

Folk Concepts and Jung: The Relationship between the California Personality Inventory (CPI) and the MBTI

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Abstract

A total of 383 participants (aged 19 to 66 yrs) completed the Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985) and the California Psychological Inventory-434 (CPI-434) (Gough & Bradley, 1996). The aim was to investigate the relationship between these two measures; the one extremely popular (MBTI) and the other now much less commonly used (CPI). Correlational and regression analysis showed a modest overlap between the two measures. We also explored the higher-order factor structure of the two measures and their relationship. The results seem to indicate that the two tests were measuring different aspects of personality. Limitations are acknowledged.

Keywords

Personality, MBTI, CPI, Jung, Folk Concepts, Coaching

1. Introduction

Over the years, many personality tests have been developed for various purposes and are based on different theories (Furnham, 2020). Some are very well known and used extensively, not only in research but practically in therapeutic, coaching and work settings. Some, once popular, appear to have fallen out of favour (Furnham, 2008ab, 2018) while others have only become more popular in the past decade or so; consequently, there are many studies that compare tests (Furnham, 1996).

This paper looks at the relationship between two famous psychology tests, both of which have existed for over 50 years: one based on Jungian theory (Jung,

1921), the other on folk concepts of personality. They differ particularly on one feature: The MBTI was derived from a theory of personality while the CPI set out to capture “folk concepts” of personality (Jones & Peskin, 2017).

1.1. Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985)

The Myers Briggs Type Indicator (MBTI) has been translated into around 25 languages and described over 40 years ago as “*probably the most widely used instrument for non-psychiatric populations in the area of clinical, counselling, and personality testing*” (Devito, 1985: p. 1030). It remains among the most well-known of all personality tests (Furnham, 2018). Moyle and Jackson (2018) have recently offered a robust defence of the MBTI and its use in applied settings, though it has fallen out of favour for most academic psychologists (Furnham, 2022a).

This Jungian-based test assesses four dimensions, and the scoring system unusually classifies people into types, a concept rejected by personality theorists who have long favoured dimensional models. The test thus classifies, as do most people, individuals into either Introvert or Extravert: there is thus no distinction between an extreme or moderate Extravert, or the concept of an Ambivert. Participants get a letter (I or E) to denote either an introvert or extravert and the same is true for the other three dimensions. The spectrum hypothesis, now accepted by all personality theorists, asserts that all traits are *normally distributed* and that it is unwise to categorise into types because so much nuanced and crucial information is lost.

McCrae and Costa (1989) related the MBTI to the Big Five personality traits and noted that none of the four types appeared to be related to Neuroticism. They noted various important problems with the measure and theory not least of which Jung apparently argued that people cannot accurately report on their personality making questions like the MBTI misleading or invalid. Also, the MBTI includes the JP dimension which is not part of Jung’s theory. The questionnaire fails to measure Neuroticism which is one of the most fundamental dimensions of personality acknowledged by all theorists since the ancient Greeks.

Furnham (2020) concluded “*There have, over the years, been academic and practitioner assessments and critiques of the MBTI and the Jungian theory upon which it is based. Some of these critiques have been more disinterested and objective than others. Typical objection by practitioners is that the test was not designed for selection at work. Some argue that both internal and external reliability falls below minimum standards. The ipsative nature of the test means in essence people are measured against themselves, and the bipolar conception assumes that traits are opposites*” (p. 3). Nevertheless, there remains great interest in the test from practitioners.

There are numerous studies that have related the MBTI to other personality tests, like Saggino and Kline (1996) who studied the relationship between the

MBTI, Cattell's 16PF and Eysenck's Eysenck Personality Questionnaire. Furnham (1996) and Furnham et al. (2003) have examined the relationship between the MBTI and the well-established NEO-PI-R. Furnham (2008a, 2008b) related the MBTI to the Fundamental Interpersonal Relations Orientation-Behaviour, (FIRO-B) while Furnham and Crump (2014) related it to the Hogan Developmental Survey (HDS). More recently the MBTI has been related to aberrant personality traits (Furnham, 2022b).

This study looks at the relationship between the MBTI and another well-established personality test: the CPI.

1.2. California Psychological Inventory-434 (CPI-434) (Gough & Bradley, 1996)

There are a number of recent reviews of this famous measure (Atkinson & Hatrup, 2003; Megargee, 2009). It also continues to attract research (e.g. Dunlop, et al., 2014). Jones and Peskin (2017) noted that “*The California Psychological Inventory (CPI) is one of the oldest and most commonly-used standardized tests available to assess personality in non-clinical adult populations. The CPI has undergone multiple revisions to maintain currency in language and tone and to remove disability-related content, and remains a powerful, reliable, and valid measure*”.

The CPI-434 measures 20 “folk concepts” used by people to describe personality (Gough & Bradley, 1996) (see **Table 1**). The CPI-434 has three structural scales: *Internality*, which assesses Extraversion; *Norm-Acceptance* which assesses Conscientiousness; and *Sense of Realization*, which measures personal attainment. Gough (1987) argued that the CPI essentially measures four of the Big Five factors Extraversion, Control (similar to Conscientiousness) Flexibility (Openness) and Consensuality (Agreeableness).

From a psychometric perspective the CPI appears to have reasonable levels of reliability and validity (Gough & Bradley, 1996). Inevitably studies have looked at the relationship between the Big Five and the CPI (Fleenor & Eastman, 1997). In an important study McCrae, Costa and Piedmont (1993) found all of the 20 CPI primary scale related to one or more of the big five factors, but that Agreeableness was under-represented by the CPI scales.

There are three validity scales: *well-being*, used to measure “fake bad”; *good impression*, used to measure “fake good”; and *communality*, used to measure random responding. There have also been various ways of classifying the 20 items into a higher order classification; *Alpha*, *Beta*, *Delta* and *Gamma* which are determined by two dimensions—the degree to which the person is *norm-favouring* or *norm-questioning* (called the v.2 scale), and the degree to which they are more externally or internally focused (the v.1 scale). This suggests that *Alpha* personality types are enterprising, dependable and outgoing; *Betas* are reserved, responsible and moderate; *Gammas* are adventurous, restless, and pleasure-seeking while *Deltas* are withdrawn, private, and disaffected.

Table 1. CPI dimensions.

Dominance (Do)	Leadership ability, dominance, persistence, and social initiative.
Capacity for Status (Cs)	Qualities and attributes that underlie and lead to the attainment of status.
Sociability (Sy)	Gregariousness, outgoing, sociable, participative temperament.
Social Presence (Sp)	Poise, spontaneity, and self-confidence in personal and social interaction.
Self-Acceptance (Sa)	A sense of personal worth, self-acceptance, and capacity for independent thinking and action
Independence (In)	Independence, confident, and resourceful, but not affiliative.
Empathy (Em)	The capacity to think intuitively about people/understand their feelings and attitudes.
Responsibility (Re)	Conscientiousness, responsibility, and dependability.
Socialization (So)	Social maturity, integrity, and rectitude.
Self-Control (Sc)	Self-regulation, self-control, and freedom from impulsivity and self-centeredness.
Good Impression (Gi)	The ability to create a favourable impression and concern about how others react to them.
Communality (Cm)	The state of being in communion
Sense of Well Being (Wb)	The ability to minimize worries and complaints and be free from self-doubt and disillusionment.
Tolerance (To)	Permissive, accepting, and non-judgmental social beliefs and attitudes.
Achievement via Conformance (Ac)	Factors that facilitate achievement in any setting where conformance is a positive behaviour.
Achievement via Independence (AI)	Factors that facilitate achievement in any setting where autonomy and independence are positive behaviors.
Intellectual Efficiency (Ie)	The degree of personal and intellectual efficiency that the individual has attained.
Psychological-Mindedness (Py)	The extent to which the individual is interested in, and responsive to, the inner needs, motives, and experiences of others.
Flexibility (Fx)	The amount of flexibility and adaptability of a person's thinking and social behavior.
Femininity/Masculinity (F/M)	A person's interest in and capacity for patience and personal and interpersonal sensitivity.

For 30 years of research there were 3 vectors: Vector 1 (V1) is now labelled “*Participating/Private*,” Vector 2 (V2) is labelled “*Approving/Questioning*,” and Vector 3 (V3) is labelled “*Fulfilment*.” The first two vectors create a quadrant of personality styles labelled “Implementers” (formerly “Alphas”) and are both extraverted and supportive of social norms; “Supporters” (formerly “Betas”) and are introverted and norm-favouring; “Innovators” (formerly “Gammas”) and are extraverted and norm-questioning, and “Visualizers” (formerly “Deltas”) and are introverted and norm-questioning. V3 serves as an indicator of the relative healthiness of the various personality types. However, the vectors have now changed.

According to the manuals:

Implementers are leaders who make things happen being confident directing others and taking necessary action; their self-perception is ambitious, efficient, industrious, and organized. Others see them as active, and enterprising, and organized, and not as apathetic, cynical, moody, or shy. *Supporters* lead by example and are hard workers, care about their impact on others while also being tolerant, caring, and motivated to contribute. They see themselves as conscientious, modest, patient, and reserved, but not as assertive, irritable, outspoken, or sarcastic. Others rate them as cautious, inhibited, peaceable, and retiring, but not as adventurous, daring, individualistic, or quick.

Innovators, by definition develop new ideas, see things differently and choose the role of change agent in organizations. Their self-image is someone who is complicated, humorous, pleasure-seeking, and spontaneous, and not conservative, conventional, placid, or submissive. Observers rate them as clever, frank, impulsive, and witty, and not conservative, conventional, methodical, or timid. *Visualizers* tend to be private and have an unconventional worldview with an artistic imagination. They see themselves as detached, frank, reflective, and unconventional, but low on cheerful, enthusiastic, forceful, or sociable. Others rate them as dreamy, modest, quiet, and unassuming, and low on assertiveness, energetic, outgoing, or talkative.

1.3. Comparing the Two Tests

There have been very few studies comparing these two tests. An exception is [Fleenor \(1997\)](#), who found a number of significant correlations between MBTI and CPI scores. Extraversion was related to CPI scores on Dominance (.44), Capacity for Status (.41), Sociability (.66), Social Presence (.52), Self-acceptance (.46), Independence (.32), Empathy (.52), and Self-Realization (v.3) (.23). Introversion was correlated with Internality (v.1) (.56). Sensing was related to Internality (v.1) (.30) and Norm-favouring (v.2) (.26). Intuition was correlated with Capacity for Status (.39), Sociability (.24), Social Presence (.33), Self-acceptance (.25), Achievement via Independence (.32), Intellectual Efficiency 12 (.28), Psychological Mindedness (.28), Flexibility (.42), Independence (.33), Empathy (.42), and Self-Realization (v.3) (.28).

Table 2. Correlations between MBTI scores and CPI scales.

CPI Scales	MBTI Scores			
	EI	SN	TF	JP
Psychological Mindedness (Py)	-.06	.28	-.08	.05
Flexibility (Fx)	-.13	.42*	.18	.43*
Independence (In)	-.32*	.33*	-.12	.16
Empathy (Em)	-.52*	.42*	.16	.23
Femininity-Masculinity (Fm)	.13	-.03	.13	-.09
Internality (v.1)	.56*	-.30*	.00	-.15
Norm-Favouring (v.2)	-.08	-.26	-.13	-.37*
Self-Realisation (v.3)	-.23	.28	.05	.05

Note. * $p < .05$.

The Thinking-Feeling dimension of the MBTI appeared to be unrelated to CPI scores. Judging was related to Socialization (.22), Self-control (.26), Achievement via Conformity (.29), and Norm-Favoring (v.2) (.38). Perceiving was correlated with Social Presence (.23), Flexibility (.43), and Empathy (.23). Other results are shown in **Table 2**.

He noted “*The following CPI scales did not appear to be related to any of the MBTI dimensions: Well-being, Responsibility, Tolerance, Good Impression, Communality, and Femininity-Masculinity. When presenting CPI and MBTI results, it is recommended that feedback-givers emphasize the scores on these CPI scales because they appear to be furnishing information not provided by the MBTI. As can be seen from the results of the factor analysis, several CPI scales that are unrelated to MBTI scores load on one of the Big Five factors. For example, although Well-being is not correlated with Intuition, it does load on the Openness to Experience factor*” (p. 11).

This study looks at the relationship between these two measures at the facet level. Further, it uses regressions as well as correlations to investigate the relationship between the two measures as well as discriminant analysis. In this sense the study was part replicative, but innovative in our analysis.

2. Method

2.1. Participants

There were 383 participants; 46 were female and 320 were male, the remainder did not specify their sex. Their age ranged from 19 to 66 years, with a mean of 38.14 (SD = 9.59). They were educated managers completing development centre exercises in Great Britain.

2.2. Materials

Myers-Briggs Type Indicator (MBTI) (Myers & McCaulley, 1985). Form G of

the MBTI is a 94-item un-timed questionnaire (administration time is 15 - 25 minutes), determining preferences on eight dimensions of four bi-polar scales. It has a satisfactory level of both reliability (Alpha range .80 to .84) and validity (Carlson, 1985).

California Psychological Inventory-434 (CPI-434) (Gough & Bradley, 1996). This is a 434-item un-timed questionnaire measuring 20 folk concept scales which may be seen as facets and three higher order (domain) traits (see **Table 1**). All items are statements answered by “true” or “false”. The manual reports satisfactory levels of reliability and validity of the test (Gough & Bradley, 1996).

2.3. Procedure

Participants were tested as part of a middle management development center exercise. They came from a variety of organizations in the public and private sector and were obligated to attend this course. All of the testers were trained in test administration and interpretation. The tests were administered in 2 sessions, with breaks in between to avoid any effects of fatigue. Not all participants completed all the tests because of the requirements of the organizations from which they came. Individual feedback was given. Ethics permission was sought and gained.

3. Results

3.1. Correlational Analysis

Table 3 shows the correlations between the two measures. Inevitably the correlations between the two opposite types (E vs I; S vs N) were almost opposites. The results showed that 6/20 correlations with EI were significant ($r > .30$), 7/20 for the SN factors; 0/20 for TF and 1/20 for JP. Considering the original “higher order” factors, the correlational analysis showed Extraversion is negatively, and Introversion positively, associated the V1: Participative-Private/Internal, which makes sense as it confirms the work of Fleenor (1997). Further, the results showed that V2: Approving-Questioning was associated with the JP dimension, which also as it confirms the work of Fleenor (1997).

3.2. Regression Analysis

Following the correlations, three step-wise regressions were calculated: in each case the higher order factors (V1, V2, and V3) were the criterion score while demographics (sex and age) and the MBTI scores were the predictor scores (see **Table 4**).

Of the 182 participants who had complete data, two were identified as multi-variate outliers using Mahalanobis distance and removed prior to the analysis. A direct discriminant function analysis was then performed using the four MBTI bipolar scales (J-P scale, E-I scale, S-N scale and T-F scale) as predictors and the groups were the quadrant of personality types derived from crossing the first two vectors of the CPI. Of the remaining 180 cases, 37 were Implementers (formerly

Table 3. Correlations between the 8 MBTI scores and the twenty CPI scores.

CPI Score	MBTI Score							
	mbti.e	mbti.i	mbti.s	mbti.n	mbti.t	mbti.f	mbti.j	mbti.p
cpido	.375**	-.447**	-.201**	.139	.096	-.100	-.034	.023
cpics	.367**	-.414**	-.316**	.225*	.002	-.078	.070	.012
cpisy	.658**	-.626**	-.227**	.227**	-.147	.054	-.101	.117
cpisp	.464**	-.473**	-.409**	.348**	-.198**	.110	-.225**	.205**
cpisa	.365**	-.355**	-.503**	.443**	-.180*	.115	-.268**	.265**
cpiin	.248**	-.334**	-.386**	.311**	-.009	-.031	-.203*	.251**
cpiem	.422**	-.438**	-.450**	.363**	-.190**	.092	-.157**	.159*
cpire	.138	-.222*	-.088	.030	-.133	.018	.208*	-.238**
cpiso	.164*	-.165*	.024	-.072	-.085	.102	.148*	-.159*
cpisc	-.068	.011	.113	-.124	-.004	-.073	.177*	-.228**
cpigi	.184*	-.242**	.077	-.139	.126	-.148*	.235**	-.268
cpicm	.109	-.110	-.185*	.110	-.197*	.084	-.125	.076
cpiwb	.157	.271**	-.054	-.035	.119	-.136	.027	-.060
cpito	.128	-.180*	-.299**	.231**	-.181*	-.006	-.030	.024
cpiac	.201**	-.239**	.000	-.070	.016	-.108	.297**	-.311**
cpiai	.054	-.114	-.377**	.302**	-.109	-.002	-.050	.063
cpiee	.147	-.198*	-.410**	.328**	-.166	.053	-.112	.123
cpipy	.176*	-.239**	-.171	.113	-.040	-.123	.035	-.021
cpifx	.078	-.104	-.373**	.381**	-.285**	.174*	-.389**	.035
cpifm	-.274**	.330**	.093	.003	-.282**	.280**	.005	-.031
cpiv1	-.583**	.573**	.315**	-.249**	-.038	.013	.145	-.173
cpiv2	.211**	-.281**	.211**	-.310**	.152*	-.066	.426**	-.450**
cpiv3	.188*	-.258**	-.301**	.217**	-.135	.001	-.065	.026

Note. * $p < .05$, ** $p < .01$.

Table 4. Results of regression.

Variables	CPIV1: Internality			CPIV2: Norm Favouring			CPIV3: Self-realisation		
	$F(10,165) = 13.913^{***}$, adj $R^2 = .419$			$F(10,139) = 10.360^{***}$, adj $R^2 = .343$			$F(10,304) = 5.633^{***}$, adj $R^2 = .206$		
	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>	<i>B</i>	β	<i>t</i>
Age	.061	.136	2.143**	.085	.187	2.778**	-.218	-.264	-3.57***
Sex	.880	.067	1.071	.057	.004	.066	.456	.019	.261
mbti.e	-.289	-.371	-2.61**	.065	.084	.555	-.409	-.289	-1.734
mbti.i	.143	.170	1.207	-.229	-.273	-1.825	-.631	-.413	-2.511*

Continued

mbti.s	.185	.276	2.276**	-.092	-.137	-1.064	-.387	-.317	-2.243*
mbti.n	.013	.015	.124	-.245	-.276	-2.14**	-.140	-.087	-.612
mbti.t	-.160	-.205	-2.012*	.188	.242	2.234**	-.441	-.312	-2.614**
mbti.f	-.127	-.092	-.912	.349	.254	2.362**	-.801	-.321	-2.714**
mbti.j	-.004	-.005	-.038	-.022	-.028	-.204	-.118	-.081	-.537
mbti.p	-.046	-.057	-.459	-.345	-.428	-3.23***	-.204	-.139	-.956

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

Alphas), 44 were Supporters (formerly Betas), 56 were Innovators (formerly Gammas) and 43 were Visualizers (formerly Deltas).

Three discriminant functions were calculated, with a combined $\chi^2(12) = 115.82$, $p < .001$. After removal of the first function, there was still a significant association between groups and predictors, $\chi^2(6) = 47.09$, $p < .001$, but the third function alone was not significant, $\chi^2(2) = .95$, $p = .624$, and will not be further described. The first two discriminant functions accounted for 61.0% and 38.3% of the between-group variability respectively. As illustrated in **Figure 1**, the first discriminant function separates Supporters/Implementer from Innovators/Visualizers, with greatest separation between Supporters and Innovators. The second function separates Implementers/Innovators from Visualizers/Supporters, with greatest separation between Implementers and Visualizers.

Table 5 presents the correlations between the predictors and discriminant functions, and indicates that the best predictors for distinguishing between Supporters/Implementers and Innovators/Visualizers (first function) are scores on the E-I scale. Supporters ($M = 39.82$, $SD = 10.00$) and Implementers ($M = 44.51$, $SD = 10.45$) are less extraverted than Innovators ($M = 53.93$, $SD = 7.59$) and Visualizers ($M = 51.84$, $SD = 9.41$). For the second function, the best predictors for distinguishing between Implementers/Innovators from Visualizers/Supporters is the J-P scale, and to a lesser extent, the S-N scale. Implementers ($M = 55.57$, $SD = 8.03$) and Innovators ($M = 52.00$, $SD = 8.67$) have higher scores on the J-P scale than Visualizers ($M = 42.67$, $SD = 11.76$) and Supporters ($M = 44.93$, $SD = 10.10$). On the S-N scale, Implementers ($M = 50.95$, $SD = 11.29$) have higher scores than Visualizers ($M = 39.58$, $SD = 10.08$) but the scores for Innovators ($M = 44.57$, $SD = 9.16$) and Supporters ($M = 43.71$, $SD = 12.68$) are very similar, indicating that these two groups are not well separated on this scale.

For the usable sample of 180 participants, 97 (54%) were correctly classified compared to 45 (25%) who would be correctly classified by chance alone. The group with the highest percentage of correct classifications was Supporters (64%) followed by Implementers (57%) then Innovators (55%), with the worst correct classification being found in the Visualizers group (40%).

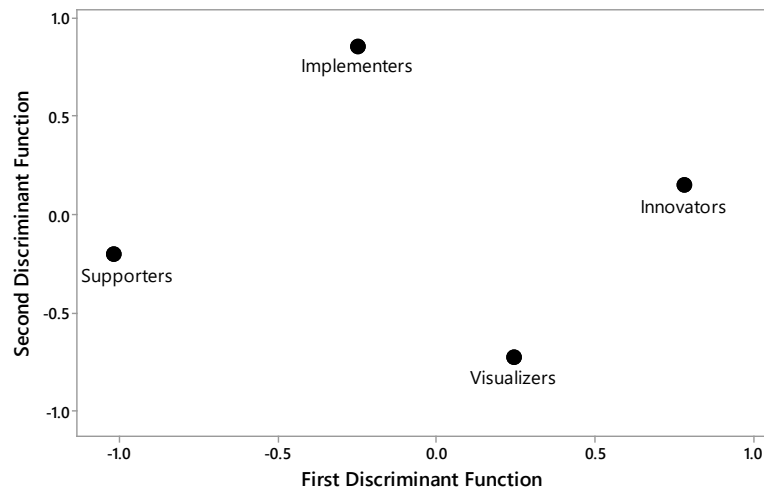


Figure 1. A plot of the four group centroids on two discriminant functions derived from the four MBTI bi-polar scales.

Table 5. Correlations between the four MBTI scales and the first two discriminant functions.

Scale	Function 1	Function 2
E-I	.890	-.220
J-P	.226	.906
S-N	-.080	.641
T-F	.200	.096

4. Discussion

This study is one among many which have looked at the relationship between the MBTI and other personality scales (Furnham, 2022b). One central question is: to what extent do tests measure unique variables (discriminant validity)? That is, there is no correlation between the scales. Psychometricians are interested in convergent and divergent validity; the former where test scores are highly correlated because they assess the same concept and the latter where they are statistically and conceptually unrelated because they measure different concepts. This is similar to the *Jingle-Jangle fallacy*: two different concepts or measures are the same because they bear the same name (*jingle fallacy*) or that two identical or very similar measures concepts are different because they have different labels (*jangle fallacy*). Thus, the jangle fallacy occurs when two tests with *different names/labels* measure essentially quite *different constructs*, while the jingle fallacy is based on the assumption that two measures that have the same name measure the same construct.

One of the most fundamental dimensions of personality is introversion-extra-version found in nearly all personality scales; this study showed that the MBTI scale was logically correlated with five CPI scales: Dominance, Capacity for Status, Sociability, Social Presence, Self-Acceptance and Empathy. This reflects par-

ticularly the people-oriented aspects of extraversion, as well as confidence, but also the idea of dominance and status which is less emphasised in Jungian theory and the MBTI. It is interesting that empathy is associated with extraversion which is rarely found in standard descriptions of extraversion and may reflect an interest in others being thought of as empathy. Similarly, the sensation-seeking, excitement-oriented, risk-taking aspect of extraversion identified particularly in the Eysenckian model seems to be missing from both CPI and MBTI (Furnham, 2022a). However, the theme of being active and enterprising is expressed in the higher-order factor of Implementer which is closely associated with the EI scale.

Predictably the SN scale showed that N was positively related to the factors: Achievement via Independence, Intellectual Efficiency and Flexibility. Yet N, like E, was correlated with Social Presence, Self-Acceptance and Empathy, which is not found in the Jungian or MBTI description.

Interestingly our results, similar to those of Fleenor (1997) showed very little association between the 20 CPI scales and the TF dimension. As noted above, other studies that examined the correlation between TF and other personality factors have shown few associations though some have speculated that it measures stability/adjustment vs Neuroticism (Furnham, 1996, 2008a). Interesting research suggests that the TF dimension is closely associated with “dark-side” or aberrant personality traits (Furnham, 2022b) which the CPI clearly does not measure.

The same was true for the problematic JP dimension, though our results concur with those of Fleenor (1997) who found it correlated with the higher-order Norm favouring or *Norm-Acceptance dimension* otherwise called “adjustment by social conformity”.

One of the more interesting findings is where there is little or no overlap between the scales. Thus, there were eight CPI scales; responsibility, socialization, self-control, good impression, communality, sense of well-being, tolerance and psychological mindedness with few, if any significant, correlations with the MBTI measures. This may suggest that folk concepts and psychological theories do not overlap a great deal. It is usually the aim of personality theorists to derive theories and tests which parsimoniously describe the fundamental differences between individuals and offer some explanations for the processes and mechanisms by which they operate. This is not the same aim as lay people who use folk concepts. Thus, perhaps to the surprise of lexical theorists, lay concepts, as opposed to trait words, seem little related to the academic theories of personality.

Like all studies, this had numerous limitations. It was an example of a self-report, cross-sectional study based on a modest and unrepresentative sample—studies that are now out of favour. However, they are necessary to investigate the psychometric properties of tests. Ideally, it would have been better to have a larger sample with more details about the individuals. Equally, it would be most desirable to have some other behavioural data on each individual’s health, happiness, relationships and work success which has been noted to be a function of personality so that the predictive validity of these tests could be established.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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