

Evaluation of the psychometric properties of type indicators



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Psychometrics, in layman's term, means measurement of psychological constructs. To elucidate, it is a field of psychology concerned with the theory and technique of educational and psychological measurement, including measurement of knowledge, abilities, attitudes and personality traits. It is concerned with construction and validation of measurement instruments such as questionnaires, tests and personality assessments (Jung, 1971) . Psychometrics as a science began in Cambridge between 1886 and 1889 with the setup of the first laboratory by James Mckeen Cattell in 1887 (Bayne, 1997). The first psychometric test was designed to measure intelligence; however, another major focus has been on personality testing. There have been a series of theoretical approaches to conceptualizing and measuring personality. These include Classical test theory (CTT)[1]and Item response theory (IRT)[2](Jung, 1971). As per the CTT, the key to evaluating psychometric tool is its reliability and validity. Reliability refers to the ability of the test to measure consistently. A test with high reliability will yield similar results each time it is administered to measure the same construct (Rust & Golombok, 2009). Validity refers to the degree to which a test measures what it is supposed to measure (D. J. Pittenger, 1993).

2. Scope

In this paper, the focus is on evaluating the psychometric properties of Myers-Briggs Type Indicator (MBTI), a psychometric tool for personality assessment designed to measure psychological preferences in how people perceive the world and make decisions[3]. The Myers- Briggs Type Indicator (MBTI) has gained considerable attention in research, individual and organisational settings. For instance, it has been used for academic advising

and career counselling (Kennedy & Kennedy, 2004; Provost & Anchors, 1987) Organisational behaviour (Bridges, 1992), Leadership (McCaulley, 1990) Management practices (Vance, Groves, Yongsun, & Kindler, 2007) and Social interaction (Swiatek & Cross, 2007)

Despite its popularity, the MBTI has been subjected to considerable criticism (CAPT, 2010a; Garden, 1991; McCrae & Costa, 1989) with respect to its claim of being grounded in C. G. Jung's theory of psychological types, first presented in his book *Psychological Types* (1921/1971). For instance, Garden (1991) argues that " the practical implication of applying type theory to individuals, without integrating this within the wider Jungian theory of the psyche, would appear to be potentially harmful (p. 13)" (Garden, 1991). Spoto (1993) also criticized MBTI's excessive emphasis on consciousness at the expense of the unconscious (one of the central aspect in Jung's theory) to understand human behaviour.

However, the context of this paper is to answer the central question: Does Myers- Briggs Type Indicator (MBTI) instrument verify Jung's typology structure? This will be achieved by assessing only MBTI's psychometric properties as opposed to the validity of Myers' or Jung's type based theories, or the practical applications of MBTI. In order to investigate these psychometric properties, a literature review of studies based on Form F version of the Myers-Briggs Type Indicator (Myers, 1962) is employed.

This essay will firstly review the type theory of personality and highlight the characteristics of Form F version of MBTI. Following, several structural properties of Jung's typology will be introduced and discussed with respect to

the MBTI. Finally, a discussion on MBTI's ability to lend support to Jung's typology will be undertaken.

3. Type Theory of Personality

The underlying principle of type theories is that personality of an individual can be classified into discrete categories that are qualitatively different from each other. Type theories helps people (a) identify or confirm the ways in which they and their kinds are likely to be most effective and fulfilled (b) embrace the differences in preferences and operating styles of others (c) understand their areas of development of their personality (Bayne, 1997).

Jung's typology (Jacobi, 1951; Jung 1923, 1933, 1953) is one of the most influential of the several others (e. g. Friedman, 1950; Eysenck, 1951; Galen, 1958) and the drive behind the development of the Myers-Briggs Type Indicator was to implement Carl Gustav Jung's theory of Psychological Types.

Jung's and MBTI type theory of personality are closely linked in some aspects. Both the theories emphasise that many of the differences between individuals are not random instead they form patterns. Formation of personality patterns occurs when people use their natural preference. These personality patterns are referred to as " psychological types" (CPP, 2007).

The psychological types categorize people by their perceptual, judgemental, and attitudinal functions. Each of these functions is assumed to consist of two mutually exclusive components, one of which is the dominant feature of the individual's personality (D. J. Pittenger, 1993).

The perceptual component refers to the mental process of taking in the information comprising the sensing and intuition dichotomy or index.

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Sensing types like and trust the information received directly through their sense organs (CPP, 2007), they notice the concrete details and practical aspects of situations (Carlyn, 1977). Sensing type establishes what exists. They bring to awareness only what is occurring in the present moment, they tend to focus on the immediate experiences available to their five senses. Individuals with sensing preference often develop characteristics associated with this awareness such as enjoyment of present moment, realism, acute powers of observation, memory for the details of both past & present experiences and practicality. Intuitive types like information that goes beyond what is real or concrete and focuses on meaning, associations and relationships. Intuition may come to the surface of consciousness as a "hunch" or as a sudden discovery of a pattern in seemingly unrelated events. It permits perception beyond what is visible to the senses, including possible future events. Individuals with intuition preference may develop characteristics that can follow from that emphasis and become imaginative, theoretical, abstract, future oriented, original or creative (Myers, McCaulley, Quenk, & Hammer, 1998).

The judgement function refers to the mental process of making decisions about the incoming information consisting of the Thinking and Feeling dichotomy. The Thinking types make their decisions based on impersonal and objective logic. They prefer to use logic to analyse the problem and focus on the facts and the principles (CPP, 2007). Individuals with thinking preference often develop characteristics associated with objectively organising information, weighing the facts and impersonally judging whether something is true or not (Carlyn, 1977). On the other hand, the Feeling types

make their decisions with a person-centered and value based process. They prefer to use their personal values to understand the situation (CPP, 2007). Individuals with feeling preference often are good at understanding other people's feelings and analysing subjective impressions (Carlyn, 1977). It should be noted that both the processes are rational.

The attitudinal component describes an individual's orientation to life forming the Extroversion and Introversion dichotomy. It is described the manner in which individuals' "recharge their batteries" (Myers, et al., 1998). Extroversion is the preference that relates to drawing energy from outside oneself in the external world or peers, activities and things. On the contrary Introversion is the preference that relates to drawing energy from one's inner world of ideas, emotions, and impressions (Hirsh & Kummerow, 1992). Extraverts are characterized by a preference for talking and doing, sociability, expressiveness, and the possession of an apparent breadth of interests. The opposing orientation introversion is characterised by a preference for listening and reflecting, contemplativeness and the possession of an apparent depth of interests (Francis, Craig, & Robbins, 2007).

Myers embellished Jung's theory by adding a component that describes the attitude on dealing with the outer world -with a judging or a perceiving process. Individuals with a judging preference towards the outer world (thinking or feeling) seek to order, rationalise and structure their outer world, while individuals who prefer a perceiving process (Sensing or Intuition) do not seek to impose order on the outside world, but are more flexible, responsive and open (Francis, et al., 2007). Judging types are characterized <https://assignbuster.com/evaluation-of-the-psychometric-properties-of-type-indicators/>

by organization, punctuality, concern for structure, and systematic planning whereas perceiving types are characterized by spontaneity, flexibility, openness, and casualness (Myers, 2000).

In addition to the J-P dichotomy, there is another noteworthy difference between the theories proposed by Jung and the creators of MBTI. As mentioned earlier (e. g. Gardner, 1991; Spoto, 1993) Myers' theory ignores the analysis of Jung's concepts of the unconscious and its relation to dominant and auxiliary functions and fails to explore the darker psyche of individuals, an area that Jung termed 'archetypes'(Spady).

Nevertheless, for the purpose of this paper, we will assent the view that MBTI was explicitly developed to make the measurements and assessments called for the Jungian typology, or at least follows the broad outlines of Jung (L. Stricker & Ross, 1964). Therefore, the underlying assumption behind both the theories in assessing personality remains similar. It is that each individual has a natural preference for one or the other pole on each four dichotomies analogous to a natural preference for right-or-left -handedness (Carlyn, 1977). The individuals tend to use both the pole of each dichotomy; however, one is our natural preference. The people's preferences do not change - they stay the same over the lifetime, what changes is how one uses their preferences and often the accuracy with which they can measure the preferences (CPP, 2007).

4. Myers-Briggs Type Indicator (MBTI) Instrument:

The MBTI was developed by Isabel Briggs Myers and her mother, Katherine Cook Briggs as an objective measure of Carl Jung's (1921/1926) theory of

psychological types. Katherine Briggs became interested in type theory after reading Carl Jung's book, *Psychological Type*. Isabel Myers shared her mother's interest in type theory and began to create the MBTI in early 1940s as a test to be used for personnel selection[4]. Myers believed that different vocations favoured different personality orientations, and that Jung's theory provided a theoretical link between personality and job performance.

In 1957, the Educational Testing Service (ETS) contracted with Myers to distribute the inventory as a research instrument and to provide technical support for its evaluation. After an unfavourable internal review (Lawrence J. Stricker & Ross, 1962), ETS discontinued the development of MBTI. In 1975, Consulting Psychologists Press (CPP) acquired the selling rights as a proprietary instrument.

It should be noted that MBTI emphasises on the naturally occurring differences rather than pathological issues among individuals. Since its publication, the MBTI attracted professional support. The Center for Applications of Psychological Type (CAPT) provides training on the administration and interpretation of the test and scoring services, and it maintains a database of MBTI profiles. The Association of Psychological Type (APT) represents the interests of professionals who use the MBTI and provides workshops that qualify non-psychologists to purchase and administer the MBTI in non-clinical settings (D. J. Pittenger, 1993).

Additionally, CPP provides all MBTI products and services including a four-day certification workshop that enable individuals to professionally and ethically administer and interpret the Myers-Briggs assessment, and apply the MBTI instrument in team building, leadership and management
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development. Finally, the Journal of Psychological Type is a refereed periodical that publishes empirical and theoretical articles concerning Jung's type theory and the use of MBTI (D. J. Pittenger, 1993).

MBTI Form F was published by Educational Testing Service (ETS) in 1962. It has 166 items and was used with MBTI Form F answer sheets. In Form F, the indicator consists of a series of forced-choice questions that determine habitual choices between opposites (Carlyn, 1977) e. g. at a party I like to: [A] tell jokes to others, [B] listen to others and preferred self- descriptive adjectives (e. g. [A] daring or [B] cautious (D. J. Pittenger, 1993). Each scored item has one answer weighted in favour of one of the eight preferences and the other answer weighted in favour of the opposing preference. The assigning of separate weightage facilitates the setting the scale's zero point. At zero point two opposing attitudes or functions are equal. It is presumed that individuals on one side of the zero point will be qualitatively different from the opposite type category (L. Stricker & Ross, 1964). Each individual is provided with a type consisting of four letters that is classified as one of the 16 possible types- ISTJ, ISFJ, INFJ, ISTP, ISFP, INFP, INTP, ESTP, ESFP, ENFP, ENTP, ESTJ, ENFJ or ENTJ.

Form F is the original version of the MBTI Instrument created by Isabel Briggs Myers and was used to develop the Step I MBTI Form G, Form M, and the Step II Form Q versions of the instrument. It is now primarily used for Step III research (CAPT, 2010b). Because of its contribution to the refinement of the subsequent tools and generation of better versions of the indicator, using of Form F seems reasonable to investigate the question in study.

5. Structural Properties of Jung's Typology[5]:

Jung attributed several structural properties to the elements of his typology. We will look at each, one by one in light of MBTI's ability to validate these properties. The assumption is that MBTI should reflect the features of the underlying properties for it to qualify as an instrument of measuring Jung's typology.

It is assumed that personality characteristics are stable in the normal course of events, even though, the extent of their actual development is a function of the environment. This implies that the MBTI type of an individual should not change over time. In order to substantiate this assumption, reliability studies are examined.

Pittenger (1993) noted that " because Jung & Briggs and Myers conceived of personality as an invariant (p. 471), " if each of the 16 types is to represent a very different personality trait, it is hard to reconcile a test that allows individuals to make radical shifts in their type "(p. 472) (D. J. Pittenger, 1993). It implies that although, an individual may learn to use the non-preferred function, one should still have an unambiguous preference for the dominant function.

The most straightforward technique of estimating reliability is the test-retest reliability and involves administering the test twice to the same group of respondents with an interval between the two administrations. Typically, an interval could range from weeks, months to more than a year (D. J. Pittenger, 1993; Rust & Golombok, 2009). Since type is considered to be a constant characteristic, a high reliability would be an expected indicator of stability. It

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was found that 50 per cent of the people were classified into a different type on a test-retest interval of 5 weeks (Howes & Carskadon, 1979b). Stricker and Ross (1964) found that across a 14-month period, the product moment correlation reliability ranged from a low of 0.48 for the T-F scale to a high of 0.73 for E-I scale. Rust & Golombok (2009) noted "with personality tests, reliabilities of greater than 0.7 are expected". In view of this, the above mentioned reliabilities seem acceptable. Furthermore, the proportion of changes in type was found to be a function of the proximal distance to the midpoint of the scale (1 to 15 points on either side of the midpoint). The scores within this intermediate range resulted in shifting of 32% of the EI, 25% of the SN, 29% of the TF and 30% of the JP scales on the second testing (Howes & Carskadon, 1979a). McCarley and Carskadon (1983) replicated similar findings and indicated that 50% of the respondents were reclassified on one or more of the four scales across a 5-week interval (McCarley & Carskadon, 1983).

Considering that type theory suggests personality preferences for a dominant function to remain constant, these findings suggest that the four-letter MBTI type code is not a stable personality characteristic.

The attitudes and functions are categorical or qualitatively dichotomous. Because MBTI is a typological classification, it is expected that the scores would show a bimodal distribution (i. e. peaks near the end of the dichotomies). For instance, since people are either sensing type or intuitive type, the test result should yield two different curves representing each preference. Within each preference there may be a normal distribution of how much the preference is developed. Some people will be more sensing

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than others, but overall all the sensing types would be expected to be different from all intuitive types. Therefore, two curves representing each preference with little or no overlap of the curves should be ideal. In other words, for individuals to be qualitatively different there should be (a) a greater relative difference between the two-preference types (b) less variance of the scores within each type and (c) few individuals scoring at the midpoint of the scale. The midpoint of the scale should be a true zero point that clearly demarcates the two independent processes (D. J. Pittenger, 1993). Stricker and Ross (1964) collected MBTI scores from large samples of 21 diverse groups and found that the frequency distributions of the individual scales exhibited no marked evidence of bimodality, although, there was considerable skewness. The absence of bimodality has also been replicated by Hicks (1984) and McCrae and Costa (1989). All these studies indicate a continuous distribution of the scores rather on two extremes of each dimension. The lack of bimodality and high frequency of scores at the midpoint of the scale denounces the ability of MBTI to classify respondents into discrete types. The concentration of scores around the midpoint suggests that there is an absence of the qualitative difference with a small quantitative difference between the two types on each dimension.

Additionally, the standard error of measurement for each of the four dimensions is quite large. Based on a short- interval (5-week) test-retest reliability of 0.82 and a standard deviation for the EI scale of 25 (Howes & Carskadon, 1979b), the error of measurement[6] is approximately 10.6 points. Using a 95% confidence interval, the standard error measurement becomes approximately 20.78[7]. This means that raw scores with a 21

point difference are considered significantly different. Pittenger (1993) suggested " it seems unreasonable to conclude that two individuals are qualitatively different from each other when the difference between in their MBTI scores is within the standard error of measurement". Rotter (1975) presented a similar argument when discussing a problem of using the median split in conducting research on personality traits. He states " When the I-E scale was first developed, most of the research used a median split to obtain groups called " internals" and " externals"; it is clear that if median scores are now used, subjects who were considered externals in the early samples would now be considered internals; there is absolutely no justification for thinking in terms of a typology (p. 62) (Rotter, 1975)."

Moreover, empirical studies have hypothesised observation of discontinuity as an evidence of presence of types. It is said that " discontinuity can be established either by showing that the distribution is multimodal or that the regression of external variables on the dimension varies as a function of the level of the score on the dimension" (Mendelsohn, Weiss, & Feimer, 1982).

Myers (1962) acknowledged the absence of sufficient evidence on multimodality but insisted nevertheless that the scales are bipolar and have a true zero point. Myers has presented evidence of discontinuous regression, both U and J shaped, in which the change in regression occurs at the midpoint (zero) of the scale (Mendelsohn, et al., 1982).

For the dichotomies to be distinct, the regression of the type relevant variables on type scores should change in slope or level at the zero point of the Indicator scale. Only the regression of a vocabulary test on the T-F scale for high school boys changed noticeably in the region of the zero point of the <https://assignbuster.com/evaluation-of-the-psychometric-properties-of-type-indicators/>

scale. The corresponding regressions of the vocabulary test on the T-F scale for the high school girls and of SAT-V on the T-F scale for the male Stanford university students were insignificantly non-linear (L. Stricker & Ross, 1964). In another study (Hicks, 1984), a sizable difference between sensing and intuition respondents in the number of books read each year was observed, with intuitive types reading more books than sensing types, a finding that is in keeping with the theory.

Despite, the negative evidence across studies, some of the positive findings do leave a desirability of more investigations in this area.

The various attitudes and functions should be interacting i. e. the MBTI scales should interact in relation to other variables affected by typological difference. Stricker & Ross (1964) did not find evidence of interaction among four dimensions in the analysis of variance of academic aptitude and performance measures. Hicks (1984) with respect to the finding mentioned in the previous point, he tried to test an interaction among the MBTI types and measures of "bookishness" and found a significant SN-TF interaction but not a significant EI-SN interaction.

Type Indeterminacy results to ineffective behaviour. According to Jungian typology, failure to develop one of the preferences on each dichotomy results in fluctuating and ineffective behaviour. Thus, type indeterminacy on the instrument should relate to the variables which reflect such behaviours. Contrary to the theoretical expectations, indeterminacy factors were unrelated to academic performance and personality measure variables. The failure to meet the expected outcome can be attributed to (a) ambiguities

within the MBTI to measure type indeterminacy (b) lack of development of two polarities on each dichotomy, which corresponds to Jung's conception or (c) equal development of both schisms, which is unrelated to Jung's conception.

The functions and attitudes exhibit differentiation rather an either or existence[8].

Jung (1971) proposed that opposite functions of each dichotomy do not "act" in synchronicity, however, he did made a case for relative predominance (which he termed differentiation) rather than either or existence. Jung (1971) believed that an individual adapts and operates mostly by means of his most differentiated and determined function. He also intimated the fact that "types do not occur at all frequently in such pure form in actual life" (p. 405) (Jung, 1971).

Dissimilar to Jung's concept of differentiation, MBTI suggests an independent existence of the four dichotomies. Factor analysis can be used to assess the validity of MBTI with respect to measuring four independent functions. It a technique that provides a set of results that give an indication of the underlying relationships between items or subsets (Rust & Golombok, 2009). It is expected that if each of the four MBTI preference dimensions stand-alone than we would expect each factor to be independent of the other factors (D. J. Pittenger, 1993).

Some studies examined the relative independence of the MBTI type categories and found a significant correlation between the S-N and J-P

indicating that individuals who like to see and collect facts and details, most
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likely would have an organised and systematic orientation towards the external world, whereas individuals who prefer to gather the big picture from the information, may look at seeking experiences from the world rather to organise. The E-I (extraversion-introversion), S-N (sensing and intuition) and T-F (thinking and feeling) indices appear to be fairly independent of each other (L. Stricker & Ross, 1964; Webb, 1964). Other studies (L. J. Stricker & Ross, 1963; L. J. Stricker, Schiffman, & Ross, 1965; Webb, 1964) confirmed the similar findings. Additionally some of these studies also found a significant correlation between T-F and J-P scales.

Furthermore, the studies on the factor analysis failed to produce resounding results. Sipps et al. (1985) provided a thorough item analysis of the MBTI. Based on data from 1291 participants, they found six different factors that accounted for 27.4% of the total variance (Sipps, Alexander, & Friedt, 1985). Lorr (1991) who examined the MBTI using cluster analysis techniques also supported the similar findings. The results showed negligible correspondence between the priori classes (e. g. 16 categories of MBTI) and empirically derived clusters (Lorr, 1991). In another study, JP and SN scales were correlated with one another thereby confirming the lack of independence of MBTI dichotomies (McCrae & Costa, 1989).

The failure of these studies to support the independence of MBTI factors may give an opportunity to researchers for revisiting the dimensions of MBTI with respect to Jung's typology. Jung acknowledged that though the perceptual and judgemental processes never act simultaneously and although people are likely to possess "one" predominant function, they will nevertheless possess some degree of the other function as well.

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6. Conclusion and Intervention

Let us return to the question of whether Myers-Briggs Type Indicator (MBTI) verifies or lent supports to Jung Typology. This essay concludes that it does not. The assumption that MBTI should reflect the structural properties for it to qualify as an instrument of measuring Jung's typology has not been proved. Multiple findings based on the Form F version of MBTI support this conclusion (a) the reliability studies lacks evidence of type stability (b) except for few promising non-linear regression studies, the lack of support for bimodality weakened Jung's supposition of the four dichotomies to be categorical (c) the analysis of variance studies marginally indicated an interaction between MBTI scales and other variables (d) ambiguity in type indeterminacy and (e) weak evidence on validity of MBTI based on factor analysis.

Therefore, it may be worthwhile to explore alternative methodologies which may enhance MBTI's synchronisation with Jung's structural concepts. Harvey and Murray (1994) computed latent trait (theta) score estimate using a three-parameter logistic item response model in each of the four item tools and found that the latent -trait scores were strongly bimodal, whereas preference scores were more uniform and centre-weighted (R. J. Harvey & Murry, 1994) This implied that the IRT- based scoring may strengthen the MBTI to measure the Jungian functions with greater appropriateness and accuracy. As Johnson stated " bimodality is a sine qua non requirement for the acceptance of the usefulness of dichotomies; " While bimodality in the preference scores may not be an absolute necessity of the theory, it is nevertheless an attractive empirical feature in the measurement of

psychological types (p. 2)" (Johnson, 1994) . Furthermore, Harvey and Thomas (1996) concluded the advantages of IRT based scoring. Their positive findings on IRT based scoring addressed the psychometric limitations of MBTI in verifying Jung's structural properties to some extent. For instance, it produced bimodal score distribution thereby decreasing the proportion of individuals who score near the type cut-offs and improved the test-retest stability significantly (R. J. Harvey & Thomas, 1996).

Two years later (1998), the most recent version of MBTI Form M was introduced with scoring based on Item Response Theory. In its most current form, the MBTI assessment is designed to assess three different aspects of psychological types (a) Step ITM results indicate preferences for one of the sixteen types (b) Step IITM results that provide people with individualized type reports that reflect the distinctive ways they express their type preferences (c) Step IIITM analysis helps people use their natural types as effectively as possible (CAPT, 2010b).

This indicates that the creators of MBTI have taken the criticism and suggestions constructively and made a continuous effort to improve the indicator and increase the correspondence with Jung's typology. One must give credit to Briggs and Myers for developing an instrument that at least tried to interpret Jung's theory and made it accessible to the wider population across variety of settings. It indeed provides an overall explanation of individual's personality with respect to one's preferences. " Typology is more than functions, attitudes, dominant and auxiliary, and so on. There is always more to the story than a person's type" (Allen, 1995).

One should treat it as a stepping stone towards understanding oneself based <https://assignbuster.com/evaluation-of-the-psychometric-properties-of-type-indicators/>

on fairly general characteristics rather on specific traits. As Jung states " it provides compass points in the wilderness of the psyche" (Bayne, 1997)