The Efficacy of Electronic Administration and Interpretation of Personality Measures

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The current study examined the relationship between MBTI® reported type and best-fit type, as verified by respondents upon the completion of an online interpretation session. Similar to previous research, results indicated a 76.3% rate of agreement between reported type and best-fit type. Additionally, changes on the S-N dichotomy occurred most frequently, rather than the T-F dichotomy, which is often found when using the traditional feedback approach.

In recent decades, psychological assessment has gradually shifted toward an individualized or collaborative approach whereby respondents play a more active role in the assessment process. This approach, often used in clinical practice, emphasizes an individual's personal or life experiences as primary data and test results as secondary data (Fischer, 1979; 2000). Additionally, providing feedback to clients or an interpretation of the results of their assessment, which is often neglected in psychological assessment (Pope, 1992), is a key feature of the collaborative approach (Dorr, 1981).

The Myers-Briggs Type Indicator® (MBTI®) assessment, a personality-based developmental tool, utilizes a similar approach as it enables participants to reflect upon their placement into a type category and identify whether it is their best fit, i.e., best-fit type (Myers, McCaulley, Quenk, & Hammer, 1998). Myers et al. (1998) posit that one's true type may not be revealed through a measurement device alone; therefore participants take part in a verification process where they are given detailed information on their reported type and alternative type descriptions to determine their best-fit type. Once a respondent has gone through this process and determined which type most accurately describes them, their verified or best-fit type results become the results from which all future uses of the instrument are based. Thus, a collaborative approach in which respondents are provided with an interpretation and asked to verify results is essential to completing the MBTI® assessment.

Traditionally, trained MBTI® interpreters have facilitated the verification process; however, with the advent of online assessment, recent versions of the MBTI® instrument have utilized automated, electronic feedback to provide participants with the information needed to identify their best-fit type. The use of electronic feedback is increasingly practical, given the popularity of online assessment. The American

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Psychological Association Guidelines (2002) deem automated feedback an appropriate and acceptable way to ensure the explanation of results to participants. In addition, automated, electronic feedback may produce a more valid and reliable measure of best-fit type by eliminating the potential for bias based on the gender and type preferences of interpreters (Bathurst, 2000).

The current study seeks to examine the relationship between reported type and best-fit type as determined through an electronic feedback session with participants. The number and direction of changes made from one preference pole to another within each of the four dichotomies will also be examined. As such the rate of agreement between reported type and best-fit type will be assessed as well as patterns of discrepancies within dichotomies.

Overview of the Instrument

The MBTI® assessment, based upon Carl Jung's theory of psychological type (Jung, 1921/1971), centers on the belief that individual differences among people are not random, but rather can be explained by variations in their underlying psychological types. These psychological types are determined through an individual's natural preferences for four dichotomies including Extraversion-Introversion, Sensing-Intuition, Thinking-Feeling, and Judging-Perceiving. According to the Jung's theory, Extraverts draw energy from the outside world of people, activities, things, whereas Introverts draw energy from one's inner world of ideas, emotions, and impressions. Sensing-Intuition pertains to how an individual takes in information or what they pay attention to. Those who prefer Sensing take in information through the five senses, noticing what actual exists, while those who prefer Intuition take in information through a "sixth sense" and notice what might be. Thinking-Feeling deals with the ways in which individuals make decisions. A preference for Thinking suggests that an individual organizes and structures information to decide in a logical, objective way, while a Feeling preference suggests that an individual organizes and structures information to decide in a personal, values-based way. Finally, Judging-Perceiving pertains to what you present to the world, or the lifestyle a person adopts. Individuals with a preference for Judging often prefer living a planned and organized life. In contrast, individuals with a preference for Perceiving prefer living a more spontaneous and flexible life.

While people possess and use qualities for both poles of each dichotomy, the MBTI® assessment identifies the most preferred pole of the dichotomy, or the pole used to respond first, most often, and most comfortably (Myers et al., 1998). Thus, based on responses to the assessment, a numerical score is obtained and preferences for each of the four dichotomies are identified. Taken together, the interaction of these four preferences make up one's overall type reported type by indicator. As there are 16 possible combinations of preferences, there are in turn 16 possible types. The sorting of people into the sixteen type categories allows for the identification of interests, values, needs, and habits that are common among people with similar preferences and overall type (Myers, et al., 1998).

In addition to the identification of one's type, a Preference Clarity Index is also calculated in computerized version of the instrument (similar to the *preference score* of versions prior to Form M). A

Preference Clarity Index, or PCI, examines how consistently a participant selects the items composing each dichotomy. The PCI reflects a participant's preferences within each of the four dichotomies and ultimately, the overall confidence to which he or she is accurately placed into one of the sixteen possible type categories (Myers et al., 1998). Finally, based upon an individual's PCI, a Preference Clarity Category (PCC) can be generated, which categories one's preference clarity, i.e., slight, moderate, clear, and very clear. This PCC can be used to aid in interpretation of the Preference Clarity Index reported on each of the four preference choices.

METHOD

Sample. Participants included 1,110 individuals (53% female, 46% male) who had taken the MBTI® Form M. The average age of participants was 40 years. Participants reported taking the assessment for a variety of reasons including: training purposes (39%), employment testing (4%), career counseling (5%), education (3%), and personal growth (47%). The majority of participants (84%) reported being employed full-time.

Procedure. Participants took the MBTI® Form M through an online, electronic administration called the MBTI®Complete. This method of delivering the MBTI® assessment allows interested participants to complete the assessment and receive feedback on their four-letter type without the use of a professional. Participants go through a series of steps that provide a great deal of relevant information relevant to the current study.

Upon completing the indicator, participants take part in an interactive learning session. The interactive learning session discusses the theory of type and includes activities similar to those found in a person-to-person interpretation. Next, each of the four dichotomies are presented and the participant is provided with details on each. In addition, a description of the characteristics commonly associated with both poles of the four dichotomies is provided, as well as a description of how preferences are behaviorally exhibited. Participants are then given a series of questions to check their understanding of the each of the four dichotomies and incorrect answers are explained. When finished with this section, the participant is asked to select which pole of the dichotomy they believe best describes their preference; and, their choice is then compared with the results for that dichotomy from the MBTI® assessment.

Once this has been done for each of the four preferences, the participant is provided with their "estimated" whole type, which is based on their choices regarding each of the preferences, and their indicated type, based on the results of the MBTI® assessment. A description of their estimated and reported types are given and participants are asked to select one of those types as their "best-fit type". A third option allows the participant to review all of the 16 types. Regardless of the path, the participant chooses a final "best-fit type" and is then given a detailed description of the type they have chosen. A download of the description is available, and a brief set of next steps for learning more about type is presented. This interactive process provides a great deal of data for information to evaluate both the effectiveness of the interpretation, as well as the participant's understanding of type.

RESULTS

Tables 1 and 2 illustrate the number of and percent of individuals in each of the 16 various types for both reported type and best-fit type. As shown in Table 1, the types with the most people include ISTJ, ENFP, ENTP, and ESTJ. Similarly, in Table 2, the types with the most people also include ISTJ, ENFP, ENTP, and ESTJ. Preferences within each dichotomy have been reported in Table 3. Reported types for the current sample are fairly consistent with those of the National Representative Sample (N = 3,009; as reported in Myers et al., 1998). Specifically, ISFJ is slightly under-represented in the current sample, while INFJ, INTJ, ENTP, ENFJ, and ENTJ are all slightly overrepresented in the current sample.

As indicated in Table 4, 76.3% of participants reported agreement on all four preferences. Additionally, 16.5% of participants reported agreement on three preferences, 5.7% on two preferences, 1.4% on one preference, and .2% on zero of the four preferences. The number of changes made from one preference to another within each dichotomy (e.g., a change of preference from reported type to best-fit type) and the direction of those changes (e.g., E to I vs. I to E) was also assessed. As shown in Table 4, the greatest number of total changes for the entire sample from one preference pole to another was from S to N (n = 77), while 44 changes were reported from N to S. Total changes on other dichotomies included E to I (n = 42), I to E (n = 20), T to F (n = 64), F to T (n = 31), J to P (n = 32) and P to J (n = 52).

McNemar's chi-square analysis was conducted to assess these changes on each of the four dichotomies. McNemar's chi square is a test of improvement that identifies whether cases are correctly classified (Tabachnick & Fidell, 2001), and will thus categorize a change from one preference to another as incorrect and no change as correct. As indicated in Table 4, a significant number of changes were found on the E-I dichotomy ($p < .01$), the S-N dichotomy ($p < .01$), the T-F dichotomy ($p < .001$), and the J-P dichotomy ($p < .05$).

As shown in Table 5, participants who made a change in the verification of their best-fit type were also found to have a lower Preference Clarity Index on all dichotomies. Specifically, the mean Preference Clarity Index (PCI) for all participants on E-I dichotomy was a 15.0; while the mean PCI for those who made a change on the E-I dichotomy in the verification process was a 6.6. The mean PCI for all participants on the S-N dichotomy was a 13.1; while participants who made a change on this dichotomy had a mean PCI of 6.9. The mean PCI for all participants on the T-F dichotomy was a 12.4; while the mean PCI for participants who made a change on this dichotomy was 7.0. Finally, the mean PCI for all participants on the J-P dichotomy was a 14.3; while the mean PCI for those who made a change on the J-P dichotomy in the verification process was 6.3. Independent t-tests revealed significant differences ($p < .001$) between the PCIs on all four dichotomies for those who changed preferences and those who did not change preferences.

DISCUSSION

The results of the current study were consistent with that of previous work regarding the relationship between best-fit type and reported type as indicated by the MBTI®. Previous research has found rates of agreement ranging from 63% (Kummerow, 1988) to 85% (Hammer & Yeakley, 1987). The current study found the agreement rate between reported

type and best-fit type to be 76%, similar to the 75% found by Myers and McCaulley (1985). In addition, as interpretation of results and additional feedback provided in the verification process for all previous reported studies (Bathurst, 2000; Hammer & Yeakley, 1987; Kummerow, 1988; Walck, 1992) was given to participants verbally, these results lend credit to the validity of a computer adaptive feedback process. Essentially, the computerized interpretation session of instrument, provided by the MBTI®Complete, was shown to be as effective as sessions offered by trained facilitators meeting with individuals on a face-to-face basis. Moreover, as the gender and preferences of interpreters may impact a participant's assessment of their true type (Bathurst, 2000), a computerized feedback session may eliminate this potential inaccuracy in scoring and therefore provide a more valid and reliable measure of best-fit type.

Interestingly, the number of and direction of changes made from one preference pole to another within each dichotomy were not consistent with previous work. Past studies have indicated that changes on the T-F dichotomy, specifically changes from T to F, are the most prevalent (Bathurst, 2000; Kummerow, 1988; Walck, 1992), and the reliability and validity of the T-F dichotomy has often been questioned (Carskadon, 1989; Harris & Carskadon, 1988). However, the current study found that changes on the S-N, rather the T-F dichotomy, occurred most frequently. Specifically, there were significantly more changes from the S pole of the dichotomy to the N pole than changes from the N pole to the S pole. As such, these results may refute previous arguments made in regard to the T-F dichotomy and lend credit to its validity. Future research in this area is recommended.

The PCI, or the consistency to which a participant indicated a preference on each dichotomy (Myers et al., 1998) was also examined. Both Hammer & Yeakley (1987) and Walck (1992) found that participants who reported changing a preference on any of the four dichotomies also had a lower overall PCI on that particular dichotomy. This was found to be true in the current study as significantly lower PCIs were found on all four dichotomies for those who changed preferences. Lower preferences serve as an indication that fewer items have been endorsed in favor of each pole within a dichotomy (Myers et al., 1998). Thus, individuals with low PCIs on a particular dichotomy do not have as clear of a preference regarding that dichotomy, which may ultimately account for the changes made from one pole to another.

CONCLUSION

The results of the current study provide further support for the validity of the MBTI® assessment. In addition, as rates of agreement between reported type and best-fit type were similar to those found by previous researchers, the results lend credit to the use of interactive, computerized interpretations in providing results of reported type. The use of automated computerized interpretations may offer a more systematic and accurate approach to conveying reported type results and explanations of other alternative type descriptions. Future research should be conducted to assess the validity of the computerized MBTI® interpretation sessions and the number and direction of changes made on each dichotomy when utilizing this style of feedback approach.

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Table 1. Type Table – Reported Type

ISTJ	**ISFJ**	**INFJ**	**INTJ**
118	50	41	59
10.63%	4.50%	3.69%	5.32%
ISTP	**ISFP**	**INFP**	**INTP**
59	37	74	62
5.32%	3.33%	6.67%	5.59%
ESTP	**ESFP**	**ENFP**	**ENTP**
49	39	120	103
4.41%	3.51%	10.81%	9.28%
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**
114	59	57	69
10.27%	5.32%	5.14%	6.22%

N = 1110

Table 2. Type Table – Best-Fit Type

ISTJ	**ISFJ**	**INFJ**	**INTJ**
122	58	39	77
10.99%	5.23%	3.51%	6.94%
ISTP	**ISFP**	**INFP**	**INTP**
49	43	88	46
4.41%	3.87%	7.93%	4.14%
ESTP	**ESFP**	**ENFP**	**ENTP**
40	30	127	100
3.60%	2.70%	11.44%	9.01%
ESTJ	**ESFJ**	**ENFJ**	**ENTJ**
95	55	70	71
8.56%	4.95%	6.31%	6.40%

N = 1110

Table 3. Agreement Between Reported Type and Best-Fit Type

Agreement on	*n*	%
4 Preferences	847	76.3%
3 Preferences	183	16.5%
2 Preferences	63	5.7%
1 Preference	15	1.4%
0 Preferences	2	.2%

N = 1110

Table 4. Number of Changes Between Reported Type and Best-Fit Type

Change	Total	Chi-square
E to I	42	
I to E	20	
		7.11**
S to N	77	
N to S	44	
		8.46**
T to F	64	
F to T	31	
		10.78***
J to P	32	
P to J	52	
		4.30*

N = 1110. * significant at the $p < .05$ level, ** significant at the $p < .01$ level, *** significant at the $p < .001$ level.

Table 5. Mean Preference Clarity Indexes

Dichotomy	Participants who Did Not Change Preferences	Participants who Changed Preferences	Significant difference between Mean PCI
EI	15.0	6.6	***
SN	13.1	6.9	***
TF	12.4	7.0	***
JP	14.3	6.3	***

N = 1110. *** significant at the $p < .001$ level.