

MBTI® Step II Instrument English and French Factorial Validity

Research Department
Psychometrics Canada

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1-800-661-5158 • Tel 780-469-2268 • Fax 780-469-2283 • info@psychometrics.com • www.psychometrics.com

Summary

This study was conducted to examine the factor structure of the MBTI Step II instrument in English and French. The similarities between the factors in Canadian English and French samples were examined by means of factor analysis and congruency coefficients. The results indicate that support for the factorial validity of the MBTI Step II instrument.

Introduction

The Myers-Briggs Type Indicator® (MBTI®) Step II instrument is an assessment of psychological type. It provides five facet scores for each of the four dichotomies of the MBTI instrument. These four dichotomies measure the Jungian concepts of Extraversion-Introversion; Sensing-Intuition; Thinking-Feeling; and Judging-Perception. In the MBTI Step II instrument each of the four dichotomies is made up of a number of components or facets. The 20 facets are described in Table 1. As facets of a dichotomy each of the facets is by nature also dichotomous. For example, the Extraversion-Introversion dichotomy consists of Initiating-Receiving, Expressive-Contained, Gregarious-Intimate, Active-Reflective and Enthusiastic-Quiet facets. Detailed descriptions of these facets and the theory underlying them can be found in the MBTI Step II Manual (Quenk, Hammer and Majors, 2001).

Previous studies of the MBTI Step II instrument and its precursor the MBTI Form K have looked at the relationship of the facets to their underlying dichotomies (Saunders, 1987; Johnson and Saunders, 1990; Quenk, et al, 2001). Both exploratory factor analysis and confirmatory factor analytical studies confirm that all 20 facets had high

factor loadings on their respective dichotomies.

Quenk et al (2001) report that second-order factor analysis of the MBTI Step II facets resulted in a clear 4 factor solution that showed the expected 5 facets loading on the appropriate dimensions. They further report the results of a confirmatory factor analysis that tested the placement of the five Step II facet scales within each preference block. All fit indices demonstrated that the 4 preference factor model provides an excellent fit with the data.

The MBTI Step II instrument is used in many countries and has been translated into many languages. Establishing the level of generalizability of data coming from USA personality inventories to other countries, cultures and languages, has become an important task. Work with five-factor personality models (McCrae and Costa, 1997), the Eysenck Personality Questionnaire (Barrett and Eysenck, 1984; Eysenck, Barrett and Eysenck, 1985; Barrett, Petrides, Eysenck and Eysenck, 1998), and the California Psychological Inventory (Schaubhut, Thompson and Morris, 2007) show that there is a trend towards emphasizing universality of personality structures that may be generalized over many contexts.

The establishment of factorial invariance is important for establishing generalizability and test validity. The existence of similar constructs with similar meaning across languages relate to the first of three level of construct equivalence described by van de Vijver and Poortinga (1997) and suggested by van de Vijver & Hambleton (1996) as being fundamental to an accurate test translation. Evidence for invariance must be established before results from quantitative comparisons across different groups can be completely accepted. Accordingly, it is essential to establish the level of equivalence of the Canadian

French translation of the MBTI Step II instrument to the English version. This study will explore the adequacy of the second order factor structure of the MBTI Step II instrument for both an English Canadian and a French Canadian sample.

Method

Participants in this study were drawn from archival data of individuals who took the MBTI Step II instrument in English or the MBTI Step II instrument in French. The English sample consists of 22900 assessments (46% male and 54% female). The French sample consists of 5578 participants (47% male and 53% female). Participants came from over 500 organizations and from every Province in Canada.

Measures

The MBTI Step II instrument is a measure of psychological type. It contains 144 forced-choice items. It is comprised of two sets of scales: first, four sets of dichotomous preferences – Extraversion-Introversion, Sensing-Intuition, Thinking-Feeling, and Judging-Perceiving; second, 20 facet scales that are grouped into the four preferences – five per preference (see Table 1).

The MBTI Step II instrument was translated into Canadian French. It uses the same items and scoring procedures as the English equivalent.

Procedure

The inter-correlation matrices of 20 facets scales for each sample were calculated. Principal components analysis was applied to each correlation matrix with varimax rotation. A comparison was made between the factor structures using procedures and methods outlined by Barrett (1986).

Results

Table 2 and 3 show the MBTI Step II facet scale means and standard deviations for each sample. Tables 4 and 5 show the correlations between the Step II Facets and the four MBTI preference scores. This presents good evidence of the relationship between the MBTI preference scales and their related facet scores. The highest correlations in all cases are between in-preference facets and their corresponding preference scale. There is an indication that the SN and JP facet scales have a slightly positive relationship.

The correlation matrices of 20 facets scales for each sample are shown in Tables 6 and 7. Principal components analysis was applied to each correlation matrix, obtaining the following results: for the English Canadian sample four factors with eigenvalues greater than one accounting for 62% of the variance; for the French Canadian sample four factors with eigenvalues greater than one, accounting for 62% of the variance. Table 8 shows the four factors obtained for the English and French samples, using principal components analysis with varimax rotation.

Comparison of the factor solutions with varimax rotation for the two samples was made using congruence analysis, following the procedures outlined by Bartlett (1986). Results are shown in Table 8. All congruence coefficients are above 0.90 which is typically indicative of showing congruence between factors (Barrett, 1986; Ten Berge, 1986). The overall coefficient of congruence (0.99) for the Canadian English and the Canadian French samples demonstrate high similarity for all four factors.

Discussion

The present study sought to demonstrate the initial validity and factor invariance of the MBTI Step II facet scales in two languages. The number and content of the factors is similar to previous studies and reflects the grouping of the facets to the underlying MBTI preferences. All four factors showed near perfect equivalence across languages. The same grouping of facets and preferences is found in both French and English. The results suggest that the factor structure of the MBTI Step II instrument are independent of the translation of the inventory and support confidence in the invariance

of the English and French editions of the MBTI Step II instrument. At this level French and English participants responded to the MBTI Step II instrument in a highly similar fashion. Overall, this study supports the validity of the MBTI Step II facet scales. This gives administrators the first level of confidence that the MBTI Step II instrument may be utilized in English and French with similar interpretations. In addition, it suggests that the personality structure as measured by the MBTI Step II instrument should hold up across cultures and languages.

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Table 1 Content outline of the MBTI Step II Facets

<i>E-I Facet Scales</i>	Descriptions
Initiating-Receiving	Core facet; broad and general focus; describes the basic orientation to communicating and connecting to others.
Expressive-Contained	Focus on communication of emotional states, including feelings, interests, and experiences
Gregarious-Intimate	Focuses on the breadth and depth of connections with others
Active-Reflective	Focuses on engagement with the general environment for entertainment, socializing, and learning
Enthusiastic-Quiet	Focuses on the level and kind of energy used in exchanges with others, rather than on the content of the exchanges
<i>S-N Facet Scales</i>	Descriptions
Concrete-Abstract	Core facet; broad focus perception of the world and the kind of thing we direct energy to
Realistic-Imaginative	Describes how we develop something new through dealing with the tasks and problems of daily living and working
Practical-Conceptual	Deals with the products or outcomes of our perceptions, rather than the process of perception itself
Experiential-Theoretical	Emphasizes the process by which we derive knowledge or meaning from our perceptions.
Traditional-Original	Emphasizes a social-context background that gives meaning to our perceptions
<i>T-F Facet Scales</i>	Descriptions
Logical-Empathetic	Core facet; emphasizes criteria used to make decisions
Reasonable-Compassionate	Emphasizes the standards we use to maintain relationships when making judgments
Questioning-Accommodating	Focuses on how we deal with differences of opinion
Critical-Accepting	Describes what we do after our initial judgments have been made
Tough-Tender	Focus on the impact of our judgments and how we proceed once our judgments have been made
<i>J-P Facet Scales</i>	Descriptions
Systematic-Casual	Core facet; focuses on how we organize our physical environments, including the flow of events, activities, tasks, and projects
Planful-Open-Ended	Emphasizes how we arrange our leisure time activities, including both daily and future plans
Early Starting-Pressure-Prompted	Fairly narrow focus; emphasizes how we manage time with regard to deadlines
Schedules-Spontaneous	Centers on the degree of structure in one's daily activities
Methodical-Emergent	Narrowly focused; centers on how we sequence the smaller tasks to finish larger projects; time and scheduling are not considerations

From: MBTI Step II Manual, Quenk, Hammer, & Majors, 2001

**Table 2 Means and Standard Deviations of MBTI Step II Facet Scales
Canadian French and Canadian English**

Step II Facet Scale	French (n=1835)		English (n=20490)	
	Mean	SD	Mean	SD
<i>E-I Facet Scales</i>				
Initiating-Receiving	-0.91	3.14	-0.73	3.52
Expressive-Contained	-0.34	3.14	-0.83	3.33
Gregarious-Intimate	-0.68	2.99	-0.14	3.21
Active-Reflective	-1.43	2.80	-1.03	3.07
Enthusiastic-Quiet	-0.95	2.80	-0.84	3.33
<i>S-N Facet Scales</i>				
Concrete-Abstract	-0.91	2.56	0.18	2.99
Realistic-Imaginative	0.00	3.28	0.29	3.17
Practical-Conceptual	-0.24	2.95	0.17	2.90
Experiential-Theoretical	-1.17	2.88	-0.42	3.50
Traditional-Original	0.72	2.80	0.52	2.98
<i>T-F Facet Scales</i>				
Logical-Empathetic	-0.40	2.91	-1.31	3.07
Reasonable-Compassionate	-2.20	2.15	-1.24	2.82
Questioning-Accommodating	-0.60	2.34	-0.04	2.76
Critical-Accepting	0.98	3.01	0.50	3.13
Tough-Tender	-0.07	2.71	-0.80	2.87
<i>J-P Facet Scales</i>				
Systematic-Casual	-0.11	3.05	-0.47	3.16
Planful-Open-Ended	0.29	3.21	-0.75	3.56
Early Starting-Pressure-Prompted	-0.51	3.43	-0.13	3.44
Schedules-Spontaneous	-0.79	3.16	-0.98	3.25
Methodical-Emergent	-0.76	3.24	-1.21	3.49

**Table 3 Correlations of Step II Facet Scales with
MBTI Form M Preference Scales - French**

Step II Facet Scale	Form M Preference Scale			
	E-I	S-N	T-F	J-P
<i>E-I Facet Scales</i>				
Initiating-Receiving	0.861	-0.110	-0.014	-0.045
Expressive-Contained	0.759	-0.120	-0.138	-0.097
Gregarious-Intimate	0.738	-0.020	0.014	-0.027
Active-Reflective	0.748	-0.017	0.005	-0.034
Enthusiastic-Quiet	0.754	-0.097	-0.018	-0.110
<i>S-N Facet Scales</i>				
Concrete-Abstract	-0.056	0.851	0.235	0.336
Realistic-Imaginative	-0.137	0.822	0.271	0.350
Practical-Conceptual	-0.018	0.721	0.142	0.220
Experiential-Theoretical	0.025	0.700	0.082	0.095
Traditional-Original	-0.160	0.666	-0.005	0.313
<i>T-F Facet Scales</i>				
Logical-Empathetic	-0.035	0.124	0.864	0.250
Reasonable-Compassionate	-0.070	0.192	0.803	0.301
Questioning-Accommodating	0.126	-0.127	0.231	-0.046
Critical-Accepting	-0.038	0.020	0.497	0.137
Tough-Tender	0.017	0.159	0.818	0.251
<i>J-P Facet Scales</i>				
Systematic-Casual	-0.164	0.333	0.436	0.743
Planful-Open-Ended	-0.039	0.252	0.160	0.792
Early Starting-Pressure-Prompted	-0.081	0.220	0.082	0.510
Schedules-Spontaneous	-0.029	0.287	0.258	0.850
Methodical-Emergent	0.001	0.129	0.167	0.627

Note: Bold indicates correlations of Step I preference scales with the Step II facet scales in that block

**Table 4 Correlations of Step II Facet Scales with
MBTI Form M Preference Scales - English**

Step II Facet Scale	Form M Preference Scale			
	E-I	S-N	T-F	J-P
<i>E-I Facet Scales</i>				
Initiating-Receiving	0.800	-0.087	-0.031	-0.049
Expressive-Contained	0.655	-0.049	-0.132	-0.049
Gregarious-Intimate	0.624	-0.027	-0.004	-0.046
Active-Reflective	0.669	-0.005	-0.029	-0.064
Enthusiastic-Quiet	0.693	-0.104	-0.059	-0.091
<i>S-N Facet Scales</i>				
Concrete-Abstract	-0.073	0.744	0.190	0.323
Realistic-Imaginative	-0.096	0.718	0.186	0.300
Practical-Conceptual	-0.029	0.581	0.081	0.172
Experiential-Theoretical	-0.038	0.707	0.080	0.246
Traditional-Original	-0.094	0.609	-0.010	0.313
<i>T-F Facet Scales</i>				
Logical-Empathetic	-0.075	0.132	0.780	0.183
Reasonable-Compassionate	-0.034	0.104	0.740	0.135
Questioning-Accommodating	0.032	-0.163	0.214	-0.078
Critical-Accepting	-0.065	0.097	0.468	0.093
Tough-Tender	0.014	0.108	0.672	0.111
<i>J-P Facet Scales</i>				
Systematic-Casual	-0.116	0.313	0.317	0.651
Planful-Open-Ended	-0.023	0.244	0.100	0.773
Early Starting-Pressure-Prompted	-0.081	0.233	0.020	0.454
Schedules-Spontaneous	-0.037	0.293	0.140	0.791
Methodical-Emergent	-0.004	0.148	0.107	0.512

Note: Bold indicates correlations of Step I preference scales with the Step II facet scales in that block

Table 5 Correlations of Step II Facet Scales – French Canadian Sample (n = 1835)

	Step II Facet Scale																			
Step II Facet Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 Initiating-Receiving	1.00																			
2 Expressive – Contained	0.56	1.00																		
3 Gregarious – Intimate	0.55	0.47	1.00																	
4 Active – Reflective	0.64	0.50	0.55	1.00																
5 Enthusiastic - Quiet	0.55	0.52	0.66	0.57	1.00															
6 Concrete - Abstract	-0.05	-0.09	0.03	0.01	-0.06	1.00														
7 Realistic - Imaginative	-0.11	-0.16	-0.04	-0.05	-0.13	0.65	1.00													
8 Practical – Conceptual	-0.05	0.00	0.03	0.05	-0.03	0.57	0.57	1.00												
9 Experiential - Theoretical	-0.01	-0.01	0.07	0.07	0.06	0.52	0.41	0.42	1.00											
10 Traditional - Original	-0.16	-0.13	-0.08	-0.08	-0.18	0.53	0.54	0.52	0.33	1.00										
11 Logical - Empathetic	0.00	-0.13	0.00	0.01	-0.02	0.15	0.19	0.07	0.03	-0.06	1.00									
12 Reasonable - Compassionate	-0.04	-0.14	0.01	-0.01	-0.04	0.22	0.23	0.10	0.09	0.01	0.60	1.00								
13 Questioning - Accommodating	0.14	0.05	0.10	0.09	0.14	-0.09	-0.07	-0.13	-0.08	-0.28	0.21	0.19	1.00							
14 Critical - Accepting	-0.04	-0.08	-0.01	0.00	0.01	0.05	0.05	0.02	-0.05	-0.07	0.43	0.40	0.23	1.00						
15 Tough - Tender	0.05	-0.05	0.06	0.03	0.04	0.19	0.18	0.11	0.08	-0.04	0.62	0.60	0.22	0.44	1.00					
16 Systematic – Casual	-0.11	-0.18	-0.10	-0.09	-0.16	0.33	0.37	0.22	0.06	0.28	0.36	0.38	0.02	0.24	0.36	1.00				
17 Planful – Open-Ended	-0.02	-0.04	-0.01	-0.01	-0.08	0.25	0.24	0.19	0.07	0.27	0.12	0.16	-0.03	0.08	0.12	0.47	1.00			
18 Early-Starting – Pressure-Prompted	-0.05	-0.05	-0.06	-0.06	-0.12	0.20	0.21	0.14	0.08	0.24	0.04	0.11	-0.13	-0.03	0.05	0.35	0.36	1.00		
19 Scheduled - Spontaneous	-0.01	-0.05	0.00	-0.01	-0.06	0.28	0.28	0.17	0.09	0.28	0.21	0.25	-0.08	0.07	0.20	0.54	0.60	0.46	1.00	
20 Methodical - Emergent	0.03	-0.02	0.01	0.04	-0.03	0.13	0.14	0.05	0.04	0.05	0.14	0.17	0.02	0.04	0.13	0.39	0.40	0.37	0.47	1.00

Note: Bold italics indicates correlations between facet scales within a preference block

Table 6 Correlations of Step II Facet Scales – English Canadian Sample (n = 20490)

	Step II Facet Scale																			
Step II Facet Scale	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 Initiating - Receiving	1.00																			
2 Expressive - Contained	0.57	1.00																		
3 Gregarious - Intimate	0.58	0.52	1.00																	
4 Active - Reflective	0.68	0.53	0.60	1.00																
5 Enthusiastic - Quiet	0.62	0.58	0.64	0.63	1.00															
6 Concrete - Abstract	-0.09	-0.07	-0.03	-0.01	-0.11	1.00														
7 Realistic - Imaginative	-0.11	-0.10	-0.08	-0.05	-0.18	0.69	1.00													
8 Practical - Conceptual	-0.05	0.00	0.03	0.06	-0.06	0.57	0.58	1.00												
9 Experiential -Theoretical	-0.06	-0.04	0.02	0.03	-0.05	0.65	0.55	0.49	1.00											
10 Traditional - Original	-0.13	-0.05	-0.04	-0.04	-0.15	0.62	0.60	0.54	0.51	1.00										
11 Logical - Empathetic	-0.07	-0.18	-0.04	-0.07	-0.11	0.22	0.22	0.07	0.09	0.00	1.00									
12 Reasonable - Compassionate	-0.02	-0.13	0.00	-0.03	-0.04	0.19	0.17	0.08	0.10	-0.04	0.70	1.00								
13 Questioning - Accommodating	0.06	-0.03	-0.01	0.00	0.06	-0.15	-0.12	-0.17	-0.16	-0.32	0.22	0.26	1.00							
14 Critical - Accepting	-0.07	-0.13	-0.04	-0.06	-0.06	0.15	0.15	0.09	0.07	-0.01	0.47	0.50	0.30	1.00						
15 Tough - Tender	0.03	-0.10	0.03	0.02	0.01	0.19	0.18	0.10	0.09	-0.04	0.63	0.69	0.29	0.52	1.00					
16 Systematic - Casual	-0.10	-0.13	-0.12	-0.12	-0.18	0.39	0.36	0.20	0.25	0.30	0.37	0.32	-0.01	0.22	0.29	1.00				
17 Planful - Open-Ended	-0.03	-0.02	-0.03	-0.05	-0.05	0.28	0.25	0.15	0.22	0.29	0.14	0.10	-0.08	0.08	0.07	0.56	1.00			
18 Early Starting - Pressure-Prompted	-0.08	-0.06	-0.09	-0.08	-0.12	0.26	0.25	0.14	0.21	0.28	0.05	0.02	-0.14	-0.03	-0.01	0.40	0.42	1.00		
19 Schedules - Spontaneous	-0.04	-0.04	-0.03	-0.06	-0.08	0.34	0.31	0.18	0.27	0.34	0.19	0.13	-0.10	0.08	0.11	0.63	0.69	0.50	1.00	
20 Methodical - Emergent	0.01	-0.03	-0.03	-0.02	-0.05	0.18	0.17	0.07	0.14	0.15	0.15	0.12	-0.03	0.05	0.08	0.44	0.43	0.43	0.51	1.00

Note: Bold italics indicates correlations between facet scales within a preference block

Table 7 Factor loadings of French and English Versions of the MBTI Step II Facet Scales

Step II Facet Scale	F1	F1	F2	F2	F3	F3	F4	F4
	French	English	French	English	French	English	French	English
Initiating-Receiving	0.82	0.84	-0.08	-0.09	0.02	0.01	0.02	0.01
Expressive-Contained	0.75	0.76	-0.07	-0.02	-0.13	-0.15	-0.02	-0.01
Gregarious-Intimate	0.80	0.81	0.05	0.02	0.05	0.02	-0.02	-0.04
Active-Reflective	0.81	0.84	0.04	0.05	0.03	0.00	0.00	-0.06
Enthusiastic-Quiet	0.82	0.84	-0.04	-0.10	0.05	-0.01	-0.10	-0.06
Concrete-Abstract	-0.01	-0.04	0.82	0.83	0.12	0.15	0.17	0.21
Realistic-Imaginative	-0.11	-0.09	0.78	0.81	0.15	0.15	0.19	0.18
Practical-Conceptual	0.03	0.03	0.79	0.79	0.02	0.03	0.07	0.01
Experiential-Theoretical	0.09	0.01	0.70	0.76	0.00	0.03	-0.06	0.13
Traditional-Original	-0.16	-0.08	0.72	0.78	-0.19	-0.16	0.23	0.23
Logical-Empathetic	-0.04	-0.09	0.07	0.09	0.81	0.81	0.13	0.16
Reasonable-Compassionate	-0.06	-0.02	0.13	0.07	0.77	0.85	0.18	0.10
Questioning-Accommodating	0.16	0.02	-0.22	-0.31	0.46	0.50	-0.12	-0.10
Critical-Accepting	-0.04	-0.07	-0.03	0.08	0.68	0.72	0.00	0.01
Tough-Tender	0.04	0.04	0.11	0.09	0.81	0.85	0.11	0.05
Systematic-Casual	-0.16	-0.12	0.23	0.24	0.37	0.31	0.64	0.71
Planful-Open-Ended	0.00	0.00	0.14	0.15	0.05	0.03	0.75	0.80
Early Starting-Pressure-Prompted	-0.07	-0.08	0.12	0.16	-0.09	-0.11	0.68	0.69
Schedules-Spontaneous	0.00	-0.01	0.16	0.20	0.11	0.06	0.82	0.84
Methodical-Emergent	0.05	0.01	-0.04	0.01	0.08	0.06	0.72	0.73
Eigenvalues	4.4	4.9	3.2	3.3	2.6	2.9	1.9	2.0
% Variance accounted for	22.2	24.5	1.61	16.3	13.1	14.3	9.4	9.9

Note: Bold indicates factor loading for facet scales within a preference block

Table 8 Coefficients of Congruence for MBTI Step II Canadian English and Canadian French

<i>E-I Facet Scales</i>	Congruence Coefficients	Congruence Coefficients between the target (French) and maximally congruent comparison matrix (English)				
			Factor 1	Factor 2	Factor 3	Factor 4
Initiating-Receiving	1.00					
Expressive-Contained	1.00	Factor 1	0.99	-0.08	0.11	0.35
Gregarious-Intimate	1.00	Factor 2	-0.09	0.99	-0.04	-0.10
Active-Reflective	1.00	Factor 3	0.11	-0.04	1.00	0.20
Enthusiastic-Quiet	1.00	Factor 4	0.35	-0.09	0.20	1.00
<i>S-N Facet Scales</i>		Overall Solution Congruence = 0.99				
Concrete-Abstract	1.00					
Realistic-Imaginative	1.00					
Practical-Conceptual	1.00					
Experiential-Theoretical	0.96					
Traditional-Original	1.00					
<i>T-F Facet Scales</i>						
Logical-Empathetic	1.00					
Reasonable-Compassionate	0.99					
Questioning-Accommodating	0.97					
Critical-Accepting	0.99					
Tough-Tender	1.00					
<i>J-P Facet Scales</i>						
Systematic-Casual	1.00					
Planful-Open-Ended	1.00					
Early Starting-Pressure-Prompted	1.00					
Schedules-Spontaneous	1.00					
Methodical-Emergent	1.00					