RESPONSE DISTORTION AND THE MYERS-BRIGGS TYPE INDICATOR: IMPLICATIONS FOR SELECTION AND ORGANIZATIONAL APPLICATIONS

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(ABSTRACT)

The goals of the present study were to determine whether any or all scales of the Myers-Briggs Type Indicator (MBTI) are susceptible to response distortion, and whether certain personality types are more proficient at distorting these scales. A 4 (temperament type) X 3 (level of information) X 3 (intelligence group) factorial design was used to examine the experimental hypotheses. Subjects were asked to respond to the MBTI twice, once reporting their honest preferences, and once faking a role polar opposite to their own preferences. Results indicated all MBTI scales are susceptible to response distortion to varying degrees. Subjects were able to create accurate faking profiles on the MBTI with relatively little information on the role to be faked. Certain temperaments, particularly NFs, are better at distorting their responses to these scales than others. Intelligence may also play a role in subjects' ability to fake their responses. Level of information given on the MBTI scales did not affect subjects' ability to distort their responses to the individual scales. Because of its

susceptibility to response distortion, it was suggested that the MBTI not be used as part of the organizational selection process. Implications for these results on other organizational applications of the MBTI and suggestions for future research are also discussed.

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RESPONSE DISTORTION AND THE MYERS-BRIGGS TYPE INDICATOR: IMPLICATIONS FOR SELECTION AND ORGANIZATIONAL APPLICATIONS

Introduction

Background of the MBTI

The Myers-Briggs Type Indicator (MBTI) was created by a mother and daughter team, Katharine Briggs and Isabel Briggs Myers, and "designed explicitly to make it possible to test C.J. Jung's theory of psychological types (Jung 1921/1971) and to put it to practical use" (Myers & McCaulley, 1985, p.11). According to Myers and Myers (1980), Jung's theory and the reasoning behind the MBTI rest on the assumption that "much seemingly chance variation in human behavior is not due to chance; it is in fact the logical result of a few basic, observable differences in mental functioning" (p. 1). While every individual is unique in his or her own way, there are a few fundamental personality preferences governing the way all people approach everyday life. These preferences primarily concern the way people perceive the world around them, and how they make judgments about what they perceive (Myers & McCaulley, 1985).

The MBTI has four separate indices, each designed to tap an individual's personality preferences. While taking the Indicator, subjects are asked to make choices between dichotomous items, which lead to the identification of their preferences on the four MBTI scales. Results then indicate whether an individual subject prefers an extraverted or

introverted attitude (EI), gathering information through sensing or intuition (SN), and making decisions according to thinking or feeling (TF). Each of these three preferences is identified explicitly in Jung's theory. The fourth preference, judgement or perception (JP) underlies Jung's theory, and was incorporated in the MBTI by Isabel Myers in order to identify which of these two preferences is the preferred or dominant function, and which is the auxiliary function (Murray, 1990). Each of these four preferences is explained further in the sections that follow.

Sensing or intuition. Sensing and intuiting are defined as two different ways of perceiving or becoming aware of information. Sensing is so named because people with this preference like to gather information through their five senses, and are more likely to believe facts they can gather directly through their own participation in the immediate situation. To a sensor, "seeing is believing". Intuition refers to gathering information through "gut" feelings. Individuals who use intuition are likely to look for the meanings and relationships among events rather than the facts themselves. To an intuiter, there is always "more than meets the eye".

Thinking or feeling. Thinkers and feelers differ in the way they make judgments about the information they have gathered through their perceptive function (SN). Thinkers

base decisions entirely on the facts, using impersonal logical means. Feelers, on the other hand, use their own personal values and the values of others to make more subjective decisions. Myers and McCaulley (1985) describe this dimension as a classic difference between the "tough minded" and the "tender minded".

Extraversion or introversion. The EI preference is the one probably the most familiar to lay persons, since the terms have become so popular in recent years. A preference on the EI scale refers to one's attitude toward the world. Extraverts tend to be more comfortable with the outer world of people and events in their environment, whereas introverts are more comfortable looking inside themselves to their own ideas. In gathering information and making decisions, extraverts concentrate most of their energies externally, using their perceiving (SN) and judging (TF) functions accordingly. Introverts focus their energy internally, and orient their perceiving and judging choices within themselves.

Judging or perceiving. According to Myers and McCaulley (1985), the JP dimension has two purposes. First, it describes whether judging or perceiving is the preferred way of dealing with the events in the outside world. Second, it works with the EI preference to identify which of the functions will be the dominant or leading function and which will be the auxiliary. Perceivers prefer to use their

perceptive function (S or N) over their judging function (T or F), while judgers prefer the opposite. Of course all people must use both functions, but again, one is preferred over the other. Preference on the JP scale also identifies which function will be dominant in the individual's preferred world, internal or external, and which will be auxiliary (for further information on identifying dominant and auxiliary functions, see Myers & Myers, 1980, Chapter 1).

Test Administration and Scoring

When individuals take the MBTI, they choose between bipolar word or phrase pairs designed to discriminate preferences on each of the four dichotomies. Scores are produced for each of the eight categories (two poles on each of the four dichotomies), and preferences are determined for each of the four scales. This results in the individual's description as one of sixteen (4 scales with 2 opposing dimensions each) basic personality types, such as ENFP or ISTJ. Each type shares some characteristics with other types who have one or more preference in common, however, each type also has its own unique characteristics arising from the interaction of the four preferences.

It is important to note every person has elements of all eight preferences, extraversion, introversion, sensing, intuition, thinking, feeling, perception, and judgment. However, one element of each dichotomy is preferred, and thus

is better developed than the other. There are no right or wrong, good or bad types, simply preferences.

The MBTI has several forms, however, the most commonly used are forms F and G. Both forms include the same basic items designed to measure MBTI type or preference. Preference refers to which end of each dichotomy the individual endorses, such as introversion or extraversion, thinking or feeling. Type is generally used to refer to the four letter combination of preferences such as ENFP or ISTJ. Form F is designed for research, including items used to measure type as well as additional items intended to help provide more individualized reports of type. Form G is more commonly used in education and industry (McCaulley, 1988). Subjects are asked to read the instructions and self-administer the test.

Two types of forced choice items are used within the MBTI. First, word pairs are given and test takers are instructed to choose the one of the two words that most appeals to them. The second, phrase-type questions, describe situations with a phrase and examinees are asked to choose the word or phrase that best completes the sentence in their opinion. Each response is then assigned a weight of zero, one or two, depending upon whether the item was omitted, the popularity of the response, and whether the subject is male or female (TF scale only). Weighted values for each scale are summed and transformed into "preference" scores with the

letter of the preference, for example T for thinking or F for feeling, and a number indicating the strength of that preference (McCaulley, 1981). In research situations, preference scores are commonly converted into continuous scores by setting a midpoint at 100 and adding the preference score for the I, N, F, and P scales or subtracting the preference score for the E, S, T, and J scales (McCaulley, 1990).

Temperament

In addition to describing people by their full four letter personality types, many researchers have chosen to study personality and human behavior by concentrating on some combination of two or more of the four Myers-Briggs preferences. Keirsey and Bates' (1984) temperament types represent a well-known set of such combinations. According to Keirsey and Bates (1984), "one's temperament is that which places a signature or thumbprint on each of one's actions, making it recognizably one's own" (p. 27). The authors proposed four temperaments, NF, NT, SJ, and SP, based on the same terminology and dimensions described by Myers and Briggs.

The Sensing\Intuition scale makes up the first part of temperament because dissimilarities in how people gather information are the most fundamental in human differences. After gathering information, sensors need to do something with the information, either organize it or seek additional

information. Thus, the Judgment\Perception function provides the second half of temperament for sensors. On the other hand, intuitives have a need to evaluate the information they have, and choose to do so either objectively or subjectively. The Thinking\Feeling dimension, therefore, makes up the second half of temperament for intuitives (Kroeger & Thuesen, 1988).

SP, the Dionysian temperament. Keirsey and Bates (1984) described each of the four temperaments in terms of Greek gods. Personality types who have sensing and perceiving in common are described as Dionysian. Persons of this temperament type are described as action-oriented and impulsive. Sensing makes them practical and grounded in reality, while perceiving brings a certain spontaneity to the SP's behavior (Kroeger & Thuesen, 1992). SPs tend to live for the moment and are excellent at performing in crisis situations. These individuals tend to prefer jobs that provide the opportunity for action and immediate gratification, such as performance art, carpentry, and emergency work.

SJ, the Epimethean temperament. Like SPs, those with the Epimethean temperament are also very practical and responsible. This is because both types have sensing in common. However, unlike SPs, SJs are not at all spontaneous, but are always prepared and organized. This is because Epimetheans are judgers rather than perceivers. SJs are more

likely to find themselves in careers which require following procedures and a great deal of structure. Of all the different temperament types, SJs tend to make the best administrators.

NT, the Promethean temperament. While Epimetheans and Dionysians have sensing in common, Prometheans prefer to use their intuition rather than their five senses for gathering information. Additionally, NTs like to use their thinking abilities to make decisions based strictly on the facts in the current situation. Keirsey and Bates (1984) described individuals who have the Promethean temperament as perfectionists, constantly striving for a competence only they can define. These are the people who excel in planning and research activities, particularly in the areas of science and mathematics.

NF, the Appollonian temperament. Idealist is a word often used to describe an Appollonian (Kroeger & Thuesen, 1992). These are the people who are always searching for themselves, striving to find their own uniquenesses. Like Prometheans, Appollonians use their intuition; however, they combine this with a decision making process based on feeling rather than thinking. NFs strive to find work where they can combine their idealism and innovation with their love for people. Thus, NFs often enter occupations such as teaching, acting, or nursing. Additionally, these individuals are

always championing causes, involving themselves in fundraising and education of activities they consider worthwhile.

While knowing a person's temperament cannot fully substitute for knowing his or her full four letter type, Kroeger and Thuesen (1988) described temperament's utility:

> Temperaments are useful because they afford the widest base of accurate behavioral predictions. So even if we don't understand how all four letters fit together, the two-letter Temperament helps us predict such things as how people teach, learn, lead others, entertain, manage money, and relate to others (p.50).

Furthermore, Keirsey and Bates (1984) indicated that it is a person's temperament that ultimately directs type development: "A person becomes an ENFJ, or INFP, or whatever, because of his given temperament rather than because, for example, extraversion 'somehow' combined with intuition" (p. 29). Thus, when peoples' full four letter types are not available, or when the combination of all four preferences is too complex to allow for prediction, it may be helpful to fall back upon a simpler combination of preferences such as temperament. Temperament, rather than full four letter type, was used as a basis for making predictions in the present research.

Psychometric Issues

Since its creation, the Myers-Briggs Type Indicator has been subject to many studies concerning its psychometric

properties. The 1985 edition of the MBTI Manual includes over 1500 studies, many of which provide evidence of the reliability and validity of the instrument. In a review of the research on the MBTI, Murray, (1990) concluded that studies "have shown generally satisfactory split-half and test-retest reliabilities for the F and G forms" (p. 1190) of the instrument. Howes and Carskadon (1979) found test-retest reliabilities ranging from .78 to .87 across a five week interval, even when subjects' moods were artificially altered. Leiden, Veach and Herring (1986) studied the test-retest reliabilities across longer time periods, 9-21 months, and found lower, but still significant reliabilities ranging from .41 to .66. Carlson (1985) reported personality type appears to be fairly stable over time with college students and may be even more stable with older subjects. Finally, McCaulley (1981) cited work which indicates 70 to 88 percent of individuals taking the indicator twice had the same preference on three or four dimensions upon retest. Furthermore, dimensions with low preference scores on initial administration were those most likely to change on the second administration of the MBTI.

With respect to split-half reliability, Carlson (1989) reviewed studies reporting coefficients between .77 and .97 when using continuous scoring scales. In fact, Carlson (1985)

reported that the original reliability studies used in assessing the MBTI often yielded coefficients over .80.

Additionally, studies have been quite supportive of the construct validity of the separate MBTI scales "indicating that the four scales measure important dimensions of personality that approximate those of Jung's typology theories" (Murray, 1990, p. 1191). Cohen, Cohen and Cross (1981) suggested that if the MBTI's constructs were valid, people close to the individuals responding to the questionnaire ought to be able to recognize and, therefore, predict those individuals' types. To test this hypothesis, Cohen et al. (1981) had one member of a married couple answer the MBTI, and the other member of the couple answer a separate questionnaire also designed to predict type. The authors found significant agreement between spousal ratings and MBTI scores on all scales except for the J-P dimension, thus supporting the construct validity of the MBTI. Further, the same authors found no significant relationship between MBTI ratings and ratings of ideal self by the same ratee, indicating the MBTI does not measure ideal self and thus providing evidence of divergent validity.

In a very different vein, Thompson and Borello (1986) attempted to demonstrate the construct validity of the MBTI through factor-analytic techniques. The authors factor analyzed continuous MBTI scores using both first- and second-

order factor analytic methods and found four factors, one representing each of the four MBTI dimensions. Additionally, the vast majority of items loaded exclusively on the expected dimensions, providing additional evidence for the construct validity of the MBTI. Further investigation provided support for the scoring procedure used in conjunction with the MBTI.

McCaulley (1981) cited several studies demonstrating the construct validity of the MBTI in a wide variety of situations. The MBTI was found to be predictive of choice in medical school specialty and turnover in a variety of medical fields. It was also discovered that people of various types tended to choose careers consistent with their MBTI preferences. Finally, type theory was found to be consistent with differences in various types results on memory, and even decision making tasks.

Carlson (1989) cited a number of criterion-related validity studies done since his previous (1985) review which support the widespread use of the MBTI. While most of the research has tended to focus on the Introversion-Extraversion scale of the MBTI, recent applications, particularly in the areas of education and counseling, have found support for all the MBTI scales.

Uses of the MBTI

In his review of research on the MBTI, Murray (1990) described the increasing popularity of the MBTI as a

personality instrument in populations of "normal" people. Thorne and Gough (1991) reported in 1990 alone, an estimated two million people took the MBTI. Particularly, the MBTI has become widely used in the areas of education, counseling, and organizational settings.

In educational settings, the Myers-Briggs is often used to guide students in their choices for major areas of study and to facilitate their learning skills. Several studies have utilized the instrument as a predictor of choice of major (e.g., McCaulley, 1981), showing students tend to concentrate in areas of study compatible with their personality types.

Additional studies have pointed to the strengths of using the MBTI to help users comprehend and adjust to potential differences in the preferred style of instruction of teachers and learning style preferences on the part of the students (McCaulley, 1988). Other uses for the MBTI in education include assessing motivation and identifying potential for dropout (McCaulley, 1988). In a recent newspaper article, Pollak (1994) reported some colleges have had success using the Myers-Briggs Type Indicator to match college roommates based on their personality types. Finally, in a very innovative application, Anderson and Lauderdale (1985) had high school students familiar with the MBTI attempt to "type" literary characters, Hamlet and Macbeth, in order to enhance their understanding of Shakespeare's work. While the

students' accuracy could not be assessed, instructors believed many educational benefits could result from this exercise in terms of understanding the MBTI preferences and individual differences among people.

Counselors often use the MBTI in preliminary assessment of their clients, and then use the results in treatment. Clients are taught to recognize their strengths and work on their weaknesses. This is a particularly effective strategy in marriage counseling, where couples are taught the value of their own types as well as their partners'. Often, individual members of a couple expect their partners to gather information and make decisions like themselves. The MBTI can be used to pinpoint the couples' differences and counseling may then be used to help the couples learn how to cope with these differences (McCaulley, 1988). The MBTI may also be used with family counseling to help parents and children understand and accept their differences (Myers & McCaulley, 1985).

In industrial settings, the MBTI is used primarily as an aid to point out potential differences in personality preferences which may cause conflict between members of management (Murray, 1990). Many companies use training accompanying the MBTI results to examine differences in various types' methods of gathering information and decision making (Hirsh & Kummerow, 1990). The basic idea is, once the

different types understand the preferences of the other types, they will become more tolerant and better able to work together to make key decisions that will affect their organization. Understanding decision-making behavior is one of the most common uses of the Myers-Briggs Type Indicator in industry (Murray, 1990).

Additionally, the MBTI is often used to promote communication and foster team building programs in industry. According to McCaulley (1988), one of the main goals of the MBTI is "simply to establish the fact that people indeed are different in predictable ways, and that these differences are interesting and valuable" (p. 104). In this respect, the MBTI is not different from the variety of individual difference measures often employed by psychologists. By realizing the value of these differences, teams can be designed to take advantage of each particular member's unique skills and preferences for information gathering and decision making.

Finally, the MBTI can be used as a tool for both long- and short-term career planning (McCaulley, 1988, 1990). In fact, career counseling was Isabel Myers' original intention for developing the MBTI (McCaulley, 1988). Job applicants are first assessed to determine their own preferences according to the MBTI. Based on this information, the applicant, alone or with a career counselor, determines the type of job

environment most suitable to his or her talents and preferences. In considering job possibilities, applicants then compare their needs with the requirements and opportunities of each career and look for the most optimal match. The MBTI may even be useful for the prediction of tenure in certain occupations, since people generally stay in jobs compatible with their preferences. For instance, Murray (1990) noted thinking types tend to leave sales jobs while extraverts tend to stay.

Future Directions for the MBTI

In terms of new directions for research with the MBTI, McCaulley (1988) pointed to possibilities for application of the instrument including job satisfaction, school performance, job stress and burnout, and lifetime type changes. In his research on the future of the MBTI, Apostal (1988), investigated the relationship between students' personality types and various measures of career interest. The majority of the results were consistent with the concepts underlying the MBTI, for example, students who were decided on a college major were likely to be thinkers. Identifying students' preferences proved very useful in guiding their choice of college courses and majors, as well as steering them towards careers likely to be compatible with their personality types. Finally, as the MBTI is translated into more and more foreign

languages, comparisons of type across cultures promises to be a very exciting area of research in the future.

Type in Organizations

Hammer (1993) described multiple uses for the MBTI in terms of career planning. Knowing one's own MBTI type and preferences can aid in choosing a new career, changing to a more suitable career, or increasing satisfaction and productivity in one's present job.

A tremendous amount of data has been collected relating psychological type to the choice of careers. Computerized scoring of the MBTI has allowed the Center for Applications of Psychological Type, Inc. (CAPT) in Florida to gather over 250,000 MBTI records (Myers & McCaulley, 1985). Any occupation represented by fifty or more people has a type table showing the percentage of males and females of each of the sixteen types in that occupation. Additionally, the most popular occupations for types sharing the EI, SN, TF, and JP preferences, as well as for each of the sixteen individual types have been identified. (For more information on types in career populations, see Appendix D, Myers & McCaulley, 1985).

All occupations have been found to have representatives in each of the sixteen types, but some types are attracted to various occupations in percentages far greater than would be expected by chance. These results tend to be quite consistent with what type theory would predict. Even though individuals

may not know their MBTI types, they tend to select themselves into careers compatible with their basic preferences. Individuals who choose jobs predicted to be incompatible with their MBTI preferences report being less satisfied, tired, inadequate at performing job functions, and more likely to leave their jobs (Myers & McCaulley, 1985).

Career counselors who use the MBTI to help match job seekers with careers assume that "one of the most important motivations for career choice is a desire for work that is intrinsically satisfying and that will permit the use of preferred functions and attitudes, with relatively little need for using less-preferred functions" (Myers & McCaulley, 1985, p. 77). In their experience, Myers and Myers (1980) have found the SN preference to be the most important determinant of occupational choice. Sensors tend to like jobs requiring attention to detail, basic common sense, and dealing with facts rather than possibilities. Intuitives, on the other hand, would rather deal with future possibilities, using their insight and creativity, finding details boring and uninspiring. Sensors are particularly concerned with job security whereas intuitives are more likely to leave a job if it does not allow them to make use of their creativity.

The thinking and feeling dimension is the next most important dimension determining occupational choice, according to Myers and Myers (1980). Thinkers tend to excel in

occupations that require dealing with things rather than people. The thinker is at home with making impersonal, objective decisions in a logical manner. The feeler prefers to work with people, and uses personal values to make work decisions based on how those decisions will affect the people involved.

Together, the SN and TF dimensions help to determine the kind of job an individual will find most attractive and in which he or she will be most likely to excel (Myers, 1987). ST people prefer jobs requiring attention to detail, and dealing with facts rather than people. Thus, occupations such as accounting, banking and law attract a majority of STs. SFs also like facts and details, but prefer to work with people, and are attracted to service oriented occupations such as sales and nursing (Myers & Myers, 1980).

Unlike sensors, intuitives would rather deal with possibilities, meanings and relationships than facts. NFs combine this preference for possibilities with a desire to work with people and go into careers such as health care, counseling, and theology. NTs prefer to focus their creativity in more impersonal areas, and are particularly adept at research and technically oriented occupations such as scientists and financial planners (Myers and Myers, 1980).

The EI preference comes into play by helping to choose the proper work setting within the chosen occupation (Myers &

McCaulley, 1985). Introverts like quiet desk jobs which do not require working with others often. The introvert excels at the planning stages of a job. Extraverts, on the other hand, prefer active jobs requiring action and interaction with others on a steady basis, and are more likely to engage in carrying out an introvert's plans.

The JP dimension may have the greatest effect on job satisfaction (Myers & Myers, 1980). Judgers must have order in their environment. Everything must be well planned and carried out in an orderly manner according to the rules that have been set. Deviations from the plan create stress. Perceivers prefer a constant challenge, and like to continually adapt to new requirements developing from day to day. Perceivers also tend to be more impulsive and may procrastinate on projects that do not hold their attention.

By combining all four preferences, it becomes quite clear that some occupations appear more appropriate for a particular type than others. Individuals who select themselves into jobs compatible with their personality types are more likely to be satisfied, to excel in their chosen field, and to remain committed to that field throughout the entire course of their working years. Those who find themselves in jobs that require the use of the least preferred functions are more likely to be unhappy and may be forced to leave the job to look for

something more suitable to their type. (Myers & McCaulley, 1985).

While some occupations may be better suited to a particular type than others, Myers and McCaulley (1985) caution that "clients should never be discouraged from entering an occupation on the basis that they are 'not the type'" (p. 78). Careful consideration should be given to the individual's preferences and the job requirements, and potential differences should be pointed out. However, being an atypical type in an occupation can have its advantages. Often, a person of a different type can bring valuable viewpoints and strategies to groups who have been stuck in the same routine for a long period of time. While the outsider may be met with criticism and perhaps even hostility in the beginning, teams trained in type theory will learn to value the contribution variety in personality preferences can make. In fact, often the most successful individuals are those who choose jobs seemingly incompatible with their types. These are the people who create a special niche for themselves in an occupation dominated by another type (Kroeger & Thuesen, 1988).

Hammer (1993) warned that an individual must be in agreement with his or her type before making any career decisions. Once "typed", the individual should read over the description applicable to that type and be certain it matches

his or her own preferences. It is quite possible one or more of the preferences may be wrong:

> Perhaps instead of describing yourself as you really are, you were thinking about how someone else wants you to be, or about how you would ideally like to be. Or maybe you were thinking of a job you wanted so you responded as you thought someone in that job might. (Hammer, 1993, p. 7).

It is essential that career decisions are based on the correct type, otherwise, severe ramifications may occur.

Making decisions based on the wrong type, or choosing to enter a career not clearly compatible with one's type can affect communication, decision making, and compatibility with co-workers. Additionally, being different than the majority of people within a given occupation can lead to a decline in motivation and productivity, stress, possible burnout, and perhaps even a disadvantage in terms of promotion and potential for salary increase (Hammer, 1993).

Before making any career move, individuals must have the benefit of knowing their true personality types. Only then can they make informed decisions about the type of job which best suits them. In most cases, the best careers will be ones that are compatible with individuals' personality types. In other cases, the job seeker may decide on a direction seemingly at odds with his or her personality type. Sometimes this person will surmount the challenge of being different and

excel in the position. Other times, the individual will have a difficult time coping with the situation and suffer in the position. It is essential then, that a person have all the information regarding type and careers before making potentially life altering decisions.

Why Fake the MBTI?

One purpose of the present research was to determine whether or not individuals can accurately fake responses to the MBTI according to specific occupational roles. Research on other personality measures has shown, when properly motivated, individuals can fake a wide variety of personality profiles. This section examines the reasons why individuals may feel compelled to fake responses to the MBTI.

One of the main motivations for faking may be due to the popularity of the MBTI itself. The instrument is rapidly becoming one of the most widely used personality instruments today. It may be encountered not only in counseling and the workplace, but also in schools, churches, and in many of today's "self-help" books. Many laymen have come into some contact with the instrument either by accident or through their own interests. Unfortunately, as McCaulley (1988) points out:

> Rapid growth has its costs. Enthusiasts can describe type with such vigor that more skeptical types wonder if type is a cult rather than a body of theory and research.

> The MBTI is used in organizations, religion, and education by some whose training has not alerted them to the skills caution needed when any psychological instrument is used with complex human beings. Misled by the seeming simplicity of the MBTI, they misinform. (p. 128).

As a result of this misinformation, job applicants and incumbents may come to believe they must be a certain type to be successful in their chosen career. Additionally, individuals in human resource positions may be similarly misinformed and mistakenly use the MBTI as a selection device when looking for someone to fill a particular position within their organization. If a job applicant perceives a certain type is preferable or more likely to succeed at a particular job, this provides the necessary motivation to attempt to fake that specific type.

Myers and Briggs were aware of the potential for faking. McCaulley (1981) indicated that true preferences may be compromised through "deliberate falsification by an individual (as might occur when the MBTI is used for employment)" (p.308). Further, McCaulley (1988) warned even in organizational settings where the MBTI is not used for screening, and "respondents are not sure what use will be made of the information, there is a strong motivation to answer 'as I think they want me to'" (p. 105).

Using the MBTI to match personality preferences with career types has become very valuable, however, it also has its dangers. Organizations not fully trained in the use of type theory have begun to use the MBTI as a selection device. Experience has taught personnel decision makers the type of individual who is most successful in a particular job. When hiring for that job, the personnel manager will tend to look for someone with that particular personality type, often administering the MBTI as part of the selection process, ignoring other qualified applicants who are not the appropriate type. Not only is this damaging to the individuals who do not type "correctly", it may also hurt the organization, which may lose out on a potentially valuable employee.

The MBTI may also be used as part of a generalized screening device. Companies hiring large numbers of employees for a variety of positions may use MBTI results to try to match otherwise qualified applicants with the job most compatible with their types. Additionally, while the MBTI may not be used directly in selection, results may be used for other organizational applications such as creating work teams and making promotion and career track decisions.

Employees have also learned of the value placed on MBTI type in an organization. In order to be competitive for a particular job or career track, an employee or applicant may

feel compelled to fake a particular type in order to be considered for a certain job. For instance, most managers in organizations tend to be ISTJs or ESTJs. If an individual wants to become a manager someday, it may seem wise to appear to have those personality characteristics compatible with "management potential".

Even if an organization does not use the MBTI for selection decisions, the instrument is often given as part of the application process with the results to be used at a later date, or given to new employees upon hiring. Applicants and new hires not familiar with the personality instrument may still feel pressured to fake a certain profile, particularly if he or she does not know for what purpose the results will be used. When in doubt, the respondent may think, it is always preferable to present oneself in the best light possible. When the MBTI is used for later purposes such as team building and decision making training, the person will be misinformed as to his or her own type, and the training may be useless or possibly even damaging.

This faking is potentially disastrous. Obviously, effective faking can lead to an individual's placement into a job in which he or she may be dissatisfied or perform poorly. Additionally, it is not apparent whether individuals can fake the profile they intend. Type theory is very intricate and requires a great deal of knowledge to identify the elements of

a particular personality type. Thus, ineffective faking can lead to the identification of the "wrong" personality type. Not only will the individual lose out on the job he or she was aiming for, he or she may be sent along a career path which is not compatible with his or her interests and abilities.

The MBTI as a Tool for the Industrial/Organizational Psychologist

It must be noted here that many of the applications of the MBTI, both present and future, are not uniquely tied to this instrument. There are other, long-proven ways to measure introversion and extraversion, to create diverse teams and to choose a career path. The point here is that the Myers-Briggs Type Indicator is one instrument that is being used in a wide variety of applications within organizations. If industrial/organizational psychologists intend to continue working with organizations, it seems they must be well versed with the MBTI and all of its potential uses.

Because this instrument has enjoyed such widespread use in recent years does not, however, mean it is foolproof and exempt from criticism. As is evidenced by the literature presented so far in this review, there is a relative lack of "scientific" evidence regarding the MBTI and its uses. There is good deal of evidence demonstrating the construct validity of the instrument, but other areas seem to be lacking in terms of sound support. Perhaps then, it is the role of the

industrial/organizational psychologist to provide the evidence either supporting or opposing the current trend of use for the MBTI.

Some members of the field have refused to consider working with the MBTI as a potential tool because of this lack of scientific evidence, characterizing type descriptions as nothing better than "horoscopes" designed to apply to everyone, but not really telling us anything new and different. In some cases, they may be correct in their skepticism. Certainly it would be foolish to jump into certain applications of the MBTI without thorough scientific investigation. In fact, one goal of the present research was to begin an investigation to determine whether the MBTI has any future as a selection device. Previous research on personality instruments has shown one should be extremely cautious when attempting to use personality as a means for making hiring decisions. However, some companies are beginning to use the MBTI as part of the selection process without the appropriate testing and validation of the instrument as a selection device. Here is a perfect application for the I/O psychologist--to determine whether this practice is prudent or not, and to make these recommendations to corporate clients. Again, this was one of the goals of the present study.

Many of the potential applications for the MBTI in organizations have been described above, and it should be evident that some of these uses are directly in line with I/O psychology (e.g. selection, placement, and training). In fact, pick up any textbook on personnel or organizational psychology and it is difficult to find a topic where the MBTI may not potentially fit in. The following are just a few of the many examples of how the Myers-Briggs Type Indicator may be applied to almost any of the traditional I/O psychology topics.

In his textbook entitled Psychology of Work Behavior, Landy (1980) described the first important theme of the book as the importance of individual differences in terms of predicting behavior. Much, or even all of an I/O psychologist's time may be spent trying to predict who will be the most successful at a particular job, who will be the most likely to leave, or why one person is satisfied at a job while another is miserable. To answer these questions, individual differences among workers are typically observed, generalizations are made, and predictions are devised. This is exactly what Myers and Briggs did when developing their instrument. The authors noticed certain commonalities and differences among groups of people and developed a way to measure these distinctions. The MBTI is basically a tool to measure individual differences, and to aid in the prediction

of many of these organizational applications. Again, the MBTI is by no means the only individual difference measure available, (the literature review will point to several others often used by psychologists) but should at least be considered as an alternative.

Landy (1980) described how personality inventories can be valuable as predictors in selection situations by pointing out "the logic of personality testing is that knowing the habitual manner in which an individual responds in many different situations should help in determining whether or not the individual will be successful in a particular class of jobs" (p. 88). Undeniably the MBTI would not be the first personality measure employed in a selection decision. Many other tests (e.g. the 16PF, Gordon Personal Inventory, and MMPI) have traditionally been used individually or as part of test batteries, and have even been included in assessment centers over the years. However, Landy (1980) further pointed out "it seems clear that the only acceptable reason for using personality measures as instruments of decision is found only after doing considerable research with the measure in the specific situation and for the specific purpose for which it is to be used" (p. 88). While there is a great deal of data describing the relationship between type preferences and occupational choice, the data do not support the MBTI as a selection instrument (another job for the I/O psychologist).

The point however, is that the MBTI is an example of the type of personality instrument often employed by psychologists when making personnel decisions.

Another application for the MBTI is in choosing career paths. Individuals fill out the Indicator in order to find out more about themselves and the type of job which may best suit them. Again, there are several other tests used historically by I/O psychologists for the same purpose. One of the most commonly used tests is the Strong Vocational Interest Blank (SVIB), which compares the interests of the test taker with incumbents of various jobs. Presumably, the closer the interests match, the more likely the subject will be to succeed and be satisfied in this type of career. Consulting Psychologists Press, a marketer of MBTI materials, has begun to sell packages to corporations which utilize the SVIB and the MBTI in tandem for career development. Miller (1992) provided an interesting case study describing exactly how this was done for one individual who was dissatisfied with her job and wanted to find a new career.

Other psychologists have investigated the relationship between an individual's personality and the job environment, discovering the better the "fit" between the individual and the environment, the more positive a number of organizational outcomes will be. Holland has made a career out of investigating person-environment fit, including the

development of instruments such as the Holland Self-Directed Search, which is used for career planning all over the world. Several other authors (e.g. Parsons & Wigtil, 1974; Smart, 1976) have used Holland's personality typology to investigate the relationship between person and environment in terms of its effects on occupational preference and job tenure. The MBTI again fits quite well with this organizational application. A practitioner can use the MBTI as a tool to determine which personality characteristics are most important to an individual, and then to identify potential careers which may best fit those characteristics or needs. This instrument offers a great deal of promise in terms of researching a very classic I/O problem of person-environment fit.

Schneider (1987) also investigated the relationship between the person and the organizational environment in which he or she works. In his attraction-selection-attrition (ASA) framework, Schneider explained how organizations are merely a function of the kinds of people that comprise them, therefore, to understand the organization, the people must also be understood. One of the implications of this model is how useful personality measures may be in understanding organizational processes. Again, the MBTI may be a vehicle for facilitating this understanding.

The selection interview is another application for the MBTI. Certainly, it is well known that there is room for

error in the employment interview. It has been shown time and time again that interviewers are more impressed with certain types of individuals, such as those who are assertive and outgoing (extraverted), and those who have done research and know details about the job (sensors and judgers?), and those who make the best impression are more likely to get the job (Jewell & Siegall, 1990). Additionally, interviewers may be more likely to be biased towards the traits they themselves possess, or those of the previous successful job incumbent. This bias can also extend beyond the interview into the realm of performance appraisal. Classic methods to avoid this bias have focused upon training the interviewer/rater (Bernardin & Pence, 1980; Pulakos, 1984) to be aware and consciously avoid this prejudice. Interviewers and raters should be aware of their own personality preferences and their potential for biasing judgment. Perhaps this may be incorporated into refresher training courses in rating/interviewing.

Traditional organizational applications provide another dominion of potential for the MBTI. Consider the various theories of work motivation. The MBTI may help determine whether the job will meet an individual's esteem and self-actualization needs in Maslow's (1943) Need Hierarchy theory, or the growth and relatedness needs in Alderfer's (1969) ERG theory. What motivates one type of individual may be totally different than what motivates another, which is what Lawler

and Porter (1967) showed in their drive theory of motivation. All of these theories of motivation have in common the effect individual differences can have upon what drives an individual to perform. Some of the basic MBTI preferences may affect motivation in terms of how the job fulfills the individual's needs and provides the necessary factors for motivation.

Another classic organizational topic is that of job design. I/O psychologists have traditionally been put to task to find ways to increase motivation, production and satisfaction while decreasing cost to the organization. One of the key strategies researched and implemented is job design (or redesign). The key assumption has been that productivity is associated with an employee's satisfaction, so, in order to be more productive, the employee must be made to be more satisfied. Many models, including Hackman and Oldham's (1976) classic Job Characteristics model and Salancik and Pfeffer's (1978) Social Information Processing model have tried to capture this process. What satisfies one person however, may completely displease another. For instance, the classic application of enriching a job by giving an employee more responsibility may increase satisfaction for certain employees (like perceivers, who like variety and spontaneity) and cause frustration for others (like judgers, who prefer everything to be well-planned and methodical). Jewell and Siegall (1990)

suggest these variations may account for the less than optimal results in job design research:

> Differences among individuals in the perception of the same jobs can confound research efforts and create considerable practical difficulties for the I/O psychologist seeking to help an organization redesign work from a job enrichment perspective. (p. 265).

Again, knowing typical job incumbents' personality preferences may be extremely helpful in determining whether job redesign or enrichment will be successful.

Finally, following the logic described above, many long-studied organizational outcomes may result from the interaction between the person and organization. Steers and Rhodes' (1978) model of employee attendance describes how factors such as personal characteristics and satisfaction with the job situation help to determine whether an employee will attend the job regularly. Abelson (1987) suggested person-environment fit may factor into employee turnover in an organization. Following up on Abelson's suspicions, Marcic, Aiuppa, and Watson (1989) found individuals who worked in groups encompassing MBTI types similar to their own had longer job tenure than those who were in dissimilar groups. Many theorists (e.g., Herzberg, Mausner & Snyderman, 1959; Locke, 1976; and Porter, 1961) have suggested employee satisfaction with the job results from a good match between what the

individual needs or desires and what the job has to offer. Even stress, strain, and mental health problems may be associated with poor person-environment fit (Blau, 1981; Edwards & Van Harrison, 1993; Furnham & Schaeffer, 1984). All of these outcomes depend partially upon the type of personality of the individual worker. Again, the MBTI may provide a framework for investigating these individual differences and their effect upon the organization--one of the main functions of the industrial/organizational psychologist.

The applications described above are just a few of the ways the Myers-Briggs Type Indicator may be used by a psychologist working directly with organizations or researching I/O theory and application. Unquestionably, the MBTI is not a wonder instrument or the "one size fits all" answer to all organizational problems, but it should certainly be considered as an option. A practitioner of I/O psychology should be knowledgeable enough with the instrument to be able to tell an organization whether it may be applicable in a certain situation or not. Our job then, is to find the situations where the MBTI is an appropriate tool and those where it is not. The following sections begin to explore the potential of the MBTI in organizational selection. This potential will be greatly affected according to whether or not the instrument is susceptible to faking.

Faking

According to Furnham (1990a), there are three basic ways of faking self-report measures. The first is what Furnham referred to as "deliberate sabotage", meaning providing answers to the measure which have no meaning to the individual. The subject merely fills in answers randomly or according to some set pattern. Another type of faking is described as "sheer ignorance", which refers to those instances when the testees respond in a way they believe is honest, however these responses are not accurate. Most often the respondent simply cannot report his or her attitudes or behaviors accurately. It is not a case of being unwilling to respond honestly, it is a matter of being unable to do so. The third type of faking described by Furnham (1990a), "motivational distortion", was the concern of the present study. Faking in this category refers to biasing the answers to self-report measures in order to project a particular set of results. Naturally, those who are motivated to distort their answers in a particular way typically try to "fake good" or fake a desirable response set.

In addition to the three forms of faking, Furnham (1986) and Furnham and Henderson (1982) described several terms used to describe different types of bias. Motivational distortion described above may also be called "social desirability", "yea- or nay-saying", or "acquiescence". Words such as

"faking, lying and dissimulating" refer to cases in which the respondent attempts to cover up a true response by choosing another option. More specifically, "social desirability" refers to faking only in a favorable direction, in order to make the respondent appear "better" than he or she actually is.

By far, the most research on dissimulation has focused on "faking good" or social desirability. This is presumably because most subjects taking personality tests are motivated to present themselves in a positive light considering their results will be used for some further purpose. The majority of studies investigating "faking bad" have centered around members of clinical populations, who for various reasons may try to fake a mental deficiency. The present study dealt not with merely faking good or bad, but with motivation to distort a specific MBTI profile appropriate for a job applicant for a particular role within an organization.

What Makes a Questionnaire Susceptible to Faking?

In general, research has shown subjects can determine what various items on personality questionnaires measure and can then fake these items in a socially desirable or undesirable fashion. Furnham (1986) pointed out that some questionnaires may be more susceptible to faking than others due to a variety of different factors. First, there is the question of the face validity of the test. Respondents can

hardly fake a certain profile on a test if they do not know what the test is supposed to measure. Second, and along the same lines, success in faking depends upon how much the average or layperson knows about the construct or trait being measured. Traits such as extraversion versus introversion have become well known to the general public, and are used in education and business settings whereas something like self-monitoring is less well known. The less people know about the construct being measured, the harder it is to fake a positive or negative profile on that measure.

Third, Furnham (1986) suggested there are very few traits which are exclusively positive or negative. Almost all traits have advantages along with disadvantages, so faking may be difficult since "too much of a good thing" may be seen as negative. Someone high in extraversion does not want to appear overly gregarious, impulsive or dependent on attention from others. Again, choosing the optimal level for faking a good profile may prove difficult. Finally, faking is highly dependent on the testing situation. A respondent will not likely fake unless motivated to do so. Taking a personality test when applying for a job or to determine admission to a psychiatric hospital would presumably provide more motivation to the respondent than taking the same measure as a self-informing quiz in a book or a magazine. Thus, not only does faking a personality profile prove to be challenging,

detection of those doing the faking may be an even more demanding task.

The challenge of the present research was to determine whether certain or all scales of the MBTI are susceptible to faking. Furthermore, this study attempted to determine under what conditions faking may be possible, and which temperament types are most adept at faking.

Detection of Faking

One of the main concerns that has led to the investigation of various forms of faking is that biased responses can threaten the validity of personality test results. Hough, Eaton, Dunnette, Kamp, and McCloy (1990) indicated "intentional distortion in such self-report measures may attenuate their validities when they are used for practical personnel decisions. This concern is especially salient when self-report measures are part of a selection system" (p. 581). These problems have led to the search for methods to detect the distortion which may affect the validity of results.

Furnham (1986) described four basic methods for the detection of faking. First, faking can be measured directly through the questionnaire itself. Abnormally high scores on "lie" scales can be used to identify subjects who have potentially biased their scores. These scales require rigorous testing and refinement in terms of choosing

appropriate items to detect dissimulation and setting appropriate cutoffs to differentiate subjects who respond honestly from those who fake their responses.

Second, separate questionnaires designed specifically to measure social desirability may be correlated with the scores on the target personality questionnaire to determine whether patterns of correlations indicate if the personality measures are consistent with measures of social desirability. However, according to Furnham (1986), there are many other potential explanations for a correlation between these social desirability measures and test scores.

Third, the test may be subjected to an item by item analysis to determine sensitivity to dissimulation and direction of that dissimulation. Again, according to Furnham (1986), not only is this method time consuming, the results are questionable in terms of reliability.

Finally, Furnham (1986) described one of the most frequently used methods for the detection of faking as asking subjects to deliberately fake a particular role, usually good or bad, on a personality measure, and then to compare the scores of the faking subjects with scores from a control group asked to answer the questions honestly. If these scores are significantly different, it is most likely prudent to further investigate the fakability of that particular instrument.

In addition to the methods cited by Furnham (1986), Hough et al., (1990) suggested other strategies may be used to combat the problems of intentional distortion. Forced-choice items matched on social desirability have been used in a number of different studies, however, these items appear to be susceptible to faking as well. Some researchers have tried mixing "subtle" and obvious" items in personality measures, assuming subjects can fake only the obvious items. This method has had some success, however, the obvious items have been found to be more valid than the subtle items. Perhaps the simplest solution to the problem has shown the most promising future for the prevention of response distortion. Hough et al., (1990) reported warning subjects that faked responses could be detected and indicating possible consequences which may result if faking is discovered has decreased intentional faking in several studies.

A recent study by Hough et al., (1990) showed intentional distortion of personality scales may not be as serious a problem as originally thought. A series of experiments showed subjects could successfully distort their responses on several personality scales when asked to do so. However, under honest conditions, job applicants did not distort their responses, and, under faking conditions, distortion did not affect the validities of the personality constructs. The authors warn, however, it would not be prudent simply to ignore faking and

assume personality measures can be used without caution in selection situations. Faking certainly remains an important concern, and appropriate measures must be taken to attempt to ensure response distortion does not occur, or, if it does, this distortion is detected.

The Myers-Briggs Type Indicator does not include an internal lie scale. This omission may be due to the fact the authors intended their instrument be used only for self-awareness and improvement, assuming no real motivation to fake. The instrument, however, has been through years of research and refinement resulting in the forms used today. Each item has been carefully analyzed in terms of its ability to measure the desired dimension. Furthermore, each item included in the measure is also weighted to account for social desirability. Thus, the rigor of the development process may have resulted in a test somewhat less susceptible to faking. However, it should never be assumed the instrument cannot be faked, and appropriate measures must be taken to overcome the potential for response distortion. The present research attempted to provide a preliminary assessment of whether the MBTI is indeed susceptible to response distortion in selection situations.

Review of the Faking Literature

The literature on faking personality instruments is varied and extensive. The major trends in this research revolve around whether subjects can fake good or bad on a particular instrument, and whether specific profiles, such as those appropriate for a particular job can be faked. Many studies further attempted to determine whether lie scales and other techniques can effectively detect such dissimulation. The following sections review relevant literature regarding, first, whether personality instruments can be faked in general, and second, whether they can be faked in order to produce a specific target profile.

Can Personality Instruments be Faked?

The majority of research concerning the fakability of personality instruments has focused on those tests used in clinical applications, primarily with the Minnesota Multiphasic Personality Inventory (MMPI). Obviously, if an instrument is to be used in such cases as deciding whether an individual should be institutionalized, it is important that the instrument can accurately discriminate respondents who are faking symptoms from those who are truly mentally ill.

Grow, McCaugh, and Eno (1980) examined thirteen separate techniques designed to detect faking on the MMPI in terms of the amount of variance in faking for which each technique could account. Normal subjects were asked to fake good or in

a socially desirable manner, fake bad or in a socially undesirable manner, or answer normally the questions on the MMPI. Variance was calculated, then cross-validated on a sample of clinical subjects. Results ranged from poor (ten percent detection) to very good (eighty-one percent detection), with some techniques better at the detection of faking good and others better at the detection of faking bad.

In further research on the MMPI, McAnulty, Rappaport, and McAnulty (1985) reported the validity scales and indices included in the instrument could not successfully differentiate between students who reported faking good from those who claimed to respond honestly. Kelly and Greene (1989) found that psychiatric inpatients could successfully identify key items and fake "normal" profiles when instructed to do so. And, in a search for a better method to detect faking, Hsu, Santelli, and Hsu (1989) reported measuring subjects' response latencies to items on the MMPI may prove useful in the detection of dissimulation, particularly for faking good.

Perhaps spurred on by the mixed results found with the MMPI's own lie scales, Bagby, Gillis, and Dickens (1990) attempted to measure dissimulation on the instrument with two other personality measures, the Basic Personality Inventory (BPI), and the Millon Clinical Multiaxial Inventory-II (MCMI-II). Undergraduates completed the two new scales under fake

good, fake bad, or respond honestly conditions. The authors found both scales could accurately discriminate between groups, with the MCMI-II better at detecting fake bad responses and the BPI better at detecting those faking good.

Research on faking continued with the development of the MMPI-2. Austin (1992) found the Validity, Suppressor, and Validity-Suppressor subscales to be effective at classifying subjects faking bad, while the Lie scale remained the best method for the detection of subjects who faked good. Using a shortened inventory based on portions of the MMPI-2 validity scales, Cassisi and Workman (1992) were able to correctly classify 77 percent of subjects faking good, faking bad, or responding honestly. Finally, Woychyshyn, McElheran, and Romney (1992) compared validity scales from the MMPI with those created for the MMPI-2, and found they were equally able to detect students and psychiatric patients faking good profiles.

In research on other personality instruments, Power and MacRae (1977) discovered college students could create an accurate profile of neuroticism, stability, extraversion or introversion upon direction when completing the Eysenck Personality Inventory (EPI). Further investigation of the EPI by Dunnett, Koun, and Barber (1981) showed the social desirability of items on the instrument may influence respondents who fake in a desirable direction. Items

measuring extraversion were rated as socially desirable while those measuring neuroticism were rated as undesirable. Faking profiles tended to reflect the desirability of the items. Furthermore, Dunnett et al. (1981) found the EPI Lie scale was unable to discriminate between faked and honest responses.

A very different line of research by Albert, Fox, and Kahn (1980) attempted to determine whether faking could be detected on more a subjective personality instrument designed to detect psychosis. These authors had psychiatric inpatients and undergraduate students take the Rorschach test, with the undergraduates faking psychosis in either role-informed or role-uninformed conditions. Experts in interpretation of the Rorschach were unable to distinguish real psychiatric patients from those faking a psychiatric profile. This study and those described above indicate the dangers one may face with potential dissimulation on personality instruments used for clinical purposes. If respondents can fake a certain profile without detection, it is possible the wrong people are being hospitalized, allowing disturbed individuals to go untreated, and possibly even allowing intelligent criminals to avoid prosecution by allowing them to plead insanity successfully.

Detection of response bias is equally important in instruments used for applications with normal populations. Thus, a vast amount of research has been dedicated to the detection of faking these instruments.

Seibel, Wallbrown, Reuter and Barnett (1990) found responses to the Sixteen Personality Factor Questionnaire (16PF) were significantly correlated with a measure of Motivational Distortion for a group of male prisoners. Further, Krug (1978) suggested an adjustment in the faking good validity scale for the 16PF scale was in order after finding more than half of subjects tested created profiles that were judged invalid.

Even children have been found to be adept at distorting their personality test scores. Canivez and Prichard (1989) found 12-year-olds could accurately fake good or bad profiles on the Children's Personality Questionnaire when asked to do so. Similarly, Daldin (1985) found children aged 6 to 16 could fake all scales on the Personality Inventory for Children--Revised. Finally, Castelli-Sawicki, Wallbrown, and Blixt (1983) found high school students could successfully distort the High School Personality Questionnaire in a positive direction. In an interesting twist, however, the authors noted that male and female students differed with respect to the individual items they chose to distort. These results suggest not only that children and adolescents are capable of faking personality questionnaires, it may also be necessary to adjust lie scales and other measures of distortion according the respondent's gender.

Krahe (1989) found college students were able to limit their socially desirable responses to specific dimensions of a personality instrument. Subjects asked to fake high or low scores on either a "social orientation" or "achievement orientation" dimension of the Standard Personality Inventory could do so successfully. These results indicate the subjects were able not only to pick out items measuring the target dimension, but also to distort their responses in the desired direction.

Failure of personality tests designed for clinical and counseling applications to withstand dissimulation when used in an employment context spurred some authors (e.g. Klein & Owens, 1965) to suggest perhaps the problem was due to the fact these measures were not developed specifically for the purpose of employee selection. In an effort to verify this supposition, Thornton and Gierasch (1980) tested the ability of an empirically derived selection instrument to withstand faking. Subjects filled out the measure under honest and faking instructions. Results showed seven of ten scales on the instrument were successfully faked in a positive direction. The authors concluded instruments designed specifically for selection purposes were just as vulnerable to faking as instruments derived for alternate purposes.

Finally, Furnham (1990b) used the fake good and bad method to test whether the MBTI was susceptible to response

dissimulation. Three groups of college students responded to the MBTI by answering honestly, faking by giving the best possible impression, or faking by creating the worst possible impression of themselves. Results revealed significant differences across all groups on each of the MBTI's eight subscales. Interestingly, the pattern of results differed depending on the scale. Extraversion, introversion, perceiving and judging subscales showed linear results with extraversion and judging rated highly (associated with the best possible impression) and introversion and perceiving rated as negative (associated with the worst possible impression). The remaining four scales had curvilinear patterns, with high scores on sensing and thinking judged to be both good and bad, and low scores on intuition and feeling also seen as positive and negative. The ideal fake good profile in this study tended to be ESTJ, with the ideal fake bad profile as ISTP. The typical profile in the control group was ENFP. Thus, the MBTI seems to follow the same pattern as some of the other personality measures described above. Not only is the MBTI highly susceptible to faking, the faked responses tended toward what were considered socially desirable responses.

From the evidence presented above, it is obvious that a wide variety of personality tests are susceptible to faking. The literature has shown under normal conditions, responses to

these personality measures are routinely distorted. In research situations, subjects were able to falsify their responses in the appropriate direction when asked to do so. However, not all faking or dissimulation can be grouped in the category of faking a good, socially desirable response or faking a bad or negative profile. Some faking is done with a specific purpose in mind that may or may not be congruent with producing a best or worst profile. This type of dissimulation is discussed in the following section.

Faking for a Specific Purpose

Often, an individual is motivated not to put his or her best or worst foot forward, but to produce a personality profile suitable for a specific purpose. Perhaps the most obvious motivation for this type of faking is an attempt to appear to be a suitable candidate for a particular job or career. If applicants want to be competitive for a position, it may be in their best interest to appear to be a good match for that job, whether the traits they endorse are truly indicative of their personalities or not. While faking a particular profile may seem to be much more complex than simply faking good or bad, research has shown that it can indeed be done. Furthermore, this type of faking may be even more difficult to detect.

Elliot (1976) had 12 experienced raters, psychologists and personnel officers, make judgements on 16PF profiles.

Half of the profiles were generated honestly, and half were faked according to results found in a previous study. Results showed the faked profiles received higher ratings than the true profiles, indicating even those individuals highly trained in making personnel decisions may be fooled by clever faking. Certainly these results must be considered when making personnel decisions based on personality test results.

Jeske and Whitten (1975) also did research with the 16PF, and attempted to determine whether subjects could distort their profiles if motivated to do so. These authors had subjects take the questionnaire twice, once honestly, and once faking as an applicant for a summer job in public relations. Subjects were also instructed on five of the 16 important personality characteristics. Significant differences were found for all five of the instructed dimensions as well as five additional dimensions. Thus, subjects were successful in distorting the 16PF profile in order to appear suitable as a job candidate, indicating another blow against using personality instruments for personnel assessment purposes.

Schwab and Packard (1973) attempted to determine whether faking would occur within an actual employee selection context. Two groups of job applicants were asked to take the Gordon Personal Inventory and Gordon Personal Profile under honest conditions. One group of applicants was asked to complete the measures as part of the selection process, while

a second group was asked to fill out the measures immediately after hiring. Results showed no significant differences between the two groups, and the authors concluded applicants were not motivated to fake. One other possibility not discussed by the authors is both groups were equally motivated to distort their answers. The authors assumed the control group, the one asked to complete the measure after hiring, would complete the measures honestly because their responses would not be used for hiring. However, it is possible, as suggested by McCaulley (1988), these individuals distorted their responses in a positive way nonetheless, motivated by their uncertainty about the future use of this information.

Zalinski and Abrahams (1979) sought to determine whether the method by which subjects were motivated to fake affected their ability to distort personality scales. In most studies, subjects are simply asked to fake their responses. Zalinski and Abrahams investigated the possibility that less distortion may occur in situations closer to "real-life". Two groups of upper-level psychology majors completed the Strong Vocational Interest Blank (SVIB). One group responded under honest conditions and the second group was told their responses would be used to indicate how similar their interests and abilities were to a group of successful psychologists. It was assumed, since the subjects were psychology majors, they would be motivated to produce profiles as close as possible to those

profiles of individuals employed in their chosen field. Results showed the manipulation was successful and subjects in the experimental group did significantly distort their scores to be more compatible with psychologists, indicating subjects can be motivated to fake their personalities in a target direction without specifically asking them to do so.

It seems reasonable to accept the hypothesis if people can fake a good or poor profile on a particular personality dimension, they must know what their own true scores would be. For instance, if people want to appear to be extremely extraverted, they must know to what degree they possess the trait of extraversion and then be able modify responses to the test items to appear more extraverted than they really are. Furnham and his colleagues (Furnham, 1990c; Furnham & Henderson, 1983; Furnham & Varian, 1988) set out to test this hypothesis.

Furnham and Henderson (1983) presumed subjects would be better able to predict their personality test scores on scales measuring well known constructs rather than those typically used only by psychologists. To test this idea, subjects were asked to respond to personality scales designed to measure some well known concepts such as extraversion and neuroticism, along with some lesser known concepts such as self-monitoring and locus of control. After filling out the scales, subjects were asked to estimate their scores on each of the personality

dimensions. The authors found significant correlations between actual and estimated scores for several of these dimensions, including both those from the well known and lesser known categories. The authors concluded subjects are best able to estimate their scores on traits that are part of their everyday world, whether their ideas of what those constructs mean are the same as what psychologists are attempting to measure or not.

In a similar study, Furnham and Varian (1988) had subjects estimate their scores on the Eysenck Personality Questionnaire. Results indicated subjects were fairly accurate at predicting their scores on both Extraversion and Neuroticism. Furnham (1990c) had subjects estimate their scores on 15 separate dimensions of three personality questionnaires (FIRO-B, Morningness-Eveningness, and MBTI), then had the subjects fill out each of the same questionnaires and, finally, correlated the estimate with the subjects' true scores. Significant positive correlations were found between actual and predicted scores for several of the dimensions including Extraversion, Introversion, Thinking, Feeling, and Judging on the MBTI. Again, Furnham (1990c) found the more the subjects reported understanding the construct, the better able they were to predict their scores on that dimension. Thus, if people have a good general understanding of the personality trait being tested, they should be able to

estimate their general score on this dimension and then fake better or worse according to the requirements of situation.

Cohen, Cohen and Cross (1981) found "naive subjects were unable to determine their own type" when MBTI scores were correlated with another test designed to measure persons' perceptions of their own personality types (p. 890). According to this research then, if subjects are unable to determine their own types, they should not be able to fake the dimensions in a particular direction. Cohen et al. (1981) also found no significant relationship between individuals' MBTI types and their ratings of ideal self on another personality measure, lending support to the idea that the MBTI does not measure an individual's image of ideal self. This provides some evidence that respondents are not necessarily motivated to fake good on the MBTI in experimental situations.

Many of the previous studies on faking simply assumed subjects were naive and had no knowledge of the personality measure, or simply gave subjects the necessary information about these measures. Velicer and Weiner (1975) attempted to study the effect not only of faking a particular profile for selection purposes, but also to determine how the level of knowledge about the personality measure affected faking results. The authors used four faking sets by having subjects respond honestly, fake their ideal selves, fake a salesman's profile, or fake a profile consistent with a librarian.

Further, the authors manipulated the level of information by providing no information on the Eysenck Personality Inventory (EPI), telling the subjects the test would yield three separate scales and identifying them (minimum sophistication), or naming the scales and providing sample items (reasonable sophistication). Significant differences between groups were found for all three scales of the EPI. Even a minimum level of information about the EPI resulted in significant differences in Extraversion and Neuroticism, and the Lie scale was unable to detect faking. The authors summarized their results by suggesting "structured personality inventories offer an efficient and objective means for obtaining information about a person, but only if that person is willing honestly and accurately to provide such information" (p. 73).

Kroger and Turnbull (1975) suggested the reason the MMPI validity scales were successful at the detection of faking was a function of the instructions given to the respondents. Subjects were asked to give the very best or worst possible impression of themselves. Validity scales are designed to detect this type of socially desirable answer. However, in real world situations, subjects are unlikely to use this strategy. More often, individuals are likely to use faking as a strategy in order to present themselves as a particular type of person. This type of faking is not necessarily consistent with social desirability.

Kroger (1974) provided a social-psychological hypothesis for faking, and suggested "faking involves much more than 'putting one's best foot forward' or answering in socially desirable ways. It involves responses that are much more fine tuned to the requirements of particular test situations, namely, role-taking" (p. 133). Job applicants will not only try to present themselves personally as individuals qualified for the particular position, they will also approach any test or instrument in the same manner, answering according to the adopted social role. Someone adept at role-taking does this by using the social cues present in the situation. These cues may be given by the personnel representative, titles of personality measures, the test items themselves, and the perceived purpose of the testing (Kroger, 1974). Thus, faking can differ dramatically from situation to situation, depending on the specific social cues available.

According to Kroger and Turnbull (1975) when a person sets out to fake a particular profile, he or she does this by enacting a social role consistent with that profile. In other words, the respondent imagines what a person in the position in question would be like, and answers items according to that role. To test this idea, the authors asked subjects to fake an MMPI profile for an air force officer or a creative artist. Undergraduates were successful at creating an accurate profile for the air force officer, but not the creative artist. The

authors assumed this result was due to the fact that the students did not have an accurate conception of what a creative artist's role should be. After the subjects were given information on characteristics of artists, they were able to successfully create this profile as well. Furthermore, the MMPI validity scales were unable to detect these profiles as faked. Thus, according to Kroger and Turnbull (1975), it is possible for individuals to accurately fake any personality profile without detection provided they have a realistic conception of the role they intend to simulate.

The research reviewed thus far has demonstrated that motivation to fake and accurate conception of the role to be faked are important determinants of the success of dissimulation. In addition, Kroger (1974) asserted, successful role faking depends on whether the subject has the skill to fake the role, and whether there are role-relevant cues in the personality measure. Through a series of several experiments, the author determined "providing the respondents with greater information in the form of explicit instructions, detailed role definitions, and highly role-relevant test items resulted in more successful faking" (p. 133). Therefore, according to Kroger (1974), even if the respondent is motivated to fake, and is both aware of and capable of adopting the desired social role, it may not be possible to

fake a particular personality measure if the items in the measure are not relevant to that particular social role.

Furnham (1990a) investigated whether subjects could accurately fake a particular role as a job applicant on the MBTI and three other personality measures. Each subject filled out all four measures, one under each of the following conditions: respond honestly, fake advertising executive, fake banker, or fake librarian. ANOVAs calculated on the dimensions of the MBTI indicated all eight subscales differed significantly for the comparison between control group and each of the three faked social roles. Advertising executive profiles had the highest scores on extraversion, intuition, feeling and judgement. Librarian profiles tended toward introverted perceivers, and banker profiles were extremely high on the thinking dimension. The author concluded subjects can not only fake MBTI profiles, they can fake specific social roles or profiles.

Furnham's (1990a) study leaves important questions unanswered. It was found that subjects' faked profiles differed significantly from control responses to the MBTI, but it is by no means certain that the subjects achieved the profile they intended based on their conception of the social role. Subjects seemed to have an easier time faking advertising executives and bankers, than librarians. The modal type found in the study for librarian, ISTP, is most

commonly associated with professions such as farmers and police, whereas librarians overwhelmingly tend to be ISFJ (Myers and McCaulley, 1985). In fact, Furnham (1990a) reported a great deal of variability in faking responses, indicating either a lack of consensus as to the ideal profile for that occupation, or that subjects were unable to determine which items to endorse to achieve the desired profile. Following Kroger's (1974) reasoning, this second possibility may be due to the MBTI not providing role-relevant items for the respondent. Furthermore, subjects reported the task was quite troublesome and that they had difficulty maintaining the social role.

One important question begging to be answered is whether subjects or potential job applicants can accurately fake a particular profile. In other words, if the ideal profile for a manager is ESTJ, can an individual produce an ESTJ profile on the MBTI? One goal of the present research was to answer this question. Additionally, the present study sought to determine whether certain types are more adept at faking than others. The research reviewed above was used to develop a framework for answering these questions.

The Present Study

The research reviewed here has shown many factors are involved in determining whether respondents to a personality measure can enact a specific social role, such as an applicant

for a particular job, and then fake that role accurately. The present study employed the factors suggested by Kroger (1974) and Kroger and Turnbull (1975) in an attempt to determine whether the MBTI is susceptible to response distortion.

According to Kroger and Turnbull's research, the respondent must first be motivated to fake the role. Those individuals applying for a job are presumably motivated to provide the best image of themselves possible. Furthermore, Furnham (1990a) found both experimental subjects and "real life" subjects have had comparable results in faking studies, indicating experimental subjects can be sufficiently motivated to fake simply by asking them to do so. In the present study college students were asked to fake responses to the MBTI according to specific directions. It was assumed the students were adequately motivated to perform the task.

College students were chosen as subjects for the present study for two reasons. First, Furnham (1990a) reported college students were able to produce faking profiles comparable to those of job incumbents. Because college students and graduates represent a large portion of today's job applicants, it was decided they would be appropriate as subjects for the present study. Second, since college students were available for testing and could be asked to participate in return for course credit, they were deemed desirable as subjects for their ease of accessibility.

The second requirement for accurate response distortion, according to Kroger (1974) and Kroger and Turnbull (1975), is that the respondent must have an accurate conception of the role to be faked. Again, if the person is applying for the job he or she should know what it entails. Conception of a role in experimental studies would depend on how well known the role is by the general population or how much information is given during the actual study. In the present study, subjects were given a description of a specific type to fake based on information provided in several manuals used to introduce the concepts of personality type (Hammer, 1993; Hirsh & Kummerow, 1990; and Myers, 1987). Each of these descriptions was generic in nature, not associated with a particular job; rather, it described the general characteristics desirable for a job applicant. Thus, subjects were presumed to have adequate role information for the task of faking.

The third key factor involved in successful response distortion is that the individual must have adequate role taking skills. This skill varies with the individual and the role to be taken, but generally college students and other subjects have been successful in role taking studies (Furnham, 1990a). What is unknown, however, is whether individuals differ in their abilities to take on roles and then fake those roles accurately. For instance, it was hypothesized that

individuals with certain personality characteristics in common would be better at the role taking task than individuals of other types who do not have these specific characteristics. The present study sought to determine whether certain temperament types are better at this role faking task than others.

Finally, accurate role faking may depend on whether the personality measure to be faked provides role-relevant cues to the respondent (Kroger, 1974; Kroger & Turnbull, 1975). Again, this may vary according to the measure used; however, it is unknown whether the MBTI provides these cues. It is also unknown whether the individual scales of the MBTI differ in the degree to which they supply these cues. These questions were also addressed in the present research.

In summary, it was assumed that subjects in the present study were adequately motivated to fake, and had sufficient information about the role to be faked. The remaining two elements of Kroger and Turnbull's necessities for successful role-faking were examined in the present study. First, do the four scales of the MBTI provide cues for respondents to aid in response distortion? Second, does role taking skill differ among temperament types, or are all types equally adept at faking certain roles? These questions are examined in the sections that follow.

Does the MBTI provide role-relevant cues? If the MBTI does provide cues to respondents, then respondents should be able to look at an item, determine which of the four MBTI dimension pairs that particular item measures, and then fake a response to that item in the desired direction. According to research (e.g., Velicer & Weiner, 1975; Furnham, 1986) this determination may depend on the familiarity of the subjects with the dimensions being measured. Much research has shown subjects are well acquainted with introversion and extraversion (e.g., Furnham, 1986; Furnham & Henderson, 1983), and thus should be adept at picking out items measuring this dimension. While the EI scale of the Myers-Briggs Type Indicator differs somewhat from the layperson's general understanding of the concepts of introversion and extraversion, it was assumed they are close enough to conventional scales for subjects to accurately identify items measuring the EI scale.

Furnham (1990a) found thinking and feeling (TF) to be the most successfully faked dimension, indicating subjects had a good idea which items measure these dimensions and could manipulate them according to the role they were attempting to simulate. Furthermore, Furnham (1990c) found subjects were reasonably accurate at estimating their own scores on the thinking/feeling dimension, indicating a general understanding of these constructs and how they are measured with the MBTI.

The evidence for sensing/intuition and judging/perceiving is sketchy at best. The layperson's understanding of these concepts may be quite inconsistent with the corresponding MBTI dimensions, and thus these scales may be less susceptible to accurate faking. In summary then, it was suspected subjects would be most accurate at identifying items measuring the EI and TF scales of the MBTI, and somewhat less accurate at identifying items measuring the SN and JP scales. Following the logic of Kroger (1974) and Kroger and Turnbull (1975), this proposed discrepancy in accuracy may be due to the possibility that these scales provide a differing degree of role relevant cues to the subject. The greater the number of cues provided to the subject for role-faking, the more accurate faking should be.

Velicer and Weiner (1975) showed that successful role faking may depend on the amount of knowledge the subject has about the instrument used. Presumably, if subjects are aware of the traits or dimensions measured by the instrument and understand how these dimensions are measured, they should be able to fake the desired dimension more accurately. Again, familiarity of subjects with the desired dimensions plays a role. If a subject has some knowledge about how the trait is measured, providing a definition of that trait may be redundant. For instance, a person who knows what an introvert is will not benefit from a description of how a scale measures

introversion. However, if the subject is not familiar with a measured dimension, defining and describing how that trait is measured should enable the subject to fake more accurately. Accordingly, the present study sought to determine whether knowledge of MBTI scales would enhance faking ability.

Following up on Furnham's (1990a) work, it was desirable to know whether, given a certain target profile, subjects could produce the profile with responses to the MBTI. Furnham (1990a) discovered students produced significantly different profiles for librarian, advertising executive, and banker. It was unknown, however, whether subjects conceived of an advertising executive as an ESFJ and a librarian as an ISTP and answered items accordingly, or merely looked at items and answered according to their conception of a social role and came up with those particular types, as suggested by previous research (e.g., Kroger and Turnbull, 1975). This is an important distinction. Job applicants simply faking according to their conceptions of a social role will mostly likely produce profiles consistent with their own conceptions of the job, but this profile may not be consistent with that of the personnel representative hiring for the job.

Given the recent favor of the MBTI in business applications, terminology relating to the instrument is being used more and more often. For instance, an applicant may be aware that a certain department is looking for an ENFP to

balance out their predominance of ISTJs. Or an incumbent is likely to be aware the majority of individuals promoted to managerial positions within the company in the past few years have been ESTJs. Thus, there is a question of whether knowing the desired or "target" type for a particular role enhances the accuracy of faking. Again, the present research attempted to answer this question.

Due to the recent popularity of the Myers-Briggs Type Indicator in selection and personnel applications, it is essential to understand how much information is required for accurate role faking. Can applicants and incumbents fake a desired profile simply by knowing the job or role to be faked, or do they require some sophistication with the MBTI in order to fake accurately? If individuals can fake the desired role, can they perform the job according to this role, or will they revert to their own preferred type? How can faking be detected and prevented? If accurate faking cannot be achieved, would the applicant not be better served by answering honestly, according to his or her own preferences? If the MBTI is to be used in personnel applications, these questions must be answered. The present research provides the critical first step in this investigation.

An important decision regarding the social role to be faked in the experiment had to be made before proceeding with the research. It was decided that it would not be preferable

to have all subjects fake one particular target profile because, presumably, subjects whose own types were similar to the target type would have an easier time distorting their responses to fit the profile (in other words, they would have to do less distorting and more reporting of their own preferences than would subjects whose types were quite different from the target type). It was determined that the most appropriate course of action would be to have each subject fake a profile completely opposite to his or her own personality preferences. Presumably, if subjects can fake their complete opposites, they can also fake any combination less than the complete opposite (one, two, or three personality preferences in common). Thus, all subjects were "typed" honestly, and then given a description of their four letter MBTI opposites for the purpose of faking that particular role.

To answer the research questions outlined above, subjects were divided randomly into three experimental groups. All subjects were first asked to answer the MBTI honestly in order to identify their personality preferences. The first third of subjects were assigned to what is referred to as the role definition only condition. After the subjects were "typed", they were given a description of their polar opposite type, told this was a description of an ideal worker, and asked to fill out the MBTI again playing the role of a job applicant

with the attributes listed in the description. It was decided that a general description of an ideal worker was preferable to the description of a worker in a specific job because of potential problems with stereotypes across occupations and salary ranges. Thus, general descriptions of ideal workers were compiled for all sixteen personality types and were used with all three groups of experimental subjects. Included in these general descriptions were examples of a wide variety of occupations often associated with these jobs. These examples were intended to help the subject develop a frame of reference for the personality type without associating it with a particular job or person in the job.

In order to assess the effect of knowledge of MBTI type on faking accuracy, another third of the subjects was randomly assigned to a role definition plus target type identification condition. Subjects in this condition were told the desired personality type associated with the description they had been given of an ideal worker. Thus, subjects in these conditions were given a description of their polar opposite types, and the names of the four scale dimensions accompanying that type. For example, if a subject was typed as ESTJ in the honest condition, he or she was given a description of an INFP as an ideal job candidate and then told the preferred type for this position was introverted, intuitive, feeling, and perceptive.

Subjects in the role definition only condition were not given the preferred target type information.

Knowledge of MBTI type was expected to enhance role information only if the subjects understood the dimension being measured. Subjects were expected to be able to pick out the cue-relevant items on the test, those items that measured the personality dimensions to be faked, and answer accordingly if they had a clear understanding of the personality dimension and how it is measured.

Finally, following Velicer and Weiner's (1975) suggestion, the effect of knowledge of MBTI dimensions on faking was also assessed. Subjects in the third set of conditions, defined as role definition, target type identification, and MBTI dimension knowledge, were given definitions of each of the MBTI dimensions, in addition to role and target type information. Subjects in the role definition only and role definition plus target type identification conditions were not given this information. As described above, this information was expected to enhance faking ability if the subject was not previously aware of the qualities the target dimension measures.

Are some types better at role-faking? The second key question the present research sought to answer was whether some individuals are better than others at the role-taking task, and thus more adept at response distortion. A seemingly

endless number of hypotheses could be formed on the basis of type theory. For instance, perhaps some types are simply better than others at faking. Or, perhaps certain types are easier to fake than others. For example, ESTJ is one of the most common personality types in the United States, so people here may be more familiar with the characteristics associated with this type and may be better able to take the role of this type of person. INFP, however, is a rather rare type and may be harder for all individuals to fake. Further, some types may be able to fake given only role information, while others may need information on the instrument's dimensions in order to fake accurately. The possibilities are endless.

Because of the lack of prior research involving personality types and faking, the task of hypothesizing the rank order of sixteen individual personality types in terms of faking ability was not attempted. Instead, it was decided to scale the problem down somewhat and use the concept of temperament, rather than full four letter type. As described in the introduction, temperament is the best known approximation of full personality type, and has been successfully used to predictions in a variety of areas (Kroeger & Thuesen, 1988). While the predictions made in the present research were still essentially exploratory, type and temperament theories did allow for some basic postulates.

As explained in the introduction, the S-N difference, or the difference in how people gather information is most important in determining temperament. According to Kroeger and Thuesen (1988), sensors are interested in the immediate realities of the situation, not what might be. Further, they tend to focus on what applies to them, and may be unaware of what is happening around them. This may be due to the fact that 75% of the American population are sensors (Myers & Myers, 1980). Sensors are likely to have fewer contacts with intuitives; however, intuitives are forced to live in the world of sensors. Intuitives are not as interested in realities, but the possibilities and meanings among what is perceived.

Sensors like instructions to be explicitly stated and may become upset when things are left to the imagination while intuitives thrive on these tasks. Myers and Myers (1980) sum up this essential difference: "readers who prefer sensing will tend to confine their attention to what is said here on the page. Readers who prefer intuition are likely to read between and beyond the lines to the possibilities that come to mind" (p. 2). Sensors are likely to look at a role description and see only the words and facts on the page. Intuitives will look beyond the words, try to interpret them, and come up with an overall picture of what the role entails. Based on these

essential differences, it was expected that intuitives would be better at a role taking and faking task than sensors.

Once intuitives have gathered information, they must evaluate the data through thinking (NT) or feeling (NF). NFs evaluate information subjectively, by taking into account others' wants and needs. NFs have a remarkable ability to put themselves in another person's shoes (Kroeger & Thuesen, 1988). Keirsey and Bates (1984) describe NFs:

> As actors and actresses, the NFs take on the character of the person being portrayed. Where an SP would be playing himself dressed up in a costume (for example, John Wayne playing himself dressed up as a cowboy, soldier, businessman, or lawman), the NF's personality is submerged in his role (p. 63).

In other words, NFs actually become the role they take. Hence, NFs were expected to excel at role taking, producing more accurately faked profiles than all the other temperaments.

NTs also have the ability to look for meanings and relationships among information, but they do so in a logical way rather than putting themselves in another person's place. Thus, NTs are not expected to fare as well at role taking as NFs. However, the NT's trademark is that of a perfectionist. NTs must be competent at a task and set high standards of performance for themselves (Keirsey & Bates, 1984). Thus, it

was expected that NTs would be fairly successful at role taking simply due to their relentless nature. NTs were presumed to have the desire to produce as accurate a profile as possible in order to satisfy themselves. Thus, these are the types of individuals who were expected to diligently check to be sure their responses matched the characteristics in the given profile.

Once sensors gather information, they have a need to do something with it, leading to the second part of their temperament, the J-P distinction. SJs take in information and immediately try to make a decision about it. SPs, on the other hand, remain more open to possibilities, perhaps by seeking more information (Kroeger & Thuesen, 1988).

As stated above, sensors were expected to be less effective at the role taking task than intuitives. This was particularly true for SJs. SJs believe their way is the right way and are very resistant to change. According to Keirsey and Bates (1984), SJs believe their personality and behaviors are normal and cannot understand how or why anyone would be different from them. When confronted with a role-taking task, a sensor would likely read the description of the role, make a decision on how the role should be played, and stick to that plan while answering items. Unfortunately, the sensor may not be able to understand the role, especially if that role is

polar opposite to his or her own. Thus, SJs were expected to have the most difficulty with the role-taking task.

SPs are considerably more flexible. They do not have the urgent need to decide how things are and then act upon it. SPs are more spontaneous, open-minded, and tolerant of others (Myers & Myers, 1980). Thus, SPs were expected to perform better on the role taking task than SJs.

One additional variable, intelligence, was examined in the present research. It seems reasonable to predict that intelligence may affect how well a person performs a role taking task and, thus, how well the person fares at faking the appropriate profile on the MBTI. However, it appears that no research has been done relating intelligence to role faking. Further, Myers and Myers (1980) suggest some types may simply be more intelligent than others. For these reasons, intelligence was treated in an exploratory manner and no predictions were made based on this variable.

The Wonderlic Personnel test was chosen as a the measure of intelligence in the present study for several reasons. First, the instrument was preferred for its ease of administration and scoring. The Wonderlic provides a single scale of ability, takes only 12 minutes to administer, and is easily scored. Second, the Wonderlic has a long history of use as a selection measure, and was thus appropriate for the aims of the present research. Finally, researchers (e.g.

Dodrill, 1983; Dodrill & Warner, 1988; Hawkins et al., 1990) have found the Wonderlic to provide intelligence scores comparable to the much more comprehensive and long proven Wechsler Adult Intelligence Scale (WAIS).

The high correlations between the Wonderlic Personnel Test and the WAIS provide evidence of the Wonderlic's construct validity. Hunter (1989) demonstrated the instrument's content validity, showing that it includes items typical of those that assess general cognitive ability. Finally, the Wonderlic User's Manual (1992) showed that the test is reliable, with a typical reliability range between .82 and .94.

In summary, answering two major questions was the goal of the present research. First, it was desirable to determine whether the scales of the MBTI could be faked. Additionally, this study sought to determine whether some scales of the instrument were easier to fake than others, whether role information alone was enough to allow for successful faking, or whether information about the target type and/or descriptions of the test dimensions were necessary for accurate role faking. Second, the present study attempted to discover whether certain temperament types are better at the role taking task, and therefore, better at distorting their responses in the appropriate direction than other temperament types. Keeping in mind much of this research was exploratory,

the hypotheses presented in the next section were formed and tested.

Hypotheses. Hypothesis 1 dealt with the issue of which temperament types would fare the best at the role-taking task of faking one's polar opposite:

> When confronted with the task of taking a role polar opposite to their own, NFs are anticipated to be most successful at faking an MBTI profile consistent with that role. NTs are also expected to have success at role faking, but not to the degree achieved by the NFs. SPs and SJs are expected to be less successful than NFs and NTs, with the SPs creating more accurate profiles than the SJs.

To reiterate, NFs were expected to be the foremost role takers, followed by NTs, SPs, and SJs in that order. Since this study was essentially exploratory, it was not predicted whether each of these temperament types would significantly differ from one another in terms of their success with distorting their responses on the MBTI. Certainly, some significant differences were to be expected, however, exactly where these differences would occur was not speculated. The hypothesis here focused only on the expected ordering of temperament types in terms of faking. Following the logic presented earlier, those best at role taking were presumed to fare the best at distorting their responses on the Myers-

Briggs Type Indicator in the direction of their polar opposites.

Hypotheses 2 and 3 referred to the presence or absence of role-relevant cues in the MBTI, and, as a result, whether the scales of the MBTI are susceptible to response distortion. Furthermore, these hypotheses allude to the possibility that all of the scales of the instrument may not be equally susceptible to faking.

Hypothesis 2 stated:

> Subjects in the role information only condition are not expected to differ from subjects in the role information plus target type identification, or the subjects in the role information, target type identification, and dimension description condition in terms of faking accuracy on the EI and TF scales of the MBTI.

In other words, subjects were expected to be familiar enough with the MBTI's EI and TF dimensions to pick these traits out of role descriptions. It was anticipated the subjects would read the role description and be able to determine whether introversion or extraversion and thinking or feeling was required by the role with no further information.

Hypothesis 3 stated:

> Subjects in the role information, target type identification, and dimension description condition are expected to be more accurate than subjects in the

remaining two conditions in terms of faking the SN and JP scales of the MBTI.

Subjects were expected to be less familiar with the MBTI's SN and JP dimensions. Hence, telling subjects the desired target MBTI profile for their particular roles should enhance their ability to fake these roles, but only if the subjects had an understanding of the dimensions measured by the test.

A method for the detection of dissimulation is noticeably absent from the present study. This absence is based on several reasons. First, the most common method for the detection of faking is through a lie scale. The MBTI does not include a lie scale, presumably because upon its creation, there seemed to be no reason to fake one's own personality preferences. Second, while it would possible to utilize lie scales from other measures, such as those incorporated in the MMPI, previous research (e.g. Kroger & Turnbull, 1975; Velicer & Weiner 1975) has shown these measures are unable to detect dissimulation of a specific social role. Detection is typically only achieved with extreme scores such as those associated with faking good or bad. Finally, the other method typically used for the detection of faking is to compare scores on lie scales from faking groups with those from control or honestly responding groups. The present research contained no control group. All subjects were asked to fake, making this method unfeasible. Presumably, since all subjects

were asked to fake the most desirable responses possible for their particular role, they all should have produced equally high scores on a lie scale.

Results of this research may affect the use of the MBTI in a variety of ways. If subjects can produce particular MBTI profiles, specific methods of detection may have to be developed. This may include the incorporation of a lie scale, or perhaps creating templates of typical faked responses for particular job types. However, the concern of the present study was whether or not these profiles can be faked. If faking is possible, detection will be the next critical step in the investigation process.

Method

Subjects

Subjects in the present study were 229 undergraduate students at a large public university in the southeastern United States. These students were enrolled in a variety of psychology courses at the university and received course credit in exchange for their participation in this study. Subjects' temperament conditions were defined by their MBTI results in an honest condition. Once temperament was determined, subjects were randomly assigned to one of three information conditions. Subjects were assigned to I. Q. groups according to the sample distribution of I. Q. scores.

Materials

All subjects were asked to sign an informed consent form signifying their willingness to participate in the present study. Subjects were first asked to respond to an abbreviated version of Form G of the MBTI (94 scored items only) honestly in order to determine their temperament types. Subjects were then asked to respond to the Wonderlic Personnel Test as a measure of general intelligence. Finally, subjects were asked to respond to items of Form F of the MBTI according to specific faking instructions. Form F, the long form of the MBTI was chosen because of research (e.g., Zalinski & Abrahams, 1979) suggesting entire personality instrument is less susceptible to faking than scored items only.

Both forms of the MBTI were scored in accordance with procedures outlined by Myers and McCaulley (1985). The Wonderlic Personnel Test was scored according to procedures outlined by Wonderlic (1992). Each subject was assigned an identification number to place on each of the three measures he or she completed. Subjects remained anonymous with the exception of gender, as it was essential to know gender in order to properly score the TF scale of the MBTI.

All subjects were given a scenario of their polar opposite types based on results from the honest administration of the MBTI. These scenarios were adapted from Hammer, (1993), Hirsch and Kummerow (1990), and Myers (1987) to include information on basic personality preferences and preferred occupations and working environment. These scenarios were edited to ensure no item-specific cues were included. An example of a scenario may be seen in Appendix A.

Procedure

All subjects were first asked to sign an informed consent form signifying their willingness to participate in the present experiment. Next, subjects were asked to complete an abbreviated form (94 scored items only) of the MBTI's form G in a completely honest manner:

> You have been given a copy of the Myers-Briggs Type Indicator, an instrument designed to measure an individual's personality preference or "type". There are

no right or wrong answers, only preferences. Please answer each item as honestly as possible on the answer sheet provided. Once you have completed this portion of the experiment, please return your test booklet and answer sheet to the administrator, and you will be given instructions for your task for Part II of the experiment.

Once subjects completed the MBTI under the honest condition, they were asked to return the test to the administrator for scoring. The administrator then gave each subject a copy of the Wonderlic Personnel Test and the following instructions:

You have been given a copy of the Wonderlic Personnel Test, a general ability test often used by employers to make hiring decisions. Your task is to answer each item to the best of your ability. You will be given twelve minutes to complete as many items on the test as accurately as possible. Pretend you are applying for a job and you need to get the best possible score in order to get the job. Answer each question directly on the test in the spaces provided. Once you have finished, please return your test booklet to the experimenter and you will be given your task instructions for part III, the final portion of the experiment.

All subjects were timed for twelve minutes, after which, the Wonderlic Personnel Test was taken away, and each subject

was given a set of instructions for part III of the experiment according to their temperament type and assigned experimental group. Based on the subject's identified type from the honest condition with the MBTI, he or she was given a description of his or her polar opposite type and asked to fake responses according to this information. In other words, if a subject was typed INTP under honest conditions, the subject would be given a description of the polar opposite type, ESFJ, for the faking condition. Subjects were also randomly assigned to one of three information conditions. All subjects were given the following instructions:

> You have been given another version of the Myers-Briggs Type Indicator (MBTI). Pretend you are taking the instrument as part of a test battery for an employment service. In other words, your MBTI score will determine whether or not you get a job. On the pages that follow is a description of the type of individuals for which the employment service currently has job openings. Your task is to fake responses on the MBTI according to this description. Read the description carefully and decide the personality characteristics or traits associated with a person of this type. Then, answer each MBTI item as if you were a person of this type. DO NOT answer according to your own personality, rather, respond according to the qualities in the following description.

Due to the recent problems in the job market, the employment service only has positions open for individuals displaying the characteristics in the description below. Applicants chosen for the openings will be the ones who show the highest level of these desired traits. Your job then, is to appear to have extremely high levels of these traits. Do not be afraid to appear overly qualified. After all, the applicants with the highest levels of the desired traits will be the ones to get positions, and you need a job!

Depending on the level of information condition to which the subject was assigned, he or she simply received the above information alone, or in combination with some additional information on MBTI target type and MBTI dimension descriptions. These conditions are described in the independent variables section.

Subjects in all role information conditions received the following instructions for the completion of part III of the experiment:

Review your task carefully. Once you are comfortable with the instructions, open your MBTI booklet and begin the test. Read each item carefully and respond according to the role you have been asked to take for the experiment. Record your answers on the sheet provided.

Once you have completed this task, please return your test booklet and answer sheet to the experimenter. This is the end of part III, the final portion of the experiment. Thank you for your participation.

Again, each subject was asked to record his or her assigned subject number and gender on each of the test answer sheets. Once subjects completed the third portion, they turned in all experimental materials, and were allowed to leave upon filling out necessary information for extra credit.

As a final manipulation check, subjects were asked to indicate whether they had any previous training with the MBTI, beyond simply completing the measure. This check was designed to identify subjects with prior experience who were included in conditions where it was presumed subjects had no knowledge of the Myers-Briggs Type Indicator.

Analysis and design

Three independent variables were included in the present study. Two of these, level of role information and MBTI type or temperament, were included for the purpose of investigating the experimental hypotheses. The third independent variable, intelligence, was included for exploratory purposes. Two different types of dependent measures were employed to test the experimental hypotheses.

Independent variables. All subjects were required to take the Myers-Briggs Type Indicator under honest conditions

in order to determine their individual type and temperament preferences. These subjects were divided into four groups according to their MBTI temperament type (NT, NF, SJ, or SP). Thus, temperament type represents the first experimental independent variable.

Subjects of each temperament type were assigned at random to conditions providing different degrees of information on the faking task. Approximately one third of the subjects received role information only, the simple description of the role the subject was asked to fake that was presented in the procedures section. Another third received role information and target type identification, along with the following instructions:

> The employment service has found the ideal Myers-Briggs personality type for the current job openings is _____ (subjects were be given the scale names for their polar opposite types, for example, extraverted, intuitive, feeling, and perceiving).

Finally, the remaining third of subjects were assigned to a role definition, target type identification, and dimension description condition. These subjects received all of the instructions regarding role information and target type identification, in addition to the following:

> On the pages following the description of a desirable

employee is a description of the scales of the Myers-Briggs Type Indicator. Read this information carefully and use it to prepare you for your role as an applicant for these job openings.

The dimension explanations were based on descriptions provided in Introduction to Type by Myers (1987). These descriptions were modified to exclude any words directly mentioned in MBTI test items to avoid unnecessary cuing to respondents on the appropriate items for these scales. These descriptions may be found in Appendix B.

The second experimental independent variable then, was the level of role information provided to each subject. MBTI temperament type and level of role information variables were examined to test the hypotheses presented earlier.

A third variable, intelligence, was also examined to determine its potential effect on response distortion. No formal hypotheses were made concerning this variable; it was used in an exploratory manner. Intelligence was measured as a continuous (0-50) score based on results from the Wonderlic Personnel Test.

Because the primary experimental variables (those used to test experimental hypotheses) were categorical, intelligence was converted from a continuous score to a grouped variable by splitting scores into low, medium, and high I. Q. groups. Subjects scoring in the zero to 33rd percentile in this sample

were assigned to the low I. Q. group. Those whose scores fell between the 34th and 70th percentile were assigned to the medium I. Q. group, and those who scores fell in the 71st percentile or higher were assigned to the high I. Q. group.

Analyses were performed to ensure the loss of explained variability in the experiment by the intelligence factor was minimal. Analysis of variance procedures were performed for each of the dependent measures using I. Q. both as a continuous variable and as a categorical variable. The resulting R-square statistics were compared for each of the experimental dependent variables. The largest difference between the two I. Q. groups occurred for the preference score on the SN scale, however, this difference was quite small (.015). It was decided that converting the continuous measure of intelligence to a three group categorical variable did not pose a significant threat to the experimental results in terms of the amount of variance accounted for by this variable. Thus, I. Q. was treated as a categorical variable in all experimental analyses.

Dependent variables. Two different types of dependent measures were used to test the hypotheses in the present experiment. First, to determine whether certain temperament types were better at distorting the MBTI than others (Hypothesis 1), subjects were assigned a score representing the number of scales they faked in the appropriate (opposite

to their own) direction. Thus, a subject could receive a score ranging from zero (faked no scales and simply reproduced his/her own honest type) to four (faked all four scales and produced the polar opposite type). This score represented the number of scales on which subjects could fake preferences opposite to their own, regardless of how strong this preference was (in other words, it did not matter whether the subject achieved a preference score of 1 or a preference score of 67, as long as the score represented a preference for the opposite dimension, the subject received credit for faking this scale).

Second, in order to determine whether the various scales of the MBTI were equally susceptible to response distortion, a faking score was derived for each subject on each MBTI scale. These scores were intended to represent the degree of faking (how large a preference score the subject could achieve on the polar opposite scales).

Results from the honest administration of the MBTI were used only to identify the letter of preference for each subject on each MBTI scale, regardless of strength of preference. Preference scores were calculated according to the procedures outlined by Myers and McCaulley (1985) for each subject on each MBTI scale from the faking exercise. This score represented how far along the scale the subject was able to fake. If the subject was able to fake accurately, in other

words, if the subject endorsed items leading to a preference for the dimension opposite to his or her own preference, a positive score was assigned. If the subject was unable to fake, that is, endorsed items in the faking exercise leading to a preference matching his or her own, a negative score was assigned. For example, if a subject scored a preference of 19 for extraversion in the faking exercise, he or she would be assigned a score of 19 if he or she showed a preference for introversion in the honest condition, and -19 if he or she were typed as an extravert in the honest condition.

The same procedure was followed for all four scales of the MBTI (EI, SN, TF, and JP). To summarize then, a positive preference score for the faking exercise indicated the subject was able to endorse enough items to produce a preference score on the scale opposite to his or her own honest preference. A score of zero indicated the subject reached the threshold or crossover point between the two opposing dimensions, but was not able to create a preference score for the opposite dimension. A negative preference score in the faking exercise indicated the subject endorsed more items on the same dimension as his or her own preference, producing a preference score for the same dimension as was endorsed in the honest condition.

It was decided that the above described procedure for calculating a preference score for the faking condition was

more favorable than using a difference score from the honest condition (the degree of change from the subject's honest preference to the faked preference). The experimental directions asked subjects to determine the traits and qualities persons in their role descriptions possessed and to try to reproduce these qualities in the extreme when endorsing items on the MBTI. Thus, subjects were attempting to score as high a preference score as possible on each of the scales.

Using a difference score would be limited by the subjects' honest degrees of preference. For instance, two subjects could each score a 45 in the positive direction on the faking task for judging. If one of these subjects had only a slight preference for perceiving, perhaps a nine, while the other had a strong preference for perceiving, maybe a 45, a difference score would indicate the subject with the stronger honest preference was "better" at distorting this scale (with a difference score of 90) than the subject with the slight preference (a difference score of 54). In reality, each of these subjects was able to distort their responses quite well. Therefore, the simple degree of preference, starting from a neutral point (regardless of honest preference score), was employed to test the hypotheses in the present study.

This second set of dependent measures was designed to test whether the level of role information affected faking on

the MBTI scales differentially (Hypotheses 2 and 3). Individual scale scores were also examined to determine whether different temperament types were better at faking those particular scales than others (Hypothesis 1).

Design. The two types of dependent measures were used to test the experimental hypotheses with a 4 (MBTI temperament type) X 3 (level of role information) X 3 (intelligence group) factorial design. Analysis of variance (ANOVA) procedures were used to test all experimental hypotheses. The results of these procedures are presented in the following section.

Results

Seven subjects were dropped from the experimental analysis for several different reasons. Only one subject (SP) described having extensive experience with the MBTI prior to participation in the present study. Because the design of the experiment relied on having subjects who were not experienced with the MBTI, this subject was dropped from the analysis. Two subjects (1 SP, 1 NT) were dropped because they obviously did not follow experimental instructions (e.g., chose the same response option for all items). Finally, four additional subjects (1 SP, 2 SJs, 1 NF) were excluded from the analysis because they did not complete enough of the second administration of the MBTI for accurate scoring. Of the 236 subjects who participated in the present experiment, 229 were included in the analyses of the results.

Summary statistics for the mean number of MBTI scales faked for each experimental factor are shown in Table 1. The possible range for this dependent measure extended from zero (no scales faked, the subject simply reproduced his or her honest profile in terms of preference) to four (all scales were faked; subject produced his or her polar opposite profile in terms of preference). Tables 2-5 show the mean preference scores from the faking exercise for each of the four MBTI scales. Maximum possible preference scores ranged from a low

of 37 (Thinking scale for males) to a high of 67 (Sensing scale).

Table 6 shows the proportion of variance (R-square) in each of the dependent measures due to the experimental effects for temperament analyses. In addition to testing the design involving the four MBTI temperament types, the experimental subjects were further divided according to their full MBTI type. Separate analysis of variance procedures were conducted using the 16 MBTI types and the three intelligence groups (for reasons explained later in this section, the level of role information factor was excluded from these analyses). Clearly, the variance accounted for by the factors in the present study was not trivial, particularly when full MBTI type was used in the analysis. Temperament and full type, intelligence, and the level of role information provided in this experiment do indeed account for a sizable percentage of the response distortion on the various MBTI scales.

As described earlier, a 4 X 3 X 3 factorial design was employed in the present study. ANOVA procedures were used to test all experimental hypotheses, as well as to explore other relationships for which no formal hypotheses were made. The next two sections describe the results of the hypothesis testing in the present investigation. The third section describes the role of intelligence in this study. The final section describes other, interesting findings, including

relationships discovered when subjects were further divided into groups according to their full MBTI types.

Hypothesis 1

Hypothesis 1 suggested that certain temperament types would be better at the task of faking their polar opposites than would other types. Specifically, NFs were expected to be the best at distorting their responses, followed by NTs, SPs, and SJs, in that order. The first test of this hypothesis involved comparing the number of MBTI scales that subjects of each temperament type could fake in the appropriate (opposite) direction. In analysis of variance terms, a main effect for temperament type was expected. Table 6 shows an R-square value of 0.207 for this dependent measure. Table 7 shows the ANOVA results for the number of MBTI scales faked. As expected, a significant main effect for temperament was observed, $F(3, 193) = 5.99$, $p < .001$, indicating temperament types did differ in their ability to distort the MBTI scales. To determine which of the temperament groups differed from each other, multiple comparison procedures were performed on temperament means for each group. The results of the multiple comparison procedures are shown in Table 8. As expected, subjects with the NF temperament were significantly better at faking than the other temperament types. The remaining three temperament types were not ordered as predicted, nor were there any significant differences among them. Hypothesis 1

was partially supported in terms of the number of MBTI scales subjects of each temperament type were able to fake.

Hypothesis 1 was also tested by determining whether certain temperament types were more accurate (created a higher preference score) in their distortion of the items on each individual MBTI scale. A separate ANOVA was performed on each scale using the preference score on the scale as the dependent variable. Again, a main effect for temperament type would support Hypothesis 1. The results of each of these procedures are described below.

The EI scale. Table 6 shows the proportion of variance in the EI preference scores accounted for by the experimental variables was 0.240. ANOVA results for preference scores on the EI scale of the MBTI are presented in Table 9. As anticipated, the effect for the temperament variable was significant $F(3, 193) = 2.69$, $p < .05$. However, this effect was masked by a 3-way interaction among temperament, information and intelligence (I. Q.) variables, making interpretation difficult. Table 10 shows the individual cell mean comparisons for each temperament, in each IQ group, at each information level. Several cell differences were significant, particularly those involving negative group means. There was not, however, a clear pattern indicating what caused the interaction among the variables. This confusion is further visible in Figures 1-6, which graphically

depict the relationship between IQ group and temperament type across levels of information. These figures demonstrate a complex relationship among experimental variables with no clearly discernable explanation. Small numbers of subjects within some individual cells may account for this interaction (see Table 10), therefore, caution should be used when attempting to make an interpretation of these results.

An examination of mean EI scores of the different temperament groups indicated little support for Hypothesis 1. SJs had the highest mean preference score on the EI scale of 31.2, followed by NFs (26.0), NTs (23.5), and SPs (15.2). Hypothesis 1 predicted SJs would be worst among the temperament groups at the faking task, rather than the best. In summary then, Hypothesis 1 was not supported by ANOVA results for the MBTI's EI scale.

The SN scale. The R-square value for the dependent measure of SN preference score was 0.362, as is shown in Table 6. Table 11 shows the results of the ANOVA on the MBTI's SN scale scores. As is indicated by this table, the expected main effect for temperament type was significant $F(3, 193) = 19.66$, $p < .001$. Table 12 shows the results of the multiple comparisons procedure on temperament means. As predicted, NFs had the highest mean score on the SN scale, followed by NTs, SJs and SPs. Mean scores for NTs and SJs did not significantly differ. SJs and SPs fell in reverse of the

predicted order, with SPs having particular difficulty faking this scale (with a mean of -0.71). Again, partial support was found for Hypothesis 1. Temperament types differed in their abilities to distort the SN scale, and NFs and NTs were best at this distortion, as predicted by the hypothesis.

The TF scale. Again, a main effect for temperament type was predicted for the TF scale of the MBTI. Table 6 shows an R-square of 0.295 for this dependent measure. Table 13 shows this effect was, indeed, found $F(3, 193) = 16.35$, $p < .001$. The multiple comparisons shown in Table 14 indicate NFs were again the most successful at distorting their responses on the TF scale, and were significantly better than the remaining temperament types. SJs and SPs did not significantly differ in their ability to fake. NTs had the most trouble with this scale, faking an average preference score of only 6.64 on this scale. Partial support was found for Hypothesis 1 for the TF scale. Significant differences were found among temperament types in terms of faking ability on the MBTI's TF scale. As with the other scales, NFs produced the best faking profile.

The JP scale. Table 6 reveals a smaller proportion of variance in the JP preference score (0.173) was accounted for by the experimental variables for this scale than was accounted for in the other dependent measures. The analysis of variance results for the JP scale of the MBTI, shown in Table 15, indicate no significant differences among any of the

experimental groups. Thus, Hypothesis 1 was not supported for the JP scale. Although the differences among the temperament groups were not significant, NFs again produced higher preference scores in the faking exercise than the other temperament types (M = 27.9).

Summary. Partial support was found for Hypothesis 1. Clearly, temperament type has a relationship with ability to distort responses on the MBTI. Examination of the number of scales faked indicated a significant main effect for temperament, with NFs distorting the MBTI scales significantly better than any of the other temperament types. A difference among temperament types was found for the EI scale; however, this effect was masked by a 3-way interaction. Significant main effects were found for temperament type on both the SN and the JP scale. In addition, several trends were observed in terms of faking success. As predicted, NFs were the most adept at response distortion, with the highest mean preference score on all measures except the EI scale (where they had the second highest score). This result is consistent with the prediction in Hypothesis 1. NTs and SJs typically fell in second and third places in terms of mean response faking. NTs were expected to fall into second place, however, SJs were expected to be the worst at faking. Finally, SPs were the least successful at faking, although they were predicted to be better than SJs.

Hypotheses 2 and 3

Hypotheses 2 and 3 dealt with testing whether the MBTI scales provide role-relevant cues to respondents to aid in response distortion. The information level condition in the experimental model provided the key to this information. Hypothesis 2 predicted subjects were familiar enough with the characteristics of extraversion/introversion (EI) and thinking/feeling (TF) to fake items measuring these dimensions on the MBTI given only role information (role information only condition). In other words, subjects were expected to be able to discern whether the role description they were given indicated extraversion or introversion and thinking or feeling without having those characteristics specifically identified, (role information plus target type identification condition) and without having the corresponding dimensions described (role information plus target type identification plus dimension description condition). In analysis of variance terms, an non-significant main effect for information level was expected.

The EI scale. The mean preference score for the EI scale across all groups was 25.38. Table 9 shows the results of the analysis of variance procedure using preference scores on the EI scale of the MBTI as the dependent variable. As predicted, the main effect for information level was not significant $F(2, 193) = 2.50$, $p > .05$. As indicated above, however, the three-

way interaction involving temperament, information level, and I.Q. was significant $F(12, 193) = 2.08$, $p < .05$. Again, examination of cell mean comparisons in Table 10 and the graphical representations in Figures 1-6 reveals no obvious explanation for this interaction effect, nor any clear information effect. Hypothesis 2 was not clearly supported for the EI scale.

The TF scale. Across all experimental groups, the mean preference score for the TF scale was 27.64. As expected, Table 13 shows the main effect for information level on the TF scale was not significant $F(2, 193) = 1.18$, $p > .05$. Subjects who received information on the target type associated with the role description and those who received this information in addition to descriptions of the MBTI dimensions did not significantly differ from subjects who received role information only in terms of preference scores achieved on the TF scale. Hypothesis 2 was supported for the TF scale.

Hypothesis 3 predicted level of information would play an important role in ability to distort responses on the sensing/intuition (SN) and judging/perceiving (JP) scales of the MBTI. Subjects were expected to be less familiar with these dimensions, and thus, to have a harder time identifying these characteristics from role descriptions. For the SN and JP scales then, having the target type identified was expected to aid distortion for subjects, but only if this

identification was accompanied by a description of the MBTI dimension associated with this type. In other words, telling a subject the ideal worker for the particular role identified was judging would help the subject fake only if a description of the judging dimension were provided. In terms of analysis of variance procedures, significant main effects for information level were expected for the SN and JP scales, with subjects in the role information plus target type identification plus dimension description condition faking these dimensions better (having higher preference scores) than subjects in the remaining two information conditions.

The SN scale. The mean preference score across all groups for the SN scale was 25.06. Table 11 shows the expected information level main effect was not achieved $F(2, 193 = 1.38, p > .05$. Level of information did not affect faking performance on the SN scale of the MBTI. Hypothesis 3 was not supported for the SN scale. The information condition did not produce a significant effect. An examination of the mean preference scores for each information level showed those subjects in the role information plus target type identification condition had the highest mean score on the SN scale (29.9). Those subjects in the role information only condition had the second highest mean score (23.8), and subjects in the role information plus target type identification plus dimension description condition had the

lowest mean score on the SN scale (21.2). Not only was the information level condition not significant for the SN scale, an examination of the mean preference scores for the SN scale showed a trend opposite to what was predicted by Hypothesis 3.

The JP scale. Experimental groups scored an average of 19.94 in terms of preference on the JP scale. An examination of Table 15 reveals no significant main effect for information level for the this scale $F(2, 193) = 0.52$, $p > .05$). Inspection of mean preference scores for the JP scale showed subjects in the role information only condition produced the highest mean preference score (22.7), followed by subjects in the role information plus target type identification condition (20.1), and finally, subjects in the role information plus target type identification plus dimension description condition (17.0). Hypothesis 3 was not supported for the JP scale of the MBTI.

Summary. Hypotheses 2 and 3 examined the relationship between level of information provided to subjects about the MBTI scales and their susceptibility to response distortion. The key question was whether the scales provided role-relevant cues to respondents knowing only the role they were asked to fake, or whether additional information such as knowing the target type to be faked and definitions of MBTI dimensions were necessary to distort the scales more accurately. It was predicted in Hypothesis 2 that subjects would be familiar

enough with the traits of introversion, extraversion, thinking and feeling to distort their responses on the EI and TF scales accurately. Providing target type information and dimension descriptions was not expected to enhance response distortion for subjects on these MBTI scales. On the other hand, Hypothesis 3 predicted subjects would be less familiar with the sensing, intuition, judging and perceiving characteristics, and providing them with additional information beyond simply a role description would enhance their ability to distort responses on the SN and JP scales.

An examination of ANOVAs for the EI and TF scales provided some support for Hypothesis 2. As predicted, the main effect for information level for both scales was not significant. Again, the three-way interaction between temperament, information level and intelligence variables confused matters on the EI scale, indicating that level of information may affect ability to distort responses on the EI scale. Level of information did not significantly affect preference scores on the TF scale.

Examination of ANOVAs for the SN and JP scales also showed non-significant main effects for level of information, opposite to what was predicted in Hypothesis 3. Moreover, while mean differences between information levels were not significant, the general trend of results also did not support Hypothesis 3. Providing target type information in

combination with MBTI dimension descriptions did not enhance subjects' ability to distort their responses on the SN and JP scales.

Intelligence

Figure 7 represents the distribution of intelligence scores on the Wonderlic Personnel Test for this sample. The I. Q. scores in this sample were slightly lower (for example, the median score for this sample was 28, while the Wonderlic sample median was 30) than the Wonderlic norms for job applicants who were college graduates, which should be expected since these students had not yet graduated from college. However, the intelligence scores in this sample matched closely to what one might expect from typical job applicants just finishing their college careers.

No specific predictions were made relating intelligence to a subject's ability to distort responses on the MBTI scales. Perhaps the most practical hypothesis would suggest that the more intelligent subjects are, the better their ability might be to utilize the information provided to them in order to distort their responses in the appropriate direction. However, examination of the ANOVAs for the four MBTI scales and the number of scales faked show no support for this hypothesis.

Tables 7, 13, and 15 show the main effects for intelligence (I. Q.) were not significant for the number of

scales faked $F(2, 193) = 0.99$, $p > .05$, the TF scale $F(2, 193) = 1.50$, $p > .05$, and the JP scale $F(2, 193) = 0.93$, $p > .05$ respectively. In other words, level of intelligence did not significantly affect the number of scales subjects were able to fake, nor their preference scores on the TF and the JP scales. Table 9 indicates an effect for intelligence on the EI $F(2, 193) = 4.65$, $p < .05$, again masked by the three-way interaction. Only the SN scale had a significant main effect for intelligence $F = 3.40$, $p < .05$, as seen in Table 11. An examination of the results of the multiple comparisons procedure shown in Table 12 further demonstrated that the medium I.Q. group had higher preference scores on the SN scale than the high I.Q. group. As might be expected, the low I.Q. group had significantly lower scores than the other two groups, indicating these subjects had the hardest time distorting their responses on this scale.

An examination of the non-significant mean differences for the other scales and the number of scales faked showed the same general trend of results. The medium I.Q. group had the highest scores on each of the dependent measures with the exception of the preference score on the TF scale, where the high I.Q. group performed better. Without exception, the low I.Q. group had the most difficulty faking responses to produce profiles polar opposite to their own. While these results may not have been anticipated, they do support an interesting

trend. This trend will be considered in further detail in the discussion section.

Other trends and findings

In addition to testing the hypotheses and the effect of intelligence on response distortion on the various MBTI scales, some other significant points of interest came to light during the data analysis phase of the present experiment. Table 16, which shows the mean preference scores for each temperament type on the MBTI scales, brings some of these points to light. First, with the exception of the SP temperament on the SN scale, all temperament types were able to accurately fake their polar opposites on all scales of the MBTI to some degree, indicating the MBTI is susceptible to response distortion, like other personality measures discussed in the literature review. The mean preference scores of each of the groups were not extremely high, though, considering maximum possible scores on the individual scales range from a low of 39 to a high of 67. This finding suggests that subjects were able to pick out some of the items measuring the appropriate pole of each dimensions, but not all of them.

In two cases, however, one temperament group did exhibit quite high mean preference scores for MBTI scales. Table 16 shows the NF temperament group outperformed the other temperament groups in distorting their responses on both the SN scale ($\underline{M}$ = 45.8) and the TF scale ($\underline{M}$ = 51.5) by quite a

large margin. This is interesting considering the SN and TF functions are the two which make up the NF temperament. In terms of the SN scale, the temperament types with intuition in common were able to distort their responses better than the temperament types with sensing in common, suggesting perhaps intuitive types find it easier to fake sensing than sensing types find faking intuition. This was particularly true for the SP temperament, whose mean of -0.7 suggests that members of that temperament group could not overcome their sensing preference to fake intuition.

One final point is the problem the NT temperament group had with distorting their responses on the TF scale. Table 16 shows the NT group had a mean of only 6.6 on the TF scale, indicating thinking types had difficulty overcoming their preference for thinking to produce a feeling profile. On the other hand, as was previously noted, feeling types (NFs) were able to produce a very high thinking score on this same scale.

Analyses using full MBTI type. Continuing in an exploratory fashion, analysis of variance procedures were repeated using full MBTI type rather than temperament type in an effort to discern whether any trends for type emerged in addition to those discovered for temperament. Because the information level effect did not play a significant role in the temperament analyses, this effect was omitted from the full type analyses, leaving a 16 (MBTI type) X 3 (intelligence

level) design. Analyses were again performed on the number of MBTI scales faked and preference scores for the individual MBTI scales. Table 6 reveals the proportion of variance (R-square) in the dependent measures due to these two experimental effects is quite sizable. Results of the ANOVA procedures for each dependent measure are presented in Tables 17-26.

Results for the intelligence effect in full type analyses were quite similar to those obtained in the temperament analysis. Tables 23 and 25 show the main effect for intelligence (I.Q) in the full type analysis was not significant for the number of scales faked $\underline{F}(2, 181) = 0.59$, $\underline{p} > .05$, nor for the JP preference score $\underline{F}(2, 181) = 0.09$, $\underline{p} > .05$, as was the case with the temperament analyses. Also consistent with the temperament analyses, Tables 17 and 19 show a significant main effect for the EI scale $\underline{F}(2, 181) = 3.08$, $\underline{p} < 05$, and the SN scale $\underline{F}(2, 181) = 5.46$, $\underline{p} < .01$. Results of the multiple comparisons procedures shown in Tables 18 and 20 show the medium intelligence group again performed the best in terms of response distortion on both of these scales, followed by the high I.Q. group. The low intelligence group had the lowest mean preference scores for both the EI and SN scales. Although the effect for intelligence was not significant for the JP scale and the number of MBTI scales faked analyses, the trend for the medium I.Q. group to

outperform the other groups in terms of response distortion (higher preference scores for the JP scale and a higher mean number of scales faked) was also evident for these dependent measures. The high and low I.Q. groups also fell in the same order for these scales.

The only difference between the temperament and type analyses for the EI and SN scales was the absence of a significant interaction effect in the EI analysis. A three-way interaction was found in the temperament analysis for intelligence, temperament, and level of information. When the level of information factor was removed from the type analysis, however, the remaining two-way interaction between full MBTI type and intelligence was not significant, making interpretation somewhat easier.

The major difference between type and temperament analyses concerning intelligence occurred for the TF scale. In the temperament analysis, the main effect for intelligence was not significant. As is evident from Table 21, however, the intelligence main effect for the TF scale was significant $F(2, 181) = 3.62$, $p < .05$. Additionally, results of the multiple comparisons procedure shown in Table 22 demonstrated that the high I.Q. group had the highest mean preference score for this scale, thus differing from the other four dependent measures.

Perhaps the most important result to be noted in the full type analysis was that the main effect for MBTI type was significant for all five dependent measures, indicating MBTI type played a significant role in response distortion of the various MBTI scales and the number of scales faked. Tables 17, 19, 21, 23 and 25 show significant main effects for the MBTI type variable ($p < .01 - .001$). Again, these results mirror those of the temperament analyses with the exception of the JP scale, where the temperament main effect was not significant. Also, the interaction effect for the EI scale in the temperament analysis was not present in the full type analysis.

Table 26 shows the multiple comparisons for full MBTI type on the number of MBTI scales faked. One of the most noticeable trends here was the tendency for types with the NF temperament in common to have significantly higher preference scores than other types in terms of ability to distort the various scales of the MBTI, with all four full types with the NF temperament falling in the first six places in terms of faking. Also noticeable is the fact that the best three types in terms of faking all had intuition and perceiving in common.

The multiple comparisons for full MBTI type on the EI scale are shown in Table 18. The most notable finding for this scale was the fact that three types were unable to fake their responses on the EI scale, as evidenced by their

negative mean preference scores. Each of these three types had extraversion in common, suggesting extraverts may have a difficult time faking introversion.

Table 20 reveals the multiple comparisons for full MBTI type on the SN scale. Again, intuitives excelled at faking this scale, with the top four preference scores on this scale. Those types with a combination of extraversion and intuition, or intuition and perceiving seemed to be the most adept at faking items on this particular scale. Furthermore, the only types who faked unsuccessfully (with a negative mean preference score) had introversion, sensing, and judging in common.

The most obvious trend for the full type analysis can been seen in the multiple comparisons for type on the TF scale, shown in Table 22. All eight types with the feeling preference in common fared better on the faking task for this scale than the eight types with thinking in common, indicating feelers can fake the thinking preference with greater accuracy than thinkers can fake feeling. Again, intuitive feelers (NFs) were the best at distorting their responses on this scale, falling in the top three spots.

Table 24 shows perceivers had an easier time faking their opposites on the JP preference than did judgers. The four best types in terms of faking the JP scale all had perceiving in common. In contrast, four of the types with judging in

common were unable to create a perceiving preference when instructed to do so. One other noticeable trend seen when examining the multiple comparisons of full type on both the JP scale and on the other dependent measures was the tendency for types with three preferences in common to achieve similar mean scores in terms of faking their opposite preference. When examining the list of MBTI types in order of mean preference score, types with three preferences in common often appear next to one another in terms of rank order.

Table 27 puts all of these results together and shows the rank order of each MBTI type in terms of response distortion on each of the dependent measures. Obviously, ENFPs had the most success in terms of overall response distortion, ranking first on four out of five dependent measures. INFPs also had considerable success. ENTJs had the least success with faking their opposites on the MBTI scales. The rest of the results were not as clear, with some types having great success faking some scales, but not others.

Summary. Experimental results from both type and temperament analyses showed most MBTI types/temperaments could distort their responses in the opposite direction to their own preferences to some degree. Those types with intuition or feeling, particularly a combination of both fared the best in terms of generating the highest preference scores for their polar opposite preferences. Analyses using full MBTI type

were similar to temperament analyses, and showed some interesting trends for the 16 types. One especially important finding was the fact that the type main effect was significant for all five dependent measures, indicating that MBTI type plays an important role in response distortion of the MBTI scales. ENFPs had the most success with distorting the MBTI scales, while ENTJs had the least. Finally, it was discovered that intelligence, type/temperament, and, possibly, level of information accounted for a significant portion of the variance in the present experiment. These findings, as well as those presented earlier in this section are examined further in the discussion section that follows.

Discussion

The purpose of the present study was to examine the Myers-Briggs Type Indicator in terms of its potential utility as a selection device. It was suggested in the introduction to this paper that the extreme popularity of the MBTI has caused some companies to misuse the instrument in certain circumstances, particularly in employee selection. Reports of the connection between personality type and occupational choice, and the potential resulting effects of job satisfaction, tenure, productivity and performance have led many people to think "if the MBTI relates to all of these crucial employment issues, why not use it as a selection device?" The general reasoning is very practical, however, these individuals have ignored many possible problems with using this instrument as a selection device, particularly, the possibility that the instrument is susceptible to response distortion.

The literature reviewed here has shown the majority of personality instruments, including those often used as part of selection procedures, can be faked to varying degrees, and that this distortion is not always evident. Typical fake good and fake bad response patterns may be detected through lie scales, but faking for a specific purpose, such as an applicant trying to produce a profile suitable for a job opening, may be impossible to detect (e.g., Elliot, 1976).

Thus, one major question needed to be addressed before further considering the MBTI for inclusion in a selection procedure -- is the MBTI susceptible to response distortion?

Kroger (1974) and Kroger and Turnbull (1975) provided a social-psychological hypothesis for faking, suggesting when individuals fake for a specific purpose, such as in an employment context, they approach the situation by taking the role of the type of individual they are attempting to project. In other words, if individuals are applying for a job as a nurse, they will respond to the testing situation according to their conception of the role of nurse. According to these authors, in order to fake a role successfully, several conditions must be met. First, the individual must be motivated to fake. Second, the individual must have an accurate conception of the role to be faked. Third, the individual must have adequate role-taking skills. And, finally, the test must provide role-relevant cues to the respondents. Kroger and Turnbull's (1975) framework, particularly the third and fourth points, was used in the present investigation to aid in answering two major questions regarding the MBTI and potential response distortion.

The first major question addressed was whether the MBTI could be faked by potential job applicants. Since the Indicator is made up of four different scales, it was further necessary to determine whether some, or all of these scales

were susceptible to distortion. According to Kroger (1974) and Kroger and Turnbull (1975), potential for distortion may be related to whether these various scales provide role relevant cues to the respondent. Further, Velicer and Weiner (1975) suggested the level of information provided about the test or personality measure may also affect an individual's ability to distort his or her responses in the correct manner. Thus, experimental subjects were given a description of a role to fake, and asked to distort their responses to items on all four scales of the MBTI in order to determine each of the scales' potential for distortion. In addition, experimental groups were given different levels of information in order to determine whether increased information about the role and the MBTI also increased the subject's ability to distort the instrument's scales.

The second major question addressed in the present study related to Kroger (1974) and Kroger and Turnbull's (1975) point on role-taking skills. The authors suggested sufficient role-taking skills are necessary for successful role faking. The question to be answered here, then, was whether the various MBTI types and temperaments differed in their ability to take roles, and thus, in their ability to fake the scales of the MBTI. Hypotheses were designed and tested to answer these two major issues and supporting questions. Supporting and contradictory evidence was presented in the Results

section. In the sections that follow, these results are discussed in terms of the experimental goals and implications for selection and other organizational applications. Additionally, suggestions for future research are discussed throughout the following sections.

Can the MBTI be Faked?

The results of this study clearly show the MBTI is, indeed, susceptible to faking. On average, subjects were able to fake their polar opposite preferences on three out of the four MBTI scales. This finding is quite meaningful. The subjects in the present study were relatively unfamiliar with the instrument. Although these students may have had prior experience with the instrument, and may have even known what their own types were, none had received training describing the different dimensions and the items associated with those dimensions. Certainly, some minimal training such as reading one of Kroeger and Theusen's books, or even a introductory pamphlet about the MBTI could conceivably increase one's ability to distort responses to the items in the desired direction. A well prepared job applicant would almost certainly consider this a worthwhile investment of his or her time. Furthermore, if the MBTI continues to grow in popularity as it has in the past several years, potential job applicants may become "trained" on the instrument simply

through exposure in school, work, church, or career guidance settings.

In addition to their relative inexperience with the MBTI, these subjects also had only minimal information relating to the role they were asked to fake. Subjects were given a one to two page description of an ideal employee in terms of what characteristics employers were looking for, and asked to fake this role by answering items accordingly on the MBTI. This was the only frame of reference available for the subject. While examples of positions requiring these characteristics were given, they were very wide in range in terms of education required, average salary level, and general job duties. In fact, example positions for a single personality type could range from cleaning service worker to head of a major corporation.

Subjects in this study were unable to tie their role expectations to a single job. This would not be the case in the actual job market. Undoubtedly, job applicants are aware of the types of jobs they are seeking and the personality characteristics typically associated with persons in these roles. This would allow those individuals even more information about the roles they intended to fake. Additional information such as this would certainly increase the chances for accurate response distortion, provided those doing the distorting have accurate conceptions of the role to be faked,

and that these conceptions are compatible with the conceptions of those in charge of the selection process. An extremely clever job applicant might even confirm this information by asking the interviewer "what is your idea of the ideal employee for this job?"

One other difference between the present study and the actual job search situation is the extremity of difference between the individual's own personality and the role he or she attempts to fake. In the present study, subjects' honest types were identified and they were subsequently asked to fake a personality type exactly opposite to their own. When people actually enter the job market it is not likely that they will be applying for jobs which generally attract their opposites. A more likely scenario is that the applicant will have some characteristics in common with the role he or she intends to fake, and will not find it necessary to completely distort responses in the opposite direction. Again, a prepared applicant will have pinpointed those differences in advance, making it easier to pick out the items measuring these characteristics and distort them appropriately.

Hypotheses 2 and 3 dealt with whether the individual scales of the MBTI provided differing levels of role-relevant cues to respondents. It was hypothesized that the EI and TF dimensions of the MBTI were well understood by the average lay person, while the SN and JP dimensions were not. According to

Velicer and Weiner (1975), the level of information known about the test dimensions in question may affect the accuracy of response distortion. Based on these assumptions, it was predicted that subjects would be able to distort their responses on the EI and TF scales of the MBTI with only a minimum of information, and that additional information naming the target dimensions and providing a description of these dimensions would not facilitate faking. On the other had, if subjects were, indeed, less familiar with the SN and JP dimensions, this additional information should increase faking success.

In terms of general success of faking the MBTI scales, subjects on average had similar mean preference scores on the EI (25.38), SN (25.06), and TF (27.64) scales, with slightly less success faking the JP scale (19.94). On average, subjects could fake with a moderate degree of strength on each preference dimension. While subjects were asked to fake the extreme of each preference, they were also asked to play the role of the ideal worker. These two goals may have been opposed to some degree. Most people do not tend to believe the extreme of any personality characteristic is ideal. Subjects may have faked the general preference, while endorsing some opposing items for "good measure", particularly those items associated with some level of social desirability.

Another possibility for achieving only moderate preference scores is that subjects may have figured out that the role descriptions they were given were opposite to their own personality preferences. In fact, several subjects asked the experimenter whether this was the purpose of the experiment upon completion of the study. In this case, subjects could have simply endorsed the opposite choice on each MBTI item from the honest condition. Since subjects generally did not have extreme preferences scores on their honest profiles, endorsing the complete opposite profile would lead to only moderate scores on the opposite poles to their honest preferences.

The slightly lower mean on the JP dimension could have resulted for a number of reasons. The most obvious is that subjects in the two information groups who received information about whether the target type was judging or perceiving were confused by this information (though the information level effect was not significant, the group which received role information only had a higher mean preference score than the other two groups). Each of the other dimension names has a direct relation to at least some of the items measuring them. Judging and perceiving, however, may overlap somewhat with other dimensions in terms of understanding of the dimension names. For example, perceiving might have been misconstrued as perceptive, which is possibly a synonym for

intuitive, leading to some confusion over items measuring these two scales. Further, traditional stereotypes of the word judging may overlap somewhat with items measuring the thinking end of the TF dimension (e.g., items like "tough-minded or tender-minded").

Another possibility is that subjects had greater difficulty overcoming their own preferences for the judging or perceiving dimensions. Subjects tended to score on the extremes of this scale (they were either very organized and structured, or completely spontaneous and disorganized). It seems reasonable to think subjects with very strong preferences may believe this personality characteristic is appropriate for any job to some degree. Furthermore, these subjects would encounter more difficulty when trying to overcome their own response tendencies in favor of the opposite. Individual item analysis could possibly shed further light on this issue. The possible advantages of item analysis will be discussed in the section regarding directions for future research.

Hypothesis 2 predicted mean preference scores on the EI and TF scales would not differ according to the level of information provided to the subjects. This hypothesis was supported for the TF scale. Providing subjects with the target preference of "thinking" or "feeling" on its own, or in

combination with descriptions of these dimensions did not increase subjects' accuracy in terms of faking this dimension. The information level effect was also not significant for the EI scale; however, this was complicated by a three-way interaction involving information level, temperament, and intelligence. In fact, this three-way interaction made interpretation of any relationship for the EI scale difficult.

Examination of the cell mean differences between groups for the EI scale and figures plotting this interaction provided no clear explanation of the results. Any potential explanation should be offered cautiously, because the number of subjects in some of the experimental cells was very low (ranging from 2 to 14). Level of information was the only variable under the control of the experimenter and assigned at random. Both temperament and intelligence groups were determined by the individuals' scores on the MBTI and the Wonderlic Personnel Test. The number of subjects in each experimental cell could not be controlled, and as a result cell means may have been determined by only a few subjects' scores. This may account for the strange patterns of results shown in Figures 1-6.

Hypothesis 2 then, received some support. Providing additional role information in the form of target types and MBTI dimension descriptions for these scales did not affect subjects' ability to distort their responses to these scales

in a meaningful way. Hypothesis 3 predicted this additional information would increase subjects' accuracy of faking for the SN and JP scales. This hypothesis was not supported for either scale. Subjects who received this additional information did not distort their responses on the SN and JP scales with significantly greater accuracy than subjects who who received the role information only. Apparently, the simple role description provided the subjects with enough information to accurately fake the role without being told the desired target type or being given dimension descriptions. It is possible that either this additional information was redundant with the role descriptions, or that subjects focused on only the role description and ignored the additional information.

The key finding in terms of the research question is that the scales of the MBTI are, indeed, susceptible to response distortion. Experimental subjects needed only a minimal amount of role information to accurately distort items on each MBTI scale to fit the given profile. Subjects were able to distort each scale to a moderate degree, certainly enough to create an MBTI profile desirable for a potential employer. Given that in a true selection context, the potential employee would have a great deal more information on the desirable characteristics associated with the job, it may be assumed job seekers will also have the ability to distort their responses

to the MBTI to produce a profile compatible with the desired role.

Are Some Personalities Better at Faking than Others?

Kroger (1974) and Kroger and Turnbull (1975) suggested accuracy of role-faking may depend on the role-taking skill of the subject. Previous studies of response distortion did not examine the possibility that individuals may differ in their ability to take a role. However, type and temperament theories intimate certain personalities may have natural tendencies for role taking while others may have trouble with this task.

Hypothesis 1 predicted MBTI types with the NF temperament in common would be better at role-taking while those with the SJ temperament would not fare as well, with the NT and SP temperaments falling in between. Very little information was available to allow for specific predictions in terms of which types are more adept at role-taking. Thus, an exploratory hypothesis was developed based on type and temperament theory to determine the rank order of the temperaments in terms of role-taking and faking skills.

Results of the experimental analysis provided some partial support for Hypothesis 1. Those subjects with the NF temperament were clearly superior to the other types in terms of overall distortion of the MBTI. In terms of the individual scales, NFs had the highest mean preference score for their

polar opposites on all scales with the exception of the EI scale. The remaining three temperament types varied in terms of their rank order of scores on the individual scales. Some temperament types had trouble distorting the items on certain scales while having no trouble on other scales. Some temperaments were significantly better at distorting certain scales than other temperaments. Many of these differences were not significant, however certain trends in the data were noted. Taken together, these results allowed for some interesting speculation regarding the different personalities' ability to distort their responses to the MBTI.

Those types with sensing and perceiving in common (SPs) could not accurately distort their responses on the SN scale, but had little trouble on any of the other scales. Given the key characteristic of the SP temperament is impulsivity, it seems possible that something in the role descriptions triggered an association with their own preference for sensing rather than the opposing preference for intuition, and they therefore responded to the items accordingly. Once their impulsive nature took over, subjects may have ignored additional information pointing to intuition.

In general, the intuitive temperaments were better at faking sensing (on the SN scale) than the sensing types were at faking intuition. This may be explained by the fact that the majority of the U. S. population is sensing, and intuitive

types have the opportunity for more contact with sensors than vice-versa. Furthermore, the tendency to go beyond what is on paper and read into the situation is a classic characteristic of an intuitive. Sensors may have trouble if the information they seek is not directly in the written description. This tendency for intuitives, particularly NFs, to excel at role faking was also seen in the analyses involving full MBTI type.

One other interesting result was the apparent trouble thinking types had with distorting their responses on the TF scale. Temperament analyses revealed NTs could only produce a slight preference for feeling on the TF scale while NFs produced a very high mean score for thinking. Type analyses for the TF scale further showed all eight MBTI types with feeling in common had higher mean scores on the TF scales than the eight types with thinking in common. One plausible explanation for this is that feeling types can see the advantages of rational, objective decision making while thinkers have a hard time understanding any situation when subjectivity would be preferable to detached, impartial decision making. For instance, consider receiving a description of a registered nurse. Obviously, a nurse must have compassion and sympathy, and be considerate of how all decisions affect the outcome of the situation. What a thinker may see, however, is that the nurse must objectively do whatever is in the best interest of the patient, whether it is

painful or not. On other hand, it would not be as easy for a feeler to justify a bank manager who approves a high-risk loan because he or she sympathizes with the applicants. Furthermore, feelers automatically consider others' points of view while thinkers may not.

Other type and temperament differences were significant, but, again, caution should be used when interpreting these differences, particularly with respect to analyses involving full four letter MBTI type. Type analyses were conducted in order to examine the overall trends in terms of how the individual types fare at faking the various MBTI scales. While some trends became apparent, these analyses involved groups with small numbers of subjects (ranging from 8 to 27 subjects per MBTI type).

One obvious trend in these results is that ENFPs were clearly the type which produced the most accurate faking profiles. A possible explanation for this is that this type has a characteristic need for approval and thus, may have put more effort into the task due to their desire to succeed. Indeed, once the subjects completed their experimental tasks, several asked the experimenter if it would be possible to obtain their results. While no specific data were recorded regarding the type of the subjects who asked for this information, the experimenter did note a tendency for these subjects to have the ENFP preference. Furthermore, Kroeger

and Thuesen (1988) described ENFPs as having "an almost psychic awareness of what's going on with the people around them" (p. 257). This attention to the actions of others may definitely affect one's ability to play others' roles.

Other trends and observations regarding type and temperament differences in role-taking and faking skills were presented in the Results section. Further analyses with larger numbers of each MBTI type should be conducted before conclusions about type differences can be made.

The Role of Intelligence in Response Distortion

Intelligence was treated in an exploratory manner in the present study. It was suggested that persons with higher levels of intelligence might be better at faking than those persons with lower levels of intelligence. Presumably, those with greater intelligence would be more adept at matching the characteristics identified in the role descriptions with specific items on the MBTI. These results were not obtained. Intelligence did produce significant main effects for some of the dependent variables in both type and temperament analyses. However, in the majority of cases, the medium I. Q. group was able to fake more of the MBTI's scales to a greater degree. The medium I. Q. group produced higher mean preference scores for their polar opposites on the MBTI scales

than the high or low intelligence groups. The high I. Q. group generally had the second highest preference scores, followed by the low I. Q. group.

These results allow for some interesting speculation. Why would the medium I. Q. group consistently outperform the other two groups in terms of ability to distort their responses to these items? That the low I. Q. group consistently had the least success in terms of faking fits in with the original expectations. Perhaps these subjects simply had difficulty identifying the key elements of the role descriptions and matching these characteristics with items on the MBTI. The difficulty in interpretation comes in trying to explain why the medium I. Q. group consistently had more success with faking than the high I. Q. group.

One conceivable explanation for these results is that those individuals who are highly intelligent have always succeeded in their endeavors without a great deal of difficulty. To them, then, their individual personality characteristics have always been appropriate, and have always been met with success. The possibility that the opposites to their own personality preferences could be better for particular occupations may have been difficult for these people to realize. After all, if they had always been productive in what they attempted, why would some other set of characteristics be more appropriate than their own?

On the other hand, people of average intelligence must be more aware of their own deficits if they want to achieve success. These people have to recognize their potential weaknesses and find ways to overcome them in order to achieve the same success which seems to come naturally to those with higher intelligence. This prior experience may have made those in the medium I. Q. group more aware of the differences between their own personality characteristics and the characteristics in the role descriptions they were given. Having recognized these differences, individuals from this group may have been more attuned to the items they needed to distort to create this profile.

Certainly, other explanations for the obtained relationships regarding intelligence could be made. The explanation provided above is simply one hypothesis for these results which seemed to fit with common sense. Future research should be designed to further test this hypothesis.

Organizational Implications

The results of the present investigation have several important implications for organizations and the purposes for which they use the Myers-Briggs Type Indicator. First, these results cause serious questioning of the use of the MBTI as a selection device. It was shown that the subjects in the present study were able to, on average, fake three of the four MBTI scales to create profiles opposite to their own

personality preferences. Furthermore, the subjects were able to do this with relatively little information about the roles they were asked to fake and the instrument used to measure their responses. As was suggested earlier in this discussion, it might be expected that job applicants, who would have considerably more role information available to them, would have even greater success distorting their responses to match the personality profile of the desired role. In addition, individuals having any prior experience with the MBTI could use this information to increase the likelihood of successful distortion.

Not only was it revealed that subjects in general could distort their responses on the MBTI, it was also shown that subjects differed in their ability to fake according to intelligence and personality type/temperament factors. The possibility that this instrument can be differentially distorted also calls into question the wisdom of including the MBTI as part of the selection process. Not only would selection decisions based on this criterion be questionable because of the potential for faking, it is likely that certain types of individuals would be more successful than others at creating the desired profile of responses. Those in charge of making personnel decisions would be able to deal with this differential distortion only if they had information on the

applicants' honest MBTI profiles, and the prospect of gaining this information is very unlikely.

One possible solution for overcoming the problems with response distortion would be to include a lie scale among the MBTI items. The literature review here has shown this method has led to mixed results for other personality measures. In addition to the problems already associated with lie scales, the present research points to another potential problem. If various personality types can differentially distort the MBTI scales, is it also possible that they can differentially distort lie scale items? If some types are savvy enough to match role characteristics and MBTI scale items, could they not also pick out items measuring potential to distort responses and, thus, distort the lie scale? If this is the case, even employing a lie scale could not overcome the problems associated with differential faking.

Certainly, additional research must be done to verify the results found in the present investigation and the other potential questions that were raised as a consequence. In the interim, however, use of the MBTI for selection purposes should be halted.

Selection is not the only organizational application affected by the results of the present study. Any MBTI application for which the respondent feels compelled to give anything other than a completely honest response could be

jeopardized. Other uses of the MBTI such as understanding individual differences or team-building training could be seriously affected if subjects were not given feedback on their own honest personality types. How can people learn to appreciate others' differences if they do not know what differences truly exist? If the MBTI is to be useful for organizational applications, administrators must be sure to stress the importance of answering items in a completely honest manner, otherwise the exercise might be useless. In order to motivate respondent to be as honest as possible, the administrator must clearly explain that no preference is "best", and that each has important qualities valuable to the organization.

One other implication must be considered. The finding that subjects with the NF temperament had a better understanding of others was not surprising. NFs were expected to excel at distorting their responses because of this understanding of others. This finding leads to the question of whether the intuitive feelers have greater empathy for others and excel at social relations to a greater degree than other temperaments. If so, perhaps people of this temperament should possibly be recruited to handle organizational problems that require these skills. Someone so in tune with others' characteristics might make the best MBTI administrator, pointing out all of the good qualities and areas for

improvement associated with each personality type. It is possible that individuals with this personality type would make the best teachers or counselors.

On the other hand, if NFs are so good at taking on others' personalities, is it possible that placing them in positions seemingly at odds with their own true preferences would not be ill-advised? If these individuals can slip so easily into a different persona, perhaps they would also be immune to the potentially negative outcomes of poor person-environment fit. Maybe an NF can be just as satisfied and productive in a position suited to an SJ as they would be in positions traditionally associated with their own temperament type. Again, these are issues which should be investigated further.

Research Implications

The research here has shown that the MBTI, like other personality instruments, is indeed, susceptible to response distortion. These results confirmed what had previously been found by Furnham (1990b).

Unlike the results found on the EPI by Velicer and Weiner (1975), the present research showed the level of knowledge about a personality measure did not affect subjects' ability to fake their responses on the MBTI. Giving subjects information about the MBTI scales did not produce higher faking scores. Perhaps this is because the MBTI is such a

widely used instrument and subjects were somewhat familiar with it already. Or, perhaps it is because the information provided was redundant with role information. It could even be that subjects did not use this information. Future research must address this issue.

The present research did provide some support for Kroger (1974) and Kroger and Turnbull's (1975) social-psychological hypothesis of faking. Successful role faking did depend on the role-taking ability of the subject. This ability, in turn, appeared to be a function of the personality type or temperament of the individual. Certainly, NFs appeared to have greater overall role-taking skills than other temperaments. Additionally, it appears the MBTI does provide some role-relevant cues to respondents, and these cues seem to differ somewhat among the MBTI scales. Thus, consistent with the previous research, role-taking skill and role-relevant cues within the MBTI significantly affected whether or not successful response distortion could be achieved.

Finally, the present research added to Furnham's (1990a) findings. Furnham's research showed subjects attempting fake advertising executive, banker, and librarian produced profiles which differed significantly from honest profiles. What was unknown, however, was whether subjects produced the profile they intended. In the present research, subjects were given a specific role to fake, and they were able to successfully

distort their responses to create, on average, the appropriate preference on three of four MBTI scales. In other words, subjects were able to match their responses to a given profile with a great degree of accuracy.

Further Suggestions for Future Research

Many areas of potential for future research have been addressed in the above discussion. In addition to these areas, other research questions came to light during the present investigation.

First, it was uncertain why the level of information given about the MBTI did not affect response distortion. It seems reasonable to expect that subjects with greater knowledge about the MBTI should be more adept at identifying the items measuring each of the scales. Several potential explanations were presented earlier. Strategies must be developed to determine which, if any, of these explanations is valid. One possibility is to design post hoc questionnaires asking whether subjects used the dimension information provided. Another possibility would be to provide one group of subjects with training on the MBTI dimensions prior to the faking exercise to see whether this training improved faking responses.

It was shown that certain personality types were better at faking the various scales of the MBTI than were other personality types. It was presumed that these differences

were due to variation in the personality types' ability to take on the required role. Other explanations, however, may be made. It is possible that the various temperament types differed in the type of information they attended to in the role descriptions. For instance, since SJs are very concrete, perhaps the best strategy for them would have been to choose the occupational example with which they were most familiar and fake according to their conception of this role, rather than go by the role description. On the other hand, since NFs are particularly good at putting themselves in others' shoes, they may have taken a more traditional approach to role taking and focused more on the role description. Or, it could be that some types were better at assimilating all the pieces of information into one, overall picture, while others may have been confused by seemingly conflicting information. Post hoc questionnaires asking how the subjects went about the faking exercise provide one possibility for answering the question. Another direction might be to break up the information, providing some groups with the only the role description while others get only the example occupations, and still other groups get a combination of all the information. Again, this issue must be addressed in order to better discern why certain personality types are better at faking than others.

Another key question to be addressed is whether certain MBTI scale items are more susceptible to distortion than

others. In general, subjects were able to identify and endorse enough items for each MBTI scale to create a moderate preference score, however, most subjects were not able to identify enough items correctly to create a very strong preference in the opposite direction to their own. It was suggested earlier that these results may have been due to the fact that subjects realized the role they were asked to fake was their polar opposite, and endorsed each item in an opposite direction rather than trying to create extreme profiles on the polar opposite dimension. Again, a post hoc questionnaire could provide the answer to this question.

One other explanation for these moderate preference score results is the possibility that some of these items are more obvious in what they measure than others. If this is true then perhaps the subjects were successful at faking only a subset of the items on each scale. Item analysis procedures should be employed to address this issue. If all subjects were able to fake certain items and unable to fake others, it is possible that a subset of items unsusceptible to response distortion could be created for uses in which faking is an issue.

In addition to item analysis on the present data, future research should address the above issue by asking subjects to try to match each MBTI item to the appropriate scale. If subjects are aware of the characteristic each item is intended

to measure, they should be able to distort their responses in the appropriate direction. If subjects are not able to make appropriate identifications, it is possible that they achieved their faking results by chance, or due to some other factor (such as knowing to fake their opposite on each item). This method could also address the question of what type of strategy subjects use in a faking exercise. Do subjects attempt to identify the characteristics involved in the role and then try to match items to these characteristics, or do they simply answer items according to some overall conception of the role?

Conclusions

The present study has provided the basic framework for answering several key questions regarding the MBTI both as a selection device and as a tool for achieving other organizational goals. Certainly, these results must be verified through future research replicating and improving upon the present research strategy. Suggestions have been made regarding the direction for the next steps in this research area. In the meantime, however, caution should be used before using the MBTI in any of these applications, particularly in personnel selection.

Hough and her colleagues (1990) recommended several strategies for dealing with the possibility of response distortion when using a personality measure in selection

situations. First, when possible, validity or lie scales should be incorporated to detect potentially distorted personality profiles. Problems with this strategy in the past were pointed out, in addition to the newly discovered possibility that different personality types may be better at faking these lie scales, as they were at distorting the MBTI scales. Second, job applicants should be warned that their faked responses can be detected and this will affect their chances for employment. Research should be designed to test whether providing this information significantly decreases distortion of the MBTI. If a subject knows his or her personality type does not match the characteristics required by the role, he or she may risk possible detection in hopes of creating the profile and getting the job.

Finally, Hough and her colleagues (1990) suggested that employment decisions should not be based solely on this potentially distorted information. Additional measures must be used for any personnel decision. The present research would support this point. Making selection decisions based solely on MBTI results, which are apparently highly susceptible to distortion, could lead to potentially disastrous results for the organization. In fact, this researcher would recommend using the MBTI only in applications where one can be relatively certain of obtaining honest results. Selection is not one of these applications.

Post Hoc Analyses

Based on the experimental results presented here, it was determined that some additional analyses might help to make the relationships among the experimental variables easier to interpret. The results of these additional analyses are presented below.

I. Q. and the MBTI

It was suggested earlier in this paper that there may be a relationship between intelligence and a person's MBTI temperament or type (Myers & Myers, 1980). Analyses were conducted to determine whether the four temperaments and the 16 MBTI types differed in terms of their average intelligence (based on scores on the Wonderlic Personnel Test). The results of these analyses are presented in Table 28 and 29.

Table 28 shows only the SJ temperament group had a significantly lower mean I. Q. than the other temperament groups. Further, Table 29 shows there were very few significant differences among the full MBTI types. Thus, these results do not shed any additional light on the experimental results.

To further explore the relationship among intelligence and the MBTI, analyses were conducted to determine the correlation between I. Q. and faking preference score on each of the MBTI scales. These results, along with the mean and

standard deviation for each of the four MBTI scales and the intelligence variable, are presented in Table 30.

The results in Table 30 show there is very little relationship between I. Q. scores and faking score on each of the MBTI scales. Further, the correlations among faking preference scores on the MBTI scales were also quite low, indicating little relationship among these variables. Again, these results did not provide a great deal of help in interpreting the previous experimental results.

Finally, a stronger relationship was expected between intelligence and faking scores on the MBTI scales. It was suggested that perhaps the relationship between these variables is not linear, and that including a quadratic term in the analysis would be beneficial. This analysis was conducted, and the results are presented in Table 31. These results show the quadratic I. Q. term was not significant in the analysis for any of the dependent variables, and thus, does not provide any further explanation of these experimental results.

Suggestions for other types of research and analyses were presented in the Discussion section. Following these suggestions should help to provide answers to some of the questions raised here.

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Appendix A: Example of a Role Description

Wanted: People to use their reflective ability to run as much of the world as may be theirs to run. Must enjoy executive action and long-range planning. Reliance on thinking makes these individuals logical, analytical, objectively critical, and not likely to be convinced by anything but reasoning. They should focus on the ideas, not the person behind the ideas.

These persons must like to think ahead, arrange plans, situations, and operations related to a project and make a systematic effort to reach their objectives on time. They need little patience with confusion or inefficiency, and must be tough when the situation calls for toughness.

The individuals must believe conduct should be ruled by logic, and govern their own behavior accordingly. They should live by a definite set of rules that embody their basic judgments about the world. Any change in their ways requires a deliberate change in their rules.

Persons for these positions should be mainly interested in seeing the possibilities beyond what is present, obvious, or known. They should have a curiosity for new ideas and a taste for complex problems.

Applicants for these positions should be stimulated by problems and be able to find and implement solutions. Interest should focus on the big picture, rather than certain details.

Looking for the following:

1) Contributions to Make to the Organization
   * Develop well-thought-out plans
   * Provide structure to the organization
   * Design strategies which work toward broad goals
   * Take charge quickly
   * Deal directly with problems caused by confusion and inefficiency

2) Leadership Style
   * Take an action-oriented energetic approach
   * Provide long-range vision to the organization
   * Manage directly and are tough when necessary
   * Enjoy complex problems
   * Run as much of the organization as possible

(cont.)

3) Need to Work in the Following Environment
   * Contains results-oriented, independent people focused on solving complex problems
   * Goal-oriented
   * Efficient systems and people
   * Challenging
   * Rewards decisiveness
   * Includes tough-minded people
   * Structured

Some of the positions available for people meeting the above descriptions include: management consultant, human resources representative, computer professional, family physician, sales manager, credit investigator, marketing professional, education administrator, and health administrator.

Appendix B: Description of MBTI Preferences

The following definitions of MBTI preferences were taken from Myers (1993, pp 5-6).

EI SCALE

The EI scale describes two opposite preferences for where you like to focus your attention: on the inner or outer world.

E is for EXTRAVERSION: People who prefer extraversion tend to focus on the outer world of people and the external environment. When you are extraverting, you are energized by what goes on in the outer world, and this is where you tend to direct your own energy. Extraverts usually prefer to communicate more by talking than by writing. They need to experience the world in order to understand it and thus tend to like action.

I is for INTROVERSION: People who prefer introversion focus more on their own inner world. When you are introverting, you are energized by what goes on in you own world, and this is where you tend to direct your energy. Introverts tend to be more interested and comfortable when their work requires a good deal of their activity to take place quietly inside their heads. They like to understand the world before experiencing it, and so often think about what they are doing before acting.

SN SCALE

The SN scale describes opposite ways that you perceive or acquire information--how you go about finding out about things.

S is for SENSING: One way to "find out" is to use your sensing function. Your eyes, ears, and other senses tell you what is actually there and actually happening, both inside and outside of yourself. Sensing is especially useful for appreciating the realities of a situation. Sensing types tend to accept and work with what is "given" in the here-and-now, and thus become realistic and practical. They are good at remembering and working with a great number of facts.

(cont.)

N is for INTUITION: The other way to find out is through intuition, which shows you the meanings, relationships, and possibilities that go beyond the information from your senses. Intuition looks at the big picture and tries to grasp the essential patterns. If you like intuition, you grow expert at seeing new possibilities and new ways of doing things. Intuitive types value
imagination and inspirations.

TF SCALE

The TF scale describes how you make decisions. Once you have acquired information through one of your perceiving functions, you must do something with that information. Information is used to reach conclusions, make decisions, or form opinions. This scale describes opposite ways of making decisions or judgments about something.

T is for THINKING: One way to decide is through your thinking. Thinking predicts the logical consequences of any particular choice or action. When you use thinking you decide objectively, on the basis of cause and effect, and make decisions by analyzing and weighing the evidence, even including unpleasant facts. People with a preference for thinking seek an objective standard of truth. They are frequently good at analyzing what is wrong with something.

F is for FEELING: The other way to decide is through your feeling. Feeling considers what is important to you or to other people (without requiring that it be logical), and decides on the basis of person-centered values. When making a decision for yourself, you ask how much you care, or how much personal investment you have for each of the alternatives. Those with a preference for feeling like dealing with people and tend to become sympathetic, appreciative, and tactful. (It is important to understand that the word "feeling", when used here, means making decisions based on values; it does <u>not</u> refer to your feelings or emotions.)

(cont.)

JP SCALE

The JP scale describes how you orient to the outer world. It describes the lifestyle you adopt in dealing with the outer world or how you orient yourself in relation to it. The opposites here refer back to the previous two scales. In other words, you either take primarily a judging attitude (thinking or feeling) or a perceptive attitude (sensing or intuition) toward the world.

J is for JUDGMENT: Those who take a judging attitude (either thinking or feeling) tend to live in a planned, orderly way, wanting to regulate life and control it. When you use your judging function, you like to make decisions, come to closure, and then carry on. People with a preference for judging prefer to be structured and organized and want things settled. (It is important to understand that "judging" as used here does <u>not</u> mean judgmental; any of the types can be judgmental).

P is for PERCEPTION: Those who prefer a perceptive process when dealing with the outer world (either sensing or intuition) like to live in a flexible, spontaneous way. When using your perception, you are gathering information and keeping your options open. People with a preference for perceiving seek to understand life rather than control it. They prefer to stay open to experience, enjoying and trusting their ability to adapt to the moment.

TABLE 1

MEAN NUMBER OF MBTI SCALES FAKED FOR EXPERIMENTAL FACTORS

Factor	N	Mean
Temperament		
NT	44	2.89
NF	62	3.48
SJ	81	3.09
SP	42	2.64
Role Information Level		
Role Only	76	2.97
Role + Target Type	79	3.13
Role + Target + Dimen.	74	3.12
Intelligence		
Low	77	2.95
Medium	85	3.15
High	67	3.12

TABLE 2

EI PREFERENCE SCORE (FAKING) MEANS FOR EXPERIMENTAL FACTORS

Factor	N	Mean
Temperament		
NT	44	23.46
NF	62	26.00
SJ	81	31.22
SP	42	15.24
Role Information Level		
Role Only	76	19.05
Role + Target Type	79	25.35
Role + Target + Dimen.	74	31.92
Intelligence		
Low	77	19.23
Medium	85	33.49
High	67	22.16

TABLE 3

SN PREFERENCE SCORE (FAKING) MEANS FOR EXPERIMENTAL FACTORS

Factor	N	Mean
Temperament		
NT	44	26.46
NF	62	45.77
SJ	81	21.82
SP	42	-0.71
Role Information Level		
Role Only	76	23.76
Role + Target Type	79	29.91
Role + Target + Dimen.	74	21.22
Intelligence		
Low	77	18.97
Medium	85	30.08
High	67	25.69

TABLE 4

TF PREFERENCE SCORE (FAKING) MEANS FOR EXPERIMENTAL FACTORS

Factor	N	Mean
Temperament		
NT	44	6.64
NF	62	51.52
SJ	81	24.62
SP	42	20.24
Role Information Level		
Role Only	76	24.00
Role + Target Type	79	31.04
Role + Target + Dimen.	74	27.76
Intelligence		
Low	77	22.14
Medium	85	28.44
High	67	32.96

TABLE 5

JP PREFERENCE SCORE (FAKING) MEANS FOR EXPERIMENTAL FACTORS

Factor	N	Mean
Temperament		
NT	44	16.55
NF	62	27.94
SJ	81	14.43
SP	42	22.33
Role Information Level		
Role Only	76	22.66
Role + Target Type	79	20.06
Role + Target + Dimen.	74	17.03
Intelligence		
Low	77	17.83
Medium	85	23.17
High	67	18.28

TABLE 6

PROPORTION OF VARIANCE (R-square) IN DEPENDENT MEASURES DUE TO EXPERIMENTAL EFFECTS

Temperament

Dependent Variable	R-square
EI scale score	0.240
SN scale score	0.362
TF scale score	0.295
JP scale score	0.173
Number of scales faked	0.207

Full Type

Dependent Variable	R-square
EI scale score	0.433
SN scale score	0.446
TF scale score	0.526
JP scale score	0.440
Number of scales faked	0.268

TABLE 7

ANOVA RESULTS FOR NUMBER OF MBTI SCALES FAKED: TEMPERAMENT

Source	DF	SS	F-value
Temperament	3	17.28	5.99*
Information Level	2	1.31	0.68
I.Q.	2	1.90	0.99
Temp. X Information	6	4.92	0.85
Temp. X I.Q.	6	4.54	0.79
Information X I.Q.	4	2.65	0.69
Temp. X Info. X I.Q.	12	12.33	1.07

* $p < .001$

TABLE 8

MULTIPLE COMPARISONS ON MAIN EFFECTS FOR NUMBER OF MBTI SCALES FAKED: TEMPERAMENT

Temperament

Temperament	N	Mean	Grouping
NF	62	3.48	A
SJ	81	3.09	B
NT	44	2.89	B
SP	42	2.64	B

Note: Means with same letter are not significantly different

TABLE 9

ANOVA RESULTS FOR MBTI'S EI SCALE: TEMPERAMENT

Source	DF	SS	F-value
Temperament	3	7065.64	2.69*
Information Level	2	4377.54	2.50
I.Q.	2	8154.03	4.65*
Temp. X Information	6	5477.89	1.04
Temp. X I.Q.	6	2794.75	0.53
Information X I.Q.	4	1726.12	0.49
Temp. X Info. X I.Q.	12	21916.54	2.08*

* $p < .05$

TABLE 10

CELL MEAN COMPARISONS FOR MBTI'S EI SCALE: TEMPERAMENT

Cell #	Temper-ment	Info. Level	IQ Group	EI Mean	N	Sign. Differences from Other Cells
1	NT	R	1	30.0	6	19, 24
2	NT	R	2	8.0	6	11, 32, 35
3	NT	R	3	33.7	3	24
4	NT	R+T	1	-12.0	2	5, 9, 11, 14, 15, 27, 30, 32, 33, 35
5	NT	R+T	2	36.7	6	4, 6, 12, 19, 24
6	NT	R+T	3	3.9	7	5, 11, 14, 15, 30, 32, 33, 34, 35
7	NT	R+T+D	1	27.5	4	24
8	NT	R+T+D	2	36.6	5	10, 19, 24
9	NT	R+T+D	3	37.4	5	4, 10, 19, 24
10	NF	R	1	-0.3	6	8, 9, 11, 14, 15, 16, 27, 30, 32, 33, 34, 35
11	NF	R	2	47.0	6	2, 4, 6, 10, 12, 19, 24, 25, 28
12	NF	R	3	5.2	9	5, 11, 14, 15, 30, 32, 33, 34, 35
13	NF	R+T	1	26.6	5	24
14	NF	R+T	2	36.1	7	4, 6, 10, 12, 19, 24
15	NF	R+T	3	37.0	9	4, 6, 10, 12, 19, 24, 25
16	NF	R+T+D	1	34.0	6	6, 10, 19, 24
17	NF	R+T+D	2	33.0	6	19, 24
18	NF	R+T+D	3	20.5	8	24
19	SP	R	1	-10.0	4	1, 5, 8, 9, 11, 14, 15, 16, 17, 20, 26, 27, 30, 32, 33, 34, 35
20	SP	R	2	29.0	6	19, 24
21	SP	R	3	20.0	4	
22	SP	R+T	1	24.5	4	24
23	SP	R+T	2	18.0	4	
24	SP	R+T	3	-13.7	6	1, 3, 5, 7, 8, 9, 11, 13, 14, 15, 16, 17, 18, 20, 22, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
25	SP	R+T+D	1	2.2	5	11, 15, 30, 32, 33, 35
26	SP	R+T+D	2	33.3	6	19, 24

(cont.)

TABLE 10 (Cont.)

Cell #	Temper-ment	Info. Level	IQ Group	EI Mean	N	Sign. Differences from Other Cells
27	SP	R+T+D	3	42.3	3	4, 10, 19, 24
28	SJ	R	1	17.1	14	11, 24, 32, 35
29	SJ	R	2	21.3	8	24
30	SJ	R	3	42.0	4	4, 6, 10, 12, 19, 24, 25
31	SJ	R+T	1	22.5	12	24
32	SJ	R+T	2	40.8	12	2, 4, 6, 10, 12, 19, 24, 25, 28
33	SJ	R+T	3	42.6	5	4, 6, 10, 12, 19, 24, 25
34	SJ	R+T+D	1	33.4	9	6, 10, 12, 19, 24
35	SJ	R+T+D	2	42.8	13	2, 4, 6, 10, 12, 19, 24, 25, 28
36	SJ	R+T+D	3	30.0	4	24

Note 1: Information level "R": role information only condition
Information level "R+T": role information plus target type information condition
Information level "R+T+D": role information, target type information plus dimension description condition

Note 2: IQ Group 1: lower third of IQ group (1-33 percentile)
IQ Group 2: middle third of IQ group (34-66 percentile)
IQ Group 3: upper third of IQ group (67-99 percentile)

Note 3: significant differences are defined as $p < .05$

TABLE 11

ANOVA RESULTS FOR MBTI'S SN SCALE: TEMPERAMENT

Source	DF	SS	F-value
Temperament	3	51038.71	19.66**
Information Level	2	2381.84	1.38
I.Q.	2	5877.45	3.40*
Temp. X Information	6	2025.76	0.39
Temp. X I.Q.	6	7022.70	1.35
Information X I.Q.	4	5297.29	1.53
Temp. X Info. X I.Q.	12	17690.06	1.70

** $p < .001$ * $p < .05$

TABLE 12

MULTIPLE COMPARISONS ON MAIN EFFECTS FROM SN SCALE: TEMPERAMENT

Temperament

Temperament	N	Mean	Grouping
NF	62	45.77	A
NT	44	26.45	B
SJ	81	21.82	B
SP	42	-0.71	C

Intelligence

I.Q. Group	N	Mean	Grouping	
2 (Medium)	85	30.08	A	
3 (High)	67	25.69	A	B
1 (Low)	77	18.97		B

Note: Means with same letter are not significantly different

TABLE 13

ANOVA RESULTS FOR MBTI'S TF SCALE: TEMPERAMENT

Source	DF	SS	F-value
Temperament	3	50751.35	16.35*
Information Level	2	2448.59	1.18
I.Q.	2	3097.93	1.50
Temp. X Information	6	1033.31	0.17
Temp. X I.Q.	6	5253.93	0.85
Information X I.Q.	4	2389.96	0.58
Temp. X Info. X I.Q.	12	11941.00	0.96

* $p < .001$

TABLE 14

MULTIPLE COMPARISONS ON MAIN EFFECTS FROM TF SCALE: TEMPERAMENT

Temperament

Temperament	N	Mean	Grouping
NF	62	51.52	A
SJ	81	24.62	B
SP	42	20.24	B
NT	44	6.64	C

Note: Means with same letter are not significantly different

TABLE 15

ANOVA RESULTS FOR MBTI'S JP SCALE: TEMPERAMENT

Source	DF	SS	F-value
Temperament	3	7523.04	2.08
Information Level	2	1245.51	0.52
I.Q.	2	2255.38	0.93
Temp. X Information	6	6934.59	0.96
Temp. X I.Q.	6	8892.60	1.23
Information X I.Q.	4	4671.51	0.97
Temp. X Info. X I.Q.	12	16968.94	1.17

TABLE 16

MEAN PREFERENCE SCORES ON MBTI SCALES FOR TEMPERAMENT TYPES

MBTI Scale	Mean Preference Score
EI scale	
NT	23.5
NF	26.0
SJ	31.2
SP	15.2
SN scale	
NT	26.5
NF	45.8
SJ	21.8
SP	-0.7
TF scale	
NT	6.6
NF	51.5
SJ	24.6
SP	20.2
JP scale	
NT	16.5
NF	27.9
SJ	14.4
SP	22.3

TABLE 17

ANOVA RESULTS FOR MBTI'S EI SCALE: FULL TYPE

Source	DF	SS	F-value
Type	15	46852.58	4.48**
I.Q.	2	4293.39	3.08*
Type * I.Q.	30	22557.09	1.08

** $p < .001$ * $p < .05$

TABLE 18

MULTIPLE COMPARISONS ON MAIN EFFECTS FROM EI SCALE: FULL TYPE

Type

Type	N	Mean	Grouping		
INTJ	9	47.22	A		
ISTJ	27	43.22	A		
ENFJ	13	41.92	A		
ISFJ	10	38.80	A		
INTP	10	38.80	A		
INFJ	8	38.25	A		
ISTP	8	37.25	A		
ESFJ	28	35.36	A		
ISFP	12	31.67	A		
ENFP	27	19.67	A	B	
ENTP	16	16.88	A	B	
INFP	14	16.43	A	B	
ESTP	11	11.91	A	B	C
ESTJ	16	-1.00		B	C
ENTJ	9	-5.67		B	C
ESFP	11	-15.36			C

Intelligence

I.Q. Group	N	Mean	Grouping
2 (Medium)	85	33.49	A
3 (High)	67	22.16	B
1 (Low)	77	19.23	B

Note: Means with same letter are not significantly different

TABLE 19

ANOVA RESULTS FOR MBTI'S SN SCALE: FULL TYPE

Source	DF	SS	F-value
Type	15	79725.89	6.63**
I.Q.	2	8749.61	5.46*
Type * I.Q.	30	23185.45	0.96

** $p < .001$ * $p < .01$

TABLE 20

MULTIPLE COMPARISONS ON MAIN EFFECTS FROM SN SCALE: FULL TYPE

Type

Type	N	Mean	Grouping
ENFP	27	52.78	A
ENTP	16	46.75	A B
INFP	14	45.71	A B
ENFJ	13	44.23	A B C
ISTJ	27	32.41	A B C D
ISFJ	10	30.20	A B C D
INTP	10	28.00	A B C D E
ESTJ	28	26.63	A B C D E
INFJ	8	24.75	A B C D E
ISTP	8	11.50	B C D E F
ESTP	11	9.18	C D E F
INTJ	9	7.67	C D E F
ENTJ	9	7.44	C D E F
ESFJ	28	5.86	D E F
ISTJ	11	-7.00	E F
ISFJ	12	-12.17	F

Intelligence

I.Q. Group	N	Mean	Grouping
2 (Medium)	85	30.08	A
3 (High)	67	25.69	A B
1 (Low)	77	18.97	B

Note: Means with same letter are not significantly different

TABLE 21

ANOVA RESULTS FOR MBTI'S TF SCALE: FULL TYPE

Source	DF	SS	F-value
Type	15	118691.09	10.68**
I.Q.	2	5371.19	3.62*
Type * I.Q.	30	25569.93	1.15

** $p < .001$ * $p < .05$

TABLE 22

MULTIPLE COMPARISONS ON MAIN EFFECTS FROM TF SCALE: FULL TYPE

Type

Type	N	Mean	Grouping
ENFP	27	57.59	A
ENFJ	13	51.62	A B
INFP	14	50.29	A B
ISFP	12	47.50	A B C
ESFJ	28	45.04	A B C
ESFP	11	43.00	A B C
INFJ	8	33.00	A B C D
ISFJ	10	24.80	A B C D E
INTJ	9	18.78	B C D E
INTP	10	17.80	B C D E
ESTJ	16	15.00	C D E
ISTJ	27	9.07	D E F
ENTJ	9	3.89	D E F
ISTP	8	2.00	D E F
ENTP	16	-5.63	E F
ISTJ	11	-19.00	F

Intelligence

I.Q. Group	N	Mean	Grouping
3 (High)	67	32.96	A
2 (Medium)	85	28.44	A B
1 (Low)	77	22.14	B

Note: Means with same letter are not significantly different

TABLE 23

ANOVA RESULTS FOR MBTI'S JP SCALE: FULL TYPE

Source	DF	SS	F-value
Type	15	87794.80	6.71*
I.Q.	2	161.26	0.09
Type * I.Q.	30	26638.51	1.02

* $p < .001$

TABLE 24

MULTIPLE COMPARISONS ON MAIN EFFECTS FROM JP SCALE: FULL TYPE

Type

Type	N	Mean	Grouping
ENFP	27	48.63	A
ENTP	16	42.88	A B
ISFP	12	41.33	A B
INFP	14	39.71	A B
ISTJ	27	31.81	A B C
INTP	10	28.00	A B C
ESTP	11	16.64	A B C D
ISFJ	10	15.80	A B C D
ESFP	11	14.82	A B C D
ESTJ	16	12.13	A B C D
ISTP	8	12.00	A B C D
INFJ	8	5.50	B C D
ESFJ	28	-1.50	C D
INTJ	9	-11.00	D
ENFJ	13	-13.92	D
ENTJ	9	-15.44	D

Note: Means with same letter are not significantly different

TABLE 25

ANOVA RESULTS FOR NUMBER OF MBTI SCALES FAKED: FULL TYPE

Source	DF	SS	F-value
Type	15	43.02	3.03*
I.Q.	2	1.12	0.59
Type * I.Q.	30	18.55	0.65

* $p < .01$

TABLE 26

MULTIPLE COMPARISONS ON MAIN EFFECTS FROM NUMBER OF MBTI SCALES FAKED: FULL TYPE

Type

Type	N	Mean	Grouping
ENFP	27	3.67	A
INTP	10	3.50	A B
INFP	14	3.43	A B
INFJ	8	3.38	A B
ISTJ	27	3.33	A B
ENFJ	13	3.23	A B C
ISFJ	10	3.20	A B C
ISFP	12	3.17	A B C
ENTP	16	3.06	A B C
ESFJ	28	2.93	A B C
ISTP	8	2.88	A B C
ESTJ	16	2.88	A B C
INTJ	9	2.78	A B C
ESFP	11	2.27	B C
ESTP	11	2.27	B C
ENTJ	9	2.00	C

Note: Means with same letter are not significantly different

TABLE 27

RANK ORDER OF FULL MBTI TYPES ON EACH DEPENDENT MEASURE

	Rank Order				
Type	EI score	SN score	TF score	JP score	# faked
ESTJ	14	8	11	10	12
ENTJ	15	13	13	16	16
ISTP	7	10	14	11	11
INTP	5	7	10	6	2
ESFJ	8	14	5	13	10
ENFJ	3	4	2	15	6
ISFP	9	16	4	3	8
INFP	12	3	3	4	3
ESTP	13	11	16	7	15
ESFP	16	15	6	9	14
ISTJ	2	5	12	5	5
ISFJ	4	6	8	8	7
ENTP	11	2	15	2	9
ENFP	10	1	1	1	1
INTJ	1	12	9	14	13
INFJ	6	9	7	12	4

TABLE 28

RELATIONSHIP BETWEEN INTELLIGENCE AND TEMPERAMENT

Source	DF	SS	F-value
Temperament	3	411.01	5.10*

* $p < .01$

Multiple Comparisons

Temperament	N	Mean	Grouping	
NT	44	29.23	A	
NF	62	28.84	A	
SP	42	27.57	A	B
SJ	81	26.03		B

TABLE 29

RELATIONSHIP BETWEEN INTELLIGENCE AND MBTI TYPE

Source	DF	SS	F-value
MBTI Type	15	809.80	2.04*

* $p < .05$

Multiple Comparisons

MBTI Type	N	Mean	Grouping	
ENTJ	9	31.78	A	
INFJ	8	30.25	A	B
INFP	14	29.79	A	B
ISFP	12	29.08	A	B
INTP	10	29.00	A	B
ENFP	27	28.63	A	B
ISTP	8	28.63	A	B
ENTP	16	28.50	A	B
INTJ	9	28.22	A	B
ESTP	11	28.18	A	B
ENFJ	13	27.39	A	B
ESFJ	28	27.07	A	B
ISTJ	27	26.44	A	B
ISFJ	10	25.70	A	B
ESFP	11	24.55		B
ESTJ	16	23.69		B

TABLE 30

RELATIONSHIP BETWEEN INTELLIGENCE AND MBTI SCALE SCORES

Variable	Mean	Standard Deviation	Range
EI Score	25.38	31.25	-53 to 59
SN Score	25.06	33.88	-67 to 67
TF Score	27.64	35.24	-63 to 65
JP Score	19.94	35.16	-61 to 61
I. Q.	27.69	5.32	5 to 43

Correlation Matrix

	EI Score	SN Score	TF Score	JP Score	I. Q.
EI Score	1.00	.28	.23	.12	.10
SN Score	.28	1.00	.23	.33	.15
TF Score	.23	.23	1.00	.12	.15
JP Score	.12	.33	.12	1.00	.04
I. Q.	.10	.15	.15	.04	1.00

TABLE 31

ANALYSIS OF I. Q. VARIABLE INCLUDING QUADRATIC TERM

Model	N	SS	F	PR > F
EI Scale				
I. Q.	1	2159.49	2.23	0.1364
I. Q. * I. Q.	1	2049.49	2.12	0.1467
SN Scale				
I. Q.	1	5821.80	5.21	0.0234
I. Q. * I. Q.	1	3398.63	3.04	0.0825
TF Scale				
I. Q.	1	6016.79	4.98	0.0267
I. Q. * I. Q.	1	3779.54	3.13	0.0784
JP Scale				
I. Q.	1	401.50	0.32	0.5705
I. Q. * I. Q.	1	317.79	0.26	0.6138
Number of Scales Faked				
I. Q.	1	3.55	3.54	0.0614
I. Q. * I. Q.	1	3.37	3.36	0.0682

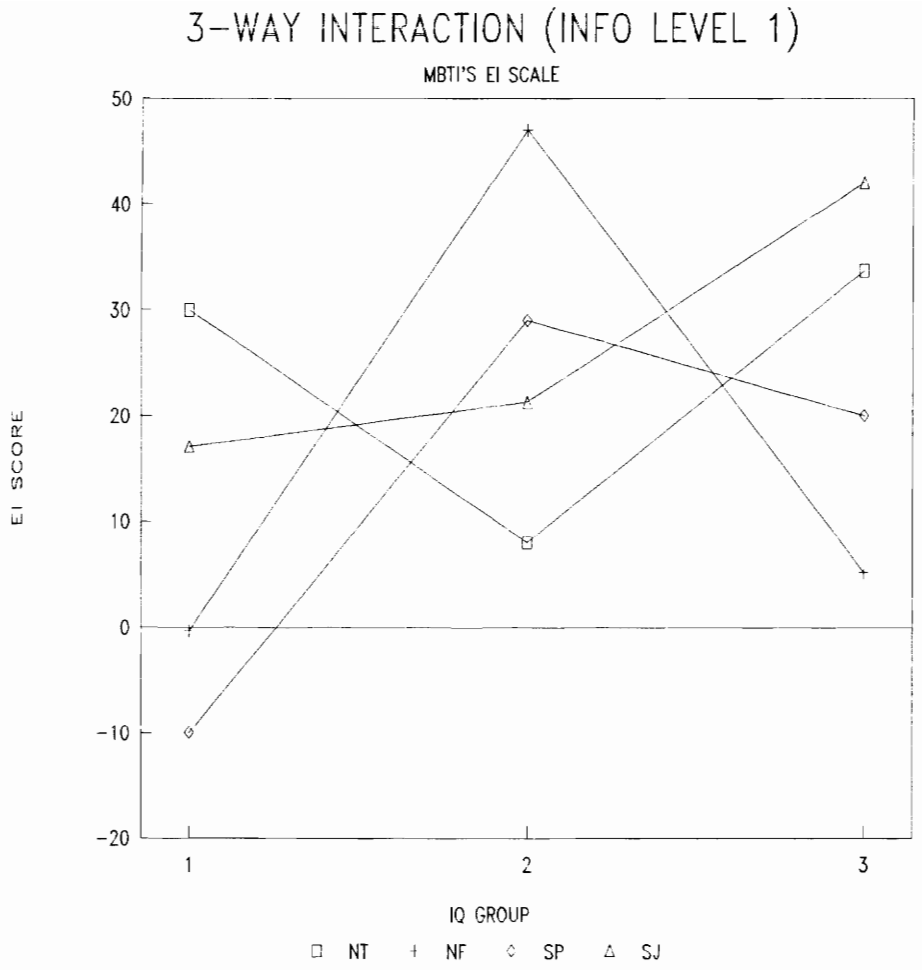

FIGURE 1: 3-WAY INTERACTION FOR EI SCALE: TEMPERAMENT BY I. Q. FOR ROLE INFORMATION LEVEL 1

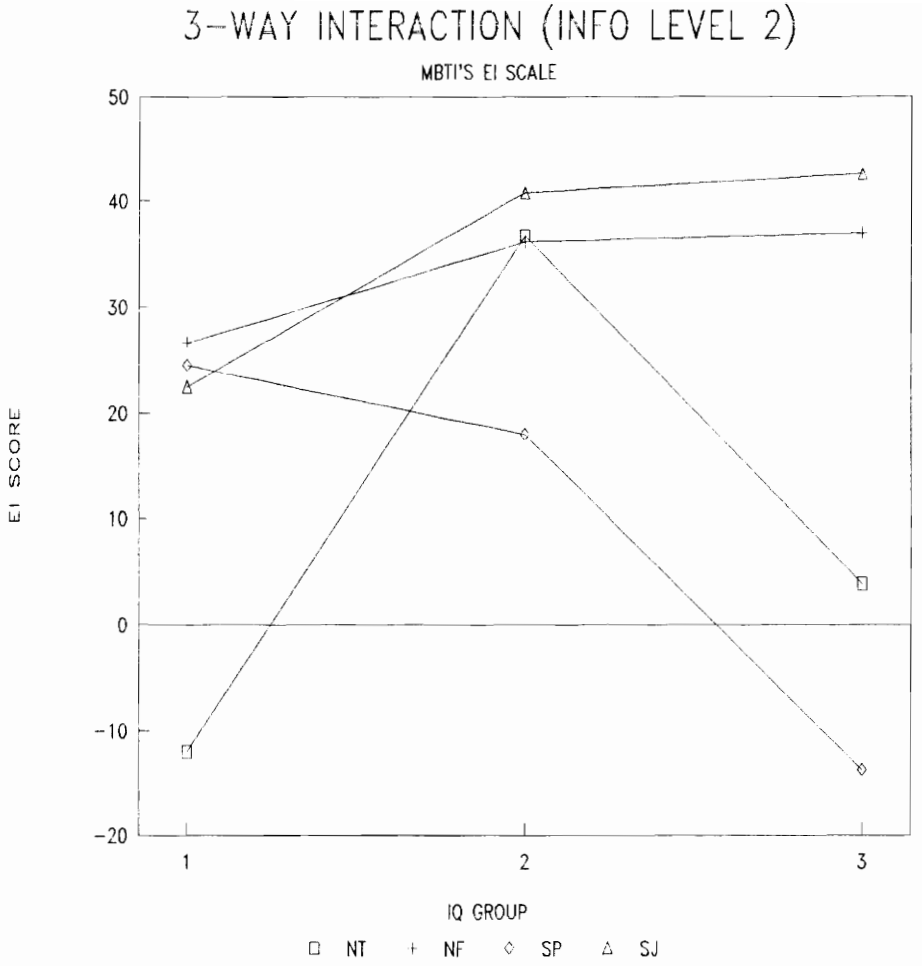

FIGURE 2: 3-WAY INTERACTION FOR EI SCALE: TEMPERAMENT BY I. Q. FOR ROLE INFORMATION LEVEL 2

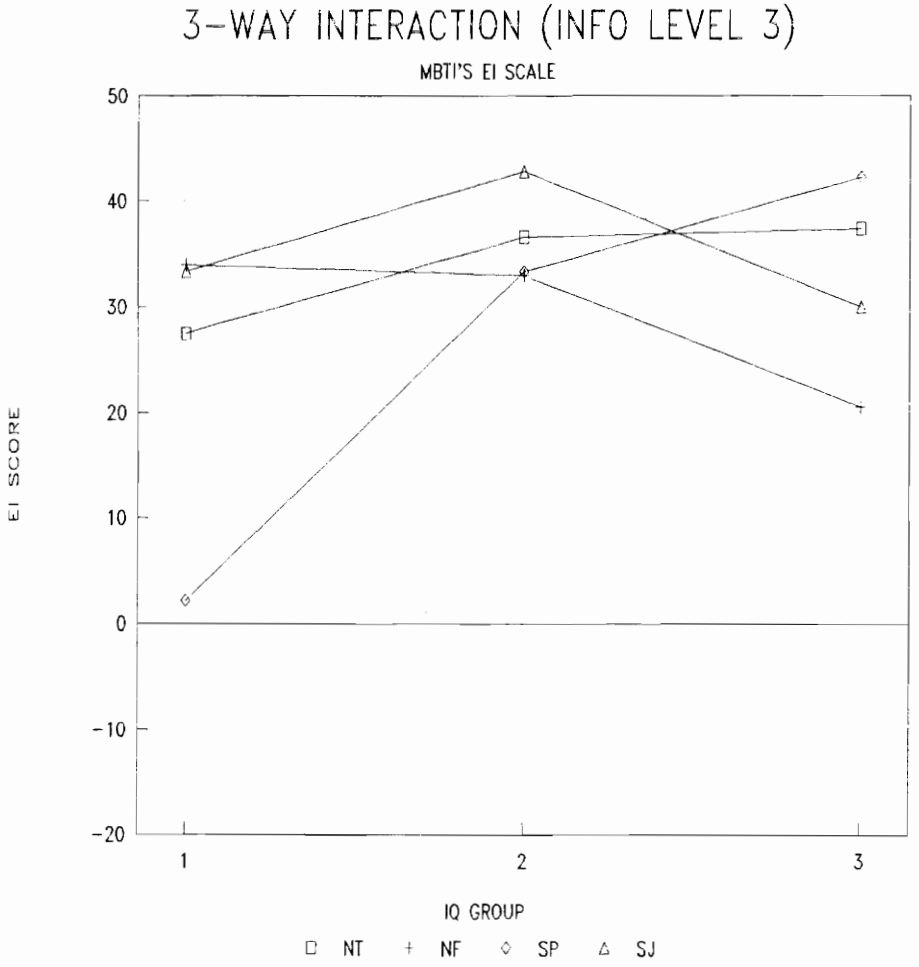

FIGURE 3: 3-WAY INTERACTION FOR EI SCALE: TEMPERAMENT BY I. Q. FOR ROLE INFORMATION LEVEL 3

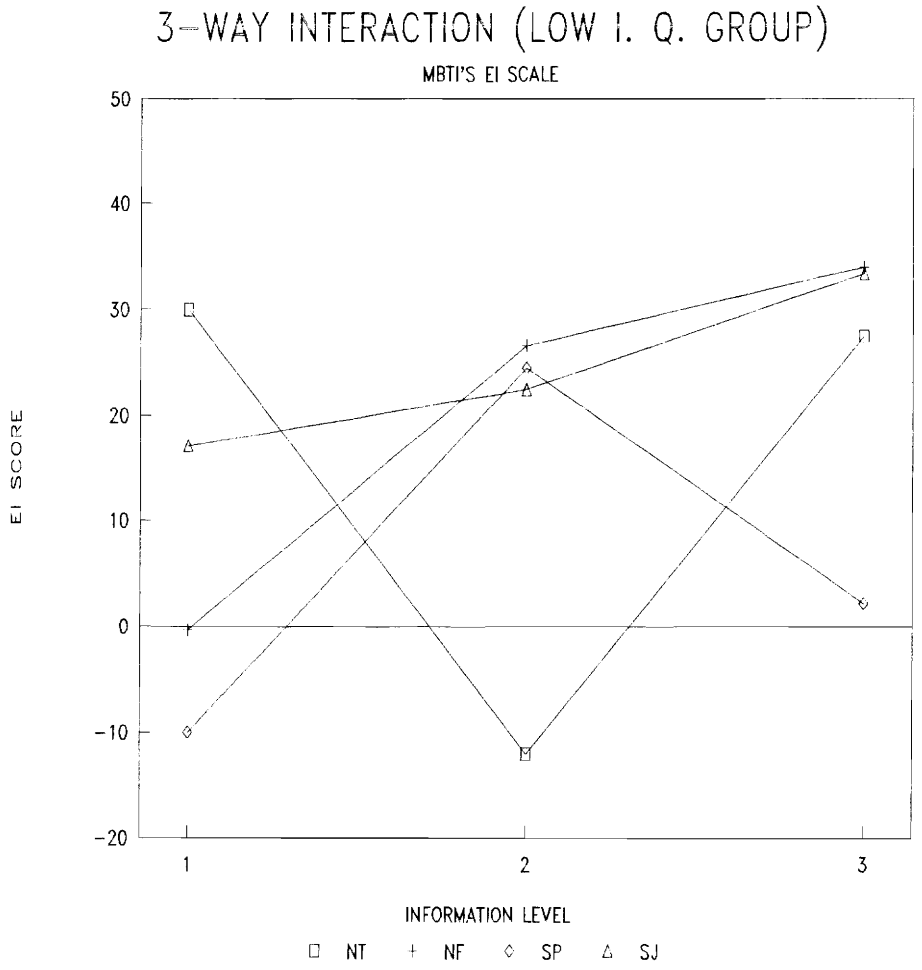

FIGURE 4: 3-WAY INTERACTION FOR EI SCALE: TEMPERAMENT BY ROLE INFORMATION LEVEL FOR LOW I. Q. GROUP

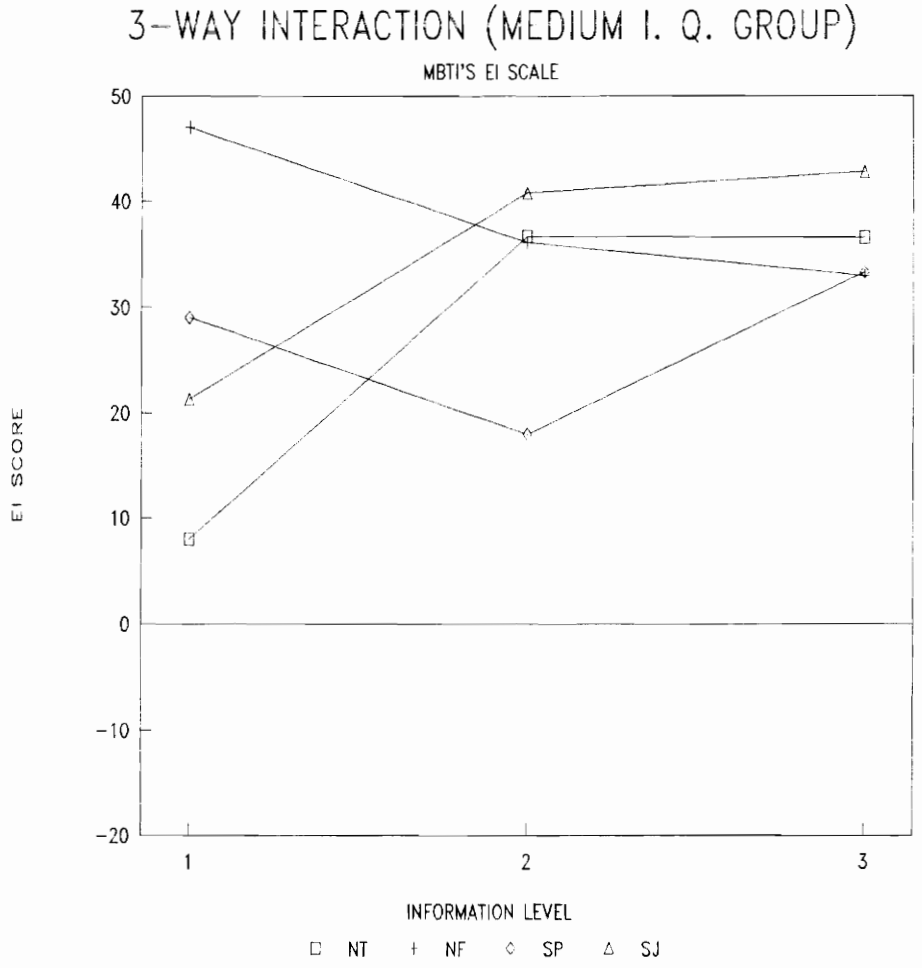

FIGURE 5: 3-WAY INTERACTION FOR EI SCALE: TEMPERAMENT BY ROLE INFORMATION LEVEL FOR MEDIUM I. Q. GROUP

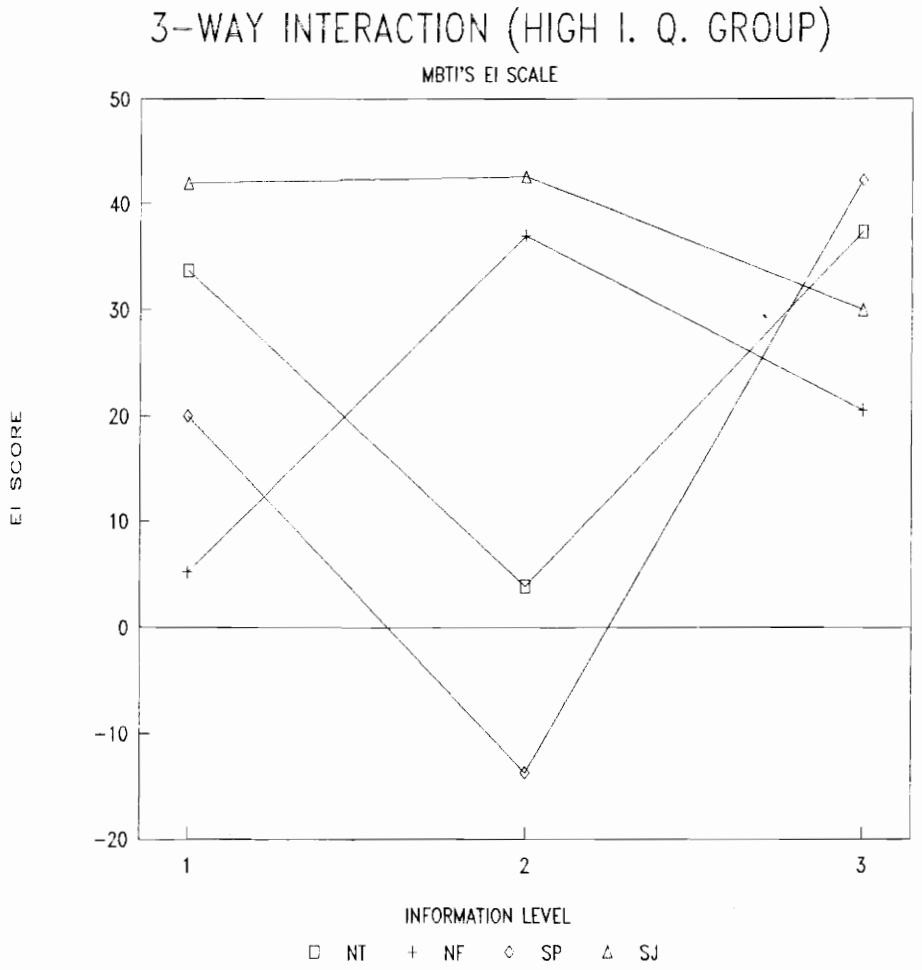

FIGURE 6: 3-WAY INTERACTION FOR EI SCALE: TEMPERAMENT BY ROLE INFORMATION LEVEL FOR HIGH I. Q. GROUP

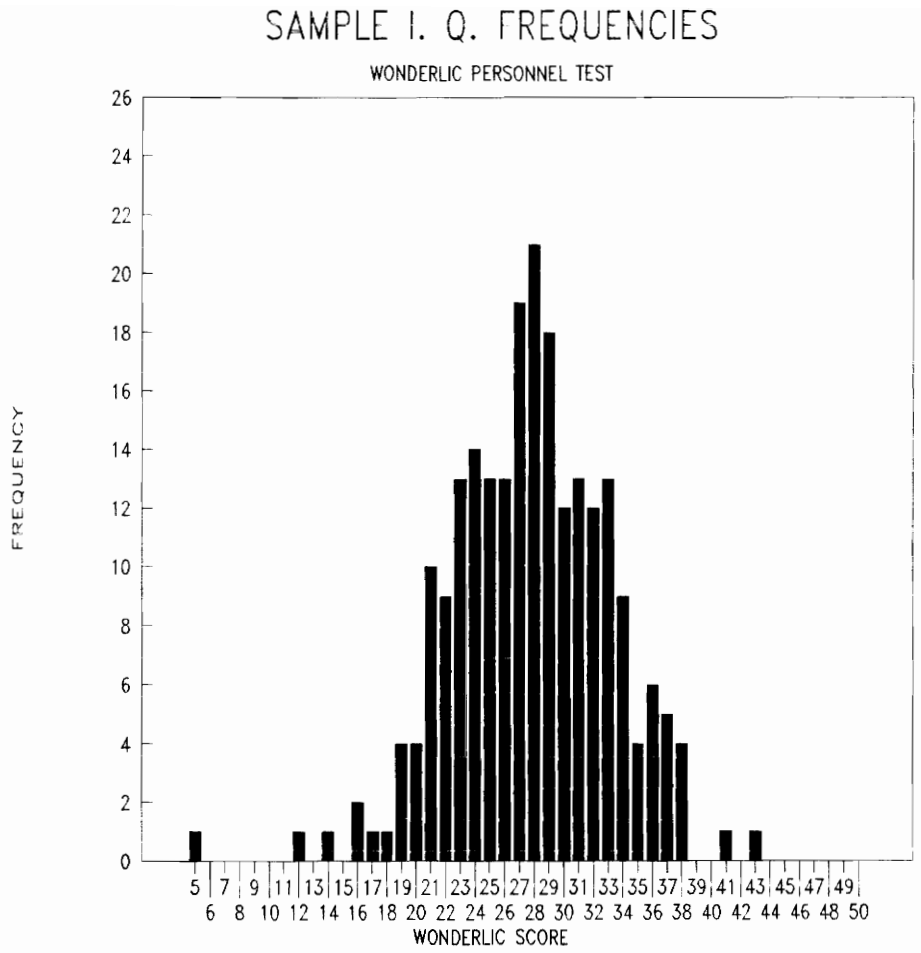

FIGURE 7: WONDERLIC PERSONNEL TEST SCORE FREQUENCIES FOR THE SUBJECT POPULATION

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EDUCATION

Ph.D., I/O Psychology, October, 1994
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Dissertation: Response distortion and the Myers-Briggs Type Indicator: Implications for selection
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M.S., I/O Psychology, February, 1993
Virginia Tech, Blacksburg, VA
Thesis: Safe behavior in the workplace: Assessing the effects of a feedback and thank you program
Advisor: E. Scott Geller

B.A. with Honors, Psychology, May, 1989
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RESEARCH INTERESTS

- applications of the MBTI in organizations
- selection system construction and implementation
- career development and placement
- occupational safety

PROFESSIONAL AND RESEARCH EXPERIENCE

Hoechst Celanese Corporation, Narrows, VA 5/90-1/93
Consultant/Intern

- developed, implemented and analyzed surveys to determine employee satisfaction and future needs of the organization
- administered and evaluated employee safety survey, and made recommendations for improvement based on results
- developed and implemented safety intervention system
- assisted in the development of training programs for Environmental, Health, and Safety Workshops
- assisted in the development and implementation of safety and environmental audits for all departments in the plant
- participated in the development of and training for a plant wide safety incentives program
- analyzed results of corporate-wide Quality Survey

Bell Atlantic Corporation, Arlington, VA 12/91-1/92
Consultant/Test Administrator

- Assisted in the pilot testing of a computer-based selection instrument to be used for selection, placement, and promotion

Management Consulting Team, Blacksburg, VA 1/91-4/91
Consulting Team Member

- conducted on-site job analysis interviews
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- assisted in the development of merit pay system

Virginia Tech, Blacksburg, VA 1/90-5/91
Coordinator, Undergraduate Information Center

- supervised advising for 700 undergraduate psychology majors
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- supervised and coordinated graduation ceremonies for psychology department

TEACHING EXPERIENCE

Virginia Tech, Department of Psychology 8/93-5/94
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- instructed Psychology of Learning course
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PRESENTATIONS

Dewey, J. D., Snell, K. L., & Geller, E. S. (1992). Using a behavioral checklist to define and measure safety behaviors.
Paper presented at the South Eastern Psychological Association, New Orleans, LA.

Finks, M., Snell, K. L., Nolan, D. J., Bass, M., & Richman, C. L. (1988). Preschool children's recall of aggressive and withdrawn stimulus sentences. Paper presented at the American Psychological Association, Atlanta, GA.

PROFESSIONAL MEMBERSHIPS

American Psychological Association
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