.04 |
| N= 29 | N= 10 | N= 1 | N= 4 | U E | T P | 67 36.41 1.36 # |
| Z= 15.76 | Z= 5.43 | Z= 0.54 | Z= 2.17 | D R | F P | 29 15.76 0.71 " |
| I= 1.95 | I= 1.37 | I= 0.26 | I= 0.46 | G T | F J | 21 11.41 0.71 " |
| ----- | | | | I S | I N | 21 11.41 0.67 " |
| ISTP | ISFP | INFP | INTP | N | E N | 29 15.76 0.63 # |
| N= 13 | N= 7 | N= 4 | N= 12 | G | I S | 59 32.07 1.49 * |
| Z= 7.07 | Z= 3.80 | Z= 2.17 | Z= 6.52 | E S | | 7 40.76 1.12 |
| I= 1.37 | I= 0.87 | I= 0.52 | I= 1.09 | | | |

Note concerning symbols following the selection ratios:

" implies significance at the .05 level, i.e., Chi-square > 3.8; Table 2

implies significance at the .01 level, i.e., Chi-square > 6.6;

* implies significance at the .001 level, i.e., Chi-square > 10.8.

(underscore) indicates Fisher's exact probability used instead Chi-square.

base population used in calculating selection ratios:

5 Students, Coll. Prep, (Myers, GIFTS DIFFERING, p. 31, Figure 3, Males)

base total N = 3503. Sample and base are independent.

*** Calculated values of Chi-square or Fisher's exact probability ***
Type table order

| | | | | | | | |
|---------|--------|---------------|---------------|-----------|------------|-----------|------------|
| 13.3187 | 0.9698 | <u>0.1821</u> | <u>0.1439</u> | E 1.8395 | IJ 2.9112 | SJ 1.8826 | IN 3.8312 |
| | | | | I 1.8395 | IP 0.0006 | SP 9.5970 | EN 8.3787 |
| | | | | S 16.1312 | EP 0.9941 | NP 4.1704 | IS 11.2296 |
| 13.3083 | 0.1336 | <u>0.2479</u> | 0.0957 | N 16.1312 | EJ 5.7175 | NJ 8.6894 | ES 1.4924 |
| | | | | T 9.0473 | ST 22.0155 | TJ 0.1354 | |
| 19.2999 | 0.0577 | 2.9938 | 0.8798 | F 9.0473 | SF 0.5157 | TP 8.2942 | |
| | | | | J 0.7891 | NF 9.8283 | FP 4.1176 | |
| 0.3157 | 2.1059 | <u>0.2128</u> | 1.5185 | P 0.7891 | NT 3.5463 | FJ 2.8774 | |

Source of data

African-American HS Males
Eastern NC versus Afr-Amer
Male College Students in
Levy et al.

Melear, 1992

Group
tabulated:

African-Amer HS Male
4 East NC Counties
Halifax, Hertford,
Martin, & Wayne

N = 184

MBTI Type Table
Center for Applications
of Psychological Type

Legend: Z = percent of
total choosing this group
who fall into this type.
I = Self-selection index:
Ratio of percent of type
in group to Z in sample.

| SENSING types with THINKING | | SENSING types with FEELING | | INTUITIVE types with FEELING | | INTUITIVE types with THINKING | | N | Z | I |
|-----------------------------------|---------|----------------------------------|---------|------------------------------------|--|-------------------------------------|--|---|---|---|
| ISTJ | ISFJ | INFJ | INTJ | | | | | | | |
| N= 29 | N= 10 | N= 1 | N= 4 | | | | | | | |
| Z= 15.76 | Z= 5.43 | Z= 0.54 | Z= 2.17 | | | | | | | |
| I= 1.05 | I= 0.67 | I= 0.20 | I= 0.45 | | | | | | | |
| ISTP | ISFP | INFP | INTP | | | | | | | |
| N= 13 | N= 7 | N= 4 | N= 12 | | | | | | | |
| Z= 7.07 | Z= 3.80 | Z= 2.17 | Z= 6.52 | | | | | | | |
| I= 1.95 | I= 2.53 | I= 0.56 | I= 1.55 | | | | | | | |
| ESTP * | ESFP | ENFP | ENTP # | | | | | | | |
| N= 31 | N= 11 | N= 7 | N= 11 | | | | | | | |
| Z= 16.85 | Z= 5.98 | Z= 3.80 | Z= 5.98 | | | | | | | |
| I= 3.50 | I= 2.21 | I= 0.84 | I= 3.97 | | | | | | | |
| ESTJ # | ESFJ | ENFJ | ENTJ | | | | | | | |
| N= 26 | N= 7 | N= 3 | N= 8 | | | | | | | |
| Z= 14.13 | Z= 3.80 | Z= 1.63 | Z= 4.35 | | | | | | | |
| I= 0.58 | I= 0.51 | I= 0.32 | I= 0.80 | | | | | | | |

Note concerning symbols following the selection ratios:
" implies significance at the .05 level, i.e., Chi-square > 3.8;
implies significance at the .01 level, i.e., Chi-square > 6.6;
* implies significance at the .001 level, i.e., Chi-square > 10.8.
_ (underscore) indicates Fisher's exact probability used instead Chi-square.

Table 3

Base population used in calculating selection ratios:
Negro Male College Students, Levy, Murphy & Carlson, 1972, Table 3, Howard University
Base total N = 332. Sample and base are independent.

*** Calculated values of Chi-square or Fisher's exact probability ***
Type table order

| | | | | | | | |
|---------|---------------|---------------|---------------|-----------|------------|------------|-----------|
| 0.0448 | 1.2944 | <u>0.1052</u> | <u>0.1589</u> | E 0.0119 | IJ 2.7060 | SJ 12.1094 | IN 1.7603 |
| | | | | I 0.0119 | IP 3.6007 | SP 32.5818 | EN 0.0563 |
| | | | | S 1.4291 | EP 26.5197 | NP 1.6708 | IS 0.7937 |
| 3.0578 | <u>0.1270</u> | <u>0.3199</u> | 1.5144 | N 1.4291 | EJ 17.7261 | NJ 8.2877 | ES 0.0838 |
| | | | | T 4.3125 | ST 1.6556 | TJ 8.4445 | |
| 20.6900 | 3.3924 | 0.1477 | <u>0.0073</u> | F 4.3125 | SF 0.0553 | TP 34.0710 | |
| | | | | J 33.1233 | NF 6.7267 | FP 0.9651 | |
| 7.5927 | 2.8252 | <u>0.0570</u> | 0.2853 | P 33.1233 | NT 0.7826 | FJ 11.1439 | |

Source of data

Susan Richardson
Goldshoro, North Carolina
Spring 1991

Group
tabulated:

Sixth Grade
Dillard School
MMTIC

N = 214

MBTI Type Table
Center for Applications
of Psychological Type

Legend: % = percent of
total choosing this group
who fall into this type.
I = Self-selection index:
Ratio of percent of type
in group to % in sample.

| SENSING types with THINKING | | SENSING types with FEELING | | INTUITIVE types with FEELING | | INTUITIVE types with THINKING | | N | % | I |
|-----------------------------------|----------|----------------------------------|---------|------------------------------------|--|-------------------------------------|--|-----|-----|------------------|
| ISTJ * | ISFJ | INFJ | INTJ | | | | | J | E | 157 73.36 1.33 * |
| N= 9 | N= 9 | N= 1 | N= 1 | | | | | U | I | 57 26.64 0.60 * |
| Z= 4.21 | Z= 4.21 | Z= 0.47 | Z= 0.47 | | | | | D I | S | 148 69.16 0.90 |
| I= 0.30 | I= 0.51 | I= 0.32 | I= 0.19 | | | | | G N | N | 66 30.84 1.34 |
| ----- | | | | | | | | | | |
| ISTP " | ISFP | INFP " | INTP | | | | | I T | T | 66 30.84 0.48 * |
| N= 7 | N= 16 | N= 11 | N= 3 | | | | | N R | F | 148 69.16 1.97 * |
| Z= 3.27 | Z= 7.48 | Z= 5.14 | Z= 1.40 | | | | | G O | J | 88 41.12 0.76 # |
| I= 0.40 | I= 1.56 | I= 5.35 | I= 0.29 | | | | | V | P | 126 58.88 1.29 # |
| ----- | | | | | | | | | | |
| ESTP | ESFP # | ENFP * | ENTP | | | | | P E | I J | 20 9.35 0.36 * |
| N= 15 | N= 34 | N= 29 | N= 11 | | | | | E R | IP | 37 17.29 1.92 |
| Z= 7.01 | Z= 15.89 | Z= 13.55 | Z= 5.14 | | | | | R T | EP | 89 41.59 1.54 # |
| I= 0.56 | I= 2.36 | I= 4.03 | I= 1.19 | | | | | C S | EJ | 68 31.78 1.12 |
| ----- | | | | | | | | | | |
| ESTJ " | ESFJ * | ENFJ | ENTJ | | | | | E | ST | 49 22.90 0.46 * |
| N= 18 | N= 40 | N= 8 | N= 2 | | | | | P | SF | 99 46.26 1.69 * |
| Z= 8.41 | Z= 18.69 | Z= 3.74 | Z= 0.93 | | | | | T | NF | 49 22.90 2.98 * |
| I= 0.56 | I= 2.43 | I= 1.94 | I= 0.24 | | | | | I E | NT | 17 7.94 0.52 " |
| ----- | | | | | | | | | | |
| | | | | | | | | V X | SJ | 76 35.51 0.79 |
| | | | | | | | | E T | SP | 72 33.64 1.04 |
| | | | | | | | | S R | NP | 54 25.23 1.87 # |
| | | | | | | | | A | NJ | 12 5.61 0.58 |
| | | | | | | | | J V | TJ | 30 14.02 0.40 * |
| | | | | | | | | U E | TP | 36 16.82 0.56 # |
| | | | | | | | | D R | FP | 90 42.06 2.65 * |
| | | | | | | | | G T | FJ | 58 27.10 1.41 |
| | | | | | | | | I S | IN | 16 7.48 0.78 |
| | | | | | | | | N | EN | 50 23.36 1.74 # |
| | | | | | | | | G | IS | 41 19.16 0.55 * |
| | | | | | | | | ES | | 107 50.00 1.20 |

Note concerning symbols following the selection ratios:

" implies significance at the .05 level, i.e., Chi-square > 3.8;

implies significance at the .01 level, i.e., Chi-square > 6.0;

* implies significance at the .001 level, i.e., Chi-square > 10.8.

— (underscore) indicates Fisher's exact probability used instead Chi-square.

Table 4

Base population used in calculating selection ratios:

Eleventh Grade, Goldsboro High School--MBTI

Base total N = 208. Sample and base are independent.

*** Calculated values of Chi-square or Fisher's exact probability ***

Type table order

| | | | | | | | |
|---------|---------|---------------|---------------|-----------|------------|------------|------------|
| 12.2039 | 2.8718 | <u>0.3662</u> | <u>0.1176</u> | E 15.0430 | IJ 20.1381 | SJ 3.7164 | IN 0.6183 |
| 4.7255 | 1.2996 | <u>0.0207</u> | <u>0.0508</u> | I 15.0430 | IP 0.1523 | SP 0.0981 | EN 6.8654 |
| 3.6252 | 8.7739 | 14.0252 | 0.1545 | S 3.2250 | EP 10.0588 | NP 9.3370 | IS 13.5882 |
| 4.3324 | 11.0879 | <u>0.3813</u> | <u>0.0591</u> | N 3.2250 | EJ 0.5831 | NJ 2.4177 | ES 2.8368 |
| | | | | T 49.0637 | ST 32.4388 | TJ 25.3979 | |
| | | | | F 49.0637 | SF 16.0978 | TP 9.9752 | |
| | | | | J 7.3741 | NF 18.7143 | FP 35.0354 | |
| | | | | P 7.3741 | NT 5.6900 | FJ 3.6660 | |