16pf®

16PF® Questionnaire

International Reference Manual

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Table of contents

Table of contents

Introduction

Overview

The 16PF[®] International Reference Manual has been written to provide 16PF users with a single source of information containing norm and technical reference data gathered for different language versions of the 16PF questionnaire. The aim of the manual is to provide one accessible resource that will support international use of the 16PF.

The manual has been divided into separate chapters, with each language version having its own chapter. Each chapter can be read as a stand-alone document, allowing users to read only the section of interest to them.

What is included in this manual?

This document contains psychometric information gathered for the 16PF questionnaire. Information is provided on norm sample description, norm tables, descriptive statistics, reliability and standard error of measurement, global weights/factor equations, response style indices and development of the 16PF questionnaire.

The following languages are included:

- Afrikaans
- Australia
- Canadian (English)
- Chinese
- Czech
- Danish
- Dutch
- Filipino
- French (European)
- German
- Greek
- Indian (English)
- Italian
- Japanese
- Norwegian
- Portuguese (Brazilian)
- Portuguese (European)
- Slovak
- Spanish-American
- Spanish (European)
- Swedish
- Turkish
- UK English
- US English

Afrikaans

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Afrikaans

Afrikaans

Norm sample description

Afrikaans – norm sample (N=794), data collected in 2001

Gender	Number in sample	Percent in sample
Male	384	48.4
Female	410	51.6
Race	**Number in sample**	**Percent in sample**
White	757	95.3
Black	1	0.1
Muslim	11	1.4
Indian	1	0.1
Other	1	0.1
Absent	23	2.9
Total	794	100

Source: Afrikaans 16PF–5 User's Guide 2012, p 2

Norm tables

Afrikaans – overall norm sample (N=794), data collected in 2001

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–3	4–6	7–8	9–10	11–13	14–16	17–18	19–20	21–22	-
Reasoning	B	0–7	8	9	10	11	12	13	14–15	-	-
Emotional Stability	C	0–2	3–4	5–7	8–10	11–13	14–15	16–17	18	19–20	-
Dominance	E	0–3	4–6	7–8	9–11	12–14	15–16	17–18	19–20	-	-
Liveliness	F	0–3	4–6	7–9	10–12	13–15	16–17	18	19–20	-	-
Rule-Conscious-ness	G	-	0–5	6–8	9–11	12–13	14–15	16–17	18–19	20	21–22
Social Boldness	H	0	1–2	3–5	6–8	9–12	13–16	17–18	19–20	-	-
Sensitivity	I	0	1–3	4–6	7–9	10–12	13–15	16–17	18–19	20	21–22
Vigilance	L	0–4	5–6	7–8	9–10	11–12	13–15	16–17	18	19–20	-
Abstract-edness	M	0	1–2	3–4	5–6	7–9	10–12	13–15	16–17	18–19	20–22
Private-ness	N	0–1	2–3	4	5–7	8–10	11–14	15–17	18	19–20	-
Apprehen-sion	O	0–2	3–4	5–6	7–9	10–12	13–15	16–17	18	19–20	-
Openness to Change	Q1	0–4	5–7	8–10	11–12	13–15	16–18	19–20	21–22	23–25	26–28
Self-Reliance	Q2	-	0	1–2	3–4	5–7	8–10	11–13	14–15	16–18	19–20
Perfection-ism	Q3	-	0–2	3–5	6–9	10–12	13–15	16–17	18–19	20	-
Tension	Q4	0–2	3–4	5–6	7–9	10–12	13–15	16–17	18	19–20	-

Source: Afrikaans 16PF–5 User's Guide 2012, p 20

Descriptive statistics

Afrikaans — overall norm sample

Primary Factor		Number of items	Combined (N=794)	
			Mean	SD
Warmth	A	11	13.45	4.72
Reasoning	B	15	11.01	2.06
Emotional Stability	C	10	13.42	4.53
Dominance	E	10	13.21	4.15
Liveliness	F	10	14.79	4.05
Rule-Consciousness	G	11	13.60	4.44
Social Boldness	H	10	11.51	6.27
Sensitivity	I	11	11.84	5.58
Vigilance	L	10	12.97	3.99
Abstractedness	M	11	9.98	5.01
Privateness	N	10	11.19	5.17
Apprehension	O	10	12.30	4.85
Openness to Change	Q1	14	15.45	5.12
Self-Reliance	Q2	10	7.87	5.09
Perfectionism	Q3	10	12.20	4.94
Tension	Q4	10	12.05	4.63

Source: Afrikaans 16PF–5 User's Guide 2012, p 3

Reliability and Standard Error of Measurement

Afrikaans

Primary Factor		Number of items	Cronbach's alpha coefficients	SEM (Sten scores)
Warmth	A	11	0.68	1.07
Reasoning	B	15	0.48	1.40
Emotional Stability	C	10	0.69	1.09
Dominance	E	10	0.66	0.94
Liveliness	F	10	0.65	1.00
Rule-Consciousness	G	11	0.67	1.15
Social Boldness	H	10	0.86	0.75
Sensitivity	I	11	0.75	1.07
Vigilance	L	10	0.61	1.21
Abstractedness	M	11	0.68	1.15
Privateness	N	10	0.76	0.89
Apprehension	O	10	0.71	1.08
Openness to Change	Q1	14	0.59	1.27
Self-Reliance	Q2	10	0.75	1.02
Perfectionism	Q3	10	0.73	0.92
Tension	Q4	10	0.69	1.05

Source: Afrikaans 16PF–5 User's Guide 2012, pp 4–5 (N=794)

Global weights/factor equations

Afrikaans — factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		Afr.	UK/US	Afr.	UK/US	Afr.	UK/US	Afr.	UK/US	Afr.	UK/US
Warmth	A	0.632	0.3			0.258	−0.2				
Emotional Stability	C			−0.478	−0.4						
Dominance	E							−0.048	0.6		
Liveliness	F	0.027	0.3							−0.194	−0.2
Rule-Conscious-ness	G									0.314	0.4
Social Boldness	H	0.266	0.2					−0.098	0.3		
Sensitivity	I					−0.121	−0.5				
Vigilance	L			0.291	0.3			0.329	0.2		
Abstract-edness	M					−0.086	−0.3			−0.125	−0.3
Private-ness	N	−0.204	−0.3								
Apprehen-sion	O			−0.150	0.4						
Openness to Change	Q1					−0.002	−0.5	0.304	0.3		
Self-Reliance	Q2	−0.110	−0.3								
Perfection-ism	Q3									−0.014	0.4
					0.4						

Source: US 16PF−5 Administrator's Manual 2009, p 37

Response Style Indices

Impression Management (IM)

Afrikaans – raw score cut-off points for IM; based on Afrikaans sample (N=794)

Raw score	Cut-off point
0–3	Low range
4–17	Acceptable range
18–24	High range

Afrikaans – raw score to percentile conversion for IM; based on Afrikaans sample (N=794)

Raw score	Percentile	Raw score	Percentile
0–1	1	11	56
2	2	12	65
3	4	13	73
4	7	14	80
5	10	15	86
6	17	16	90
7	23	17	95
8	31	18	97
9	38	19	98
10	47	20–22	99

Source: Afrikaans 16PF–5 User's Guide 2012, p 18

Afrikaans – Impression Management (IM); items/scoring key

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Source: US 16PF–5 Administrator's Manual 2009, p 41

Infrequency (INF)

Afrikaans – raw score cut-off points for INF; based on Afrikaans sample (N=794)

Raw score	Cut-off point
0–3	Acceptable range
4–32	High range

Afrikaans – raw score to percentile conversion for INF; based on Afrikaans sample (N=794)

Raw score	Percentile
0	32
1	73
2	85
3	91
4	95
5	97
6	98
7–32	99

Source: Afrikaans 16PF–5 User's Guide 2012, p 18

Afrikaans – Infrequency (INF); items/scoring key

Item number												
6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: Afrikaans 16PF–5 User's Guide 2012, p 17

Acquiescence (ACQ)

Afrikaans – raw score to percentile conversion for ACQ; based on Afrikaans sample (N=794)

Raw score	Cut-off point
1–94	Acceptable range
73–103	High range

Afrikaans – raw score to percentile conversion for ACQ; based on Afrikaans sample (N=794)

Raw score	Percentile	Raw score	Percentile
0–42	1	61	55
43–44	2	62	59
45–46	3	63	63
47	5	64	68
48	6	65	72
49	7	66	76
50	9	67	80
51	11	68	84
52	14	69	86
53	17	70	89
54	20	71	92
55	24	72	94
56	30	73	95
57	34	74	97
58	39	75–76	98
59	45	77–90	99
60	50		

Source: Afrikaans 16PF–5 User's Guide 2012, p 19

Afrikaans – Acquiescence (ACQ); items/scoring key

Item number												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	47
48	49	50	52	54	57	58	59	60	61	62	63	64
65	66	68	69	71	72	76	77	79	83	85	87	89
90	91	93	94	96	97	99	100	103	105	106	107	108
110	111	112	113	114	116	118	124	125	126	128	130	132
133	134	135	137	138	140	141	142	145	146	148	150	151
152	155	157	158	159	162	164	165	166	167	168	169	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Source: Afrikaans 16PF–5 User's Guide 2012, p 18

Development of the 16PF questionnaire in Afrikaans

The 16PF questionnaire is available in a number of different languages worldwide. In order to allow the South African community to be able to use this useful tool, the Fifth Edition of the 16PF questionnaire had to be put through a thorough translation process.

The translation processes took into account the need to measure the same 16 personality constructs in South Africa. An adaptation needed to be developed in accordance with the OPP translation standards and the ITC Test Adaptation Guidelines. These formed the underlying structure of the 16PF adaptation processes.

The International Test Commission (ITC) has set several guidelines that can be applied to all translation procedures, including back-translation. OPP translation standards share many similarities with both the ITC and other published guidelines for adaptations (such as Hambleton and Patsula, 1999).

Australia

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Response Style Indices

Australia

Norm sample description

Australia – norm sample (N=1,000), data collected in 2002

Gender	Number in sample	Percent in sample	Percent in Aust pop*
Male	500	50	49.8
Female	500	50	50.2

Age (years)	Number in sample	Percent in sample	Percent in Aust pop*
Under 15	-	-	20.6
15–19	43	4.3	7.0
20–24	359	35.9	7.1
25–29	175	17.5	7.7
30–34	123	12.3	7.4
35–39	104	10.4	7.8
40–44	92	9.2	7.5
45–49	59	5.9	7.0
50–54	32	3.2	6.5
55–59	10	1	5.0
60–64	3	0.3	4.1
Over 65	-	-	12.3

Education level	Number in sample	Percent in sample	Percent in Aust pop*
Still at school	-	-	5.4
Some secondary school	1	0.1	32.0
Secondary school	275	27.5	18.8
Undergraduate	350	35	N/A
Apprenticeship/Trainee/Certificate/Vocational	135	13.5	28.1
Graduate	158	15.8	11.5
Postgraduate	81	8.1	4.2

Cultural background	Number in sample	Percent in sample	Percent in sample born in region**
Oceania, Australia & Antarctica	450	50.6	70.4
Africa (excluding North Africa)	8	0.9	0.7
Europe & the former USSR	259	29.1	11.9
Middle East & North Africa	25	2.8	1.7
North-east Asia	23	2.6	1.7
South-east Asia	69	7.8	7.3
Southern Asia	45	5.1	4.8
The Americas	10	1.1	1.5

Note: cultural background items were answered by 889 of the overall 1,000 people (89%).

Source: Australian Manual Supplement 2002, pp 9–10

*Percent in Australian population taken from: Australian Bureau of Statistics (2000) Australian Demographic Statistics. Catalogue #3101.0; Australian Bureau of Statistics (2000) Transition From Education to Work. Catalogue #6227.0

**Participants were asked about both their cultural background and their country of birth. This column shows the percentage of people in the sample born in each of the regions on the left. In several cases, this number is smaller than the number in the previous column, because many people considered themselves to be from a place culturally or ethnically different from Australia, but were born in Australia.

Norm tables

Australia – overall norm sample (N=1,000), data collected in 2002

Primary Factor		Stens									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Warmth	A	0–5	6–8	9–11	12–14	15–17	18–19	20	21	22	-
Reasoning	B	0–1	2–4	5–6	7–8	9–10	11–12	13	14	15	-
Emotional Stability	C	0–5	6–8	9–11	12–14	15–17	18	19	20	-	-
Dominance	E	0–6	7–9	10–11	12–13	14–15	16–17	18	19–20	-	-
Liveliness	F	0–4	5–7	8–10	11–12	13–15	16–17	18	19	20	-
Rule-Conscious-ness	G	0–3	4–5	6–8	9–11	12–14	15–17	18–19	20	21–22	-
Social Boldness	H	0–1	2–4	5–9	10–13	14–16	17–18	19	20	-	-
Sensitivity	I	0–1	2	3–4	5–6	7–10	11–14	15–17	18–19	20–22	-
Vigilance	L	-	0–3	4–5	6–7	8–9	10–11	12–13	14–15	16–17	18–20
Abstract-edness	M	-	0	1	2	3–4	5–7	8–10	11–14	15–18	19–22
Private-ness	N	0–1	2	3–4	5–6	7–8	9–11	12–14	15–17	18–19	20
Apprehen-sion	O	-	0	1–2	3–5	6–8	9–12	13–15	16–17	18	19–20
Openness to Change	Q1	0–9	10–11	12–14	15–17	18–20	21–23	24–25	26	27	28
Self-Reliance	Q2	-	-	0–1	2	3–4	5–7	8–10	11–12	13–15	16–20
Perfection-ism	Q3	0–2	3–5	6–8	9–11	12–15	16–17	18	19–20	-	-
Tension	Q4	-	0	1	2	3–5	6–9	10–12	13–15	16–17	18–20

Source: Australian Manual Supplement 2002, p 12

Descriptive statistics

Australia – overall norm sample

Primary Factor		Number of items	Combined (N=1,000)	
			Mean	**SD**
Warmth	A	11	15.97	4.12
Reasoning	B	15	10.82	2.84
Emotional Stability	C	10	17.21	3.32
Dominance	E	10	15.23	3.43
Liveliness	F	10	14.56	3.80
Rule-Consciousness	G	11	13.75	4.43
Social Boldness	H	10	15.02	5.06
Sensitivity	I	11	9.92	4.95
Vigilance	L	10	9.55	3.71
Abstractedness	M	11	5.39	4.26
Privateness	N	10	8.95	4.60
Apprehension	O	10	8.78	5.23
Openness to Change	Q1	14	20.43	4.50
Self-Reliance	Q2	10	4.73	3.91
Perfectionism	Q3	10	14.58	4.29
Tension	Q4	10	6.55	4.80

Source: Australian Manual Supplement 2002, p 13

Reliability and Standard Error of Measurement

Australia

Primary Factor		Number of items	Cronbach's alpha coefficients	SEM (Sten scores)
Warmth	A	11	0.75	1.00
Reasoning	B	15	0.70	1.10
Emotional Stability	C	10	0.78	0.94
Dominance	E	10	0.71	1.08
Liveliness	F	10	0.70	1.10
Rule-Consciousness	G	11	0.75	1.00
Social Boldness	H	10	0.86	0.75
Sensitivity	I	11	0.77	0.96
Vigilance	L	10	0.72	1.06
Abstractedness	M	11	0.76	0.98
Privateness	N	10	0.78	0.94
Apprehension	O	10	0.78	0.94
Openness to Change	Q1	14	0.76	0.98
Self-Reliance	Q2	10	0.80	0.89
Perfectionism	Q3	10	0.78	0.94
Tension	Q4	10	0.81	0.87

Source: Australian Manual Supplement 2002, p 12

Response Style Indices

Impression Management (IM)

Australia – raw score cut-off points for IM; based on Australian sample (N=1,000)

Raw score	Cut-off point
0–4	Low range
5–22	Acceptable range
23–24	High range

Australia – raw score to percentile conversion for IM; based on Australian sample (N=1,000)

Raw score	Percentile	Raw score	Percentile
0–2	1	14	49
3	2	15	59
4	3	16	63
5	6	17	74
6	7	18	76
7	12	19	84
8	14	20	86
9	20	21	93
10	22	22	94
11	31	23	98
12	35	24	99
13	46		

Source: Australian Manual Supplement 2002, p 12

Australia – Impression Management (IM); items/scoring key

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Source: Australian Manual Supplement 2002, p 14

Infrequency (INF)

Australia – raw score cut-off points for INF; based on Australian sample (N=1,000)

Raw score	Cut-off point
0–6	Acceptable range
7–32	High range

Australia – raw score to percentile conversion for INF; based on Australian sample (N=1,000)

Raw score	Percentile
0–1	56
2	74
3	83
4	88
5	92
6	95
7	97
8	98
9–32	99

Source: Australian Manual Supplement 2002, p 16

Australia – Infrequency (INF); items/scoring key

Item numbers												
6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: Australian Manual Supplement 2002, p 15

Acquiescence (ACQ)

Australia – raw score to percentile conversion for ACQ; based on Australian sample (N=1,000)

Raw score	Cut-off point
0–68	Acceptable range
69–101	High range

Australia – raw score to percentile conversion for ACQ; based on Australian sample (N=1,000)

Raw score	Percentile	Raw score	Percentile
0–36	1	56	51
37	2	57	56
38–39	3	58	62
41	5	59	67
42	6	60	72
43	7	61	77
44	8	62	81
45	10	63	84
46	13	64	87
47	15	65	89
48	18	66	91
49	21	67	93
50	23	68	95
51	27	69	96
52	32	70–72	97
53	36	73–74	98
54	41	75–101	99
55	47		

Source: Australian Manual Supplement 2002, p 17

Australia – Acquiescence (ACQ): items/scoring key

Item numbers												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	45
47	48	49	50	52	54	57	58	59	61	62	63	64
66	68	69	71	72	76	79	83	85	87	90	91	92
93	94	96	97	99	100	103	105	106	107	108	110	111
112	113	114	116	118	124	125	126	128	130	132	133	134
135	137	138	140	141	142	145	146	148	150	151	152	155
157	158	159	162	164	165	166	167	168	169			

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Source: Australian Manual Supplement 2002, p 16

Canadian (English)

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Canadian (English)

Canadian (English)

Norm sample description

Canadian (English) — norm sample (N=2,071), data collected in 1998

Gender	Number in sample	Percent in sample
Male	936	45.2
Female	1135	54.8

Age (years)	Number in sample	Percent in sample
16–17	186	9
18–24	352	17
25–44	1,118	54
45–54	291	14
55–64	83	4
65 and over	41	2

Region	Number in sample	Percent in sample
Ontario	1,044	50.4
British Columbia	296	14.3
Alberta	226	10.9
Nova Scotia	125	6.0
Saskatchewan	85	4.1
New Brunswick	44	2.1
Newfoundland	20	0.9
Northwest Territories	6	0.3
Yukon Territories	25	1.2
Prince Edward Island	21	1.0
Manitoba	129	6.2
Quebec (English)	50	2.4

Race	Number in sample	Percent in sample
White	1,700	82.1
Black/Afro-Canadian	75	3.6
Aboriginal	10	0.5
Asian	143	6.9
Other	143	6.9

Source: Canadian (English) 16PF–5 Manual 2009, p 5 and 6

Norm tables

Canadian English – general population (N=2,071), data collected in 1998

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–5	6–7	8–10	11–13	14–15	16–17	18–19	20	21	22
Reasoning	B	0–3	4–5	6–7	8–9	10–11	12	13	14	15	-
Emotional Stability	C	0–2	3–4	5–8	9–12	13–15	16–17	18–19	20	-	-
Dominance	E	0–3	4–6	7–8	9–11	12–14	15–16	17	18–19	20	-
Liveliness	F	0–2	3–4	5–7	8–10	11–13	14–15	16–17	18	19	20
Rule-Conscious-ness	G	0–2	3–5	6–8	9–11	12–13	14–15	16–18	19–20	21	22
Social Boldness	H	-	0–1	2–4	5–7	8–12	13–16	17–18	19	20	-
Sensitivity	I	0–1	2–3	4–6	7–9	10–12	13–16	17–18	19–20	21	22
Vigilance	L	0–2	3	4–5	6–7	8–10	11–12	13–14	15–16	17–18	19–20
Abstract-edness	M	-	0	1–2	3–4	5–6	7–10	11–13	14–15	16–19	20–22
Private-ness	N	0	1–2	3–5	6–7	8–10	11–13	14–15	16–17	18–19	20
Apprehen-sion	O	0-1	2	3–5	6–8	9–11	12–15	16–17	18–19	20	-
Openness to Change	Q1	0–6	7–9	10–12	13–15	16–18	19–21	22–23	24–25	26–27	28
Self-Reliance	Q2	-	0	1–2	3–4	5–7	8–10	11–13	14–16	17–18	19–20
Perfection-ism	Q3	0–1	2–3	4–6	7–9	10–12	13–14	15–17	18	19	20
Tension	Q4	0–1	2–3	4–5	6–7	8–10	11–13	14–15	16–17	18–19	20

Descriptive statistics

Canadian English – overall norm sample

Primary Factor		Number of items	Combined (N=2,071)	
			Mean	SD
Warmth	A	11	14.96	4.44
Reasoning	B	15	11.08	2.96
Emotional Stability	C	10	14.13	5.12
Dominance	E	10	13.50	4.32
Liveliness	F	10	12.35	4.69
Rule-Consciousness	G	11	13.36	4.93
Social Boldness	H	10	11.62	6.22
Sensitivity	I	11	12.21	5.74
Vigilance	L	10	9.92	4.45
Abstractedness	M	10	7.31	5.21
Privateness	N	10	10.39	5.11
Apprehension	O	10	11.27	5.59
Openness to Change	Q1	14	18.34	5.44
Self-Reliance	Q2	10	7.61	5.16
Perfectionism	Q3	10	11.86	4.93
Tension	Q4	10	10.18	5.20

Source: Canadian (English) 16PF–5 Manual 1998, p 7

Reliability and Standard Error of Measurement

Canadian (English)

Primary Factor		Number of items	Cronbach's alpha coefficients (N=2017)	SEM (Sten scores)
Warmth	A	11	0.67	1.24
Reasoning	B	15	0.74	0.98
Emotional Stability	C	10	0.80	0.88
Dominance	E	10	0.70	1.08
Liveliness	F	10	0.70	1.10
Rule-Consciousness	G	11	0.73	1.05
Social Boldness	H	10	0.86	0.76
Sensitivity	I	11	0.78	1.05
Vigilance	L	10	0.72	1.05
Abstractedness	M	10	0.76	1.27
Privateness	N	10	0.76	1.02
Apprehension	O	10	0.79	0.96
Openness to Change	Q1	14	0.69	1.14
Self-Reliance	Q2	10	0.78	0.93
Perfectionism	Q3	10	0.73	1.04
Tension	Q4	10	0.77	1.03

Source: Canadian (English) 16PF–5 Manual 1998, p 28 and 29

Global weights/factor equations

The Canadian version currently uses US norms.

Canadian (English) – comparison against US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		US	Can	US	Can	US	Can	US	Can	US	Can
Warmth	A	0.3	−0.77			−0.2	0.57				
Emotional Stability	C			−0.4	−0.76						
Dominance	E							0.6	0.85		
Liveliness	F	0.3	−0.63							−0.2	0.33
Rule-Conscious-ness	G									0.4	−0.76
Social Boldness	H	0.2	−0.51		−0.34			0.3	0.51		
Sensitivity	I				0.33	−0.5	0.62				
Vigilance	L			0.3	0.63		−0.42	0.2			
Abstracted–ness	M				0.45	−0.3				−0.3	0.61
Privateness	N	−0.3	−0.61								
Apprehen-sion	O			0.4	0.76						
Openness to Change	Q1					−0.5	0.60	0.3	0.40		
Self-Reliance	Q2	−0.3	−0.65								
Perfection-ism	Q3									0.4	−0.80
Tension	Q4			0.4	0.64						

Source: Canadian (English) 16PF–5 Manual 1998, p 26

Response Style Indices

Impression Management (IM)

Canadian (English) — raw score cut-off points for IM

Raw score	Cut-off point
0–3	Low range
4–20	Acceptable range
21–24	High range

Canadian (English) — raw score to percentile conversion for IM

Raw score	Percentile	Raw score	Percentile
1–2	1	14	66
3	5	15	72
4	7	16	76
5	10	17	82
6	14	18	88
7	18	19	92
8	23	20	95
9	31	21	96
10	37	22	97
11	43	23	98
12	50	24	99
13	58		

Note: data based on a normal distribution and percentiles calculated according to this.

Canadian (English)— Impression Management (IM); items/scoring key

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Infrequency (INF)

Canadian (English) — raw score cut-off points for INF

Raw score	Cut-off point
0–8	Acceptable range
9–32	High range

Canadian (English) — raw score to percentile conversion for INF

Raw score	Percentile
0–1	55
2	71
3	80
4	86
5	90
6	93
7	94
8	95
9	97
10	98
11–32	99

Note: data based on a normal distribution and percentiles calculated according to this.

Canadian (English) — Infrequency (INF) — items/scoring key

Item numbers												
6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Canadian (English) — raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–71	Acceptable range
72–103	High range

Canadian (English) — raw score to percentile conversion for ACQ

Raw score	Percentile	Raw score	Percentile
0–42	1	61	55
43-44	2	62	59
45-46	3	63	64
47	5	64	70
48	6	65	76
49	7	66	80
50	9	67	84
51	11	68	86
52	14	69	90
53	17	70	94
54	20	71	95
55	24	72	96
56	30	73	97
57	34	74	98
58	39	75	99
59	45		
60	50		

Note: Data based on a normal distribution and percentiles calculated according to this.

Canadian (English) — Acquiescence (ACQ) — items/scoring key

Item numbers												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	47
48	49	50	52	54	57	58	59	60	61	62	63	64
65	66	68	69	71	72	76	77	79	83	85	87	89
90	91	93	94	96	97	99	100	103	105	106	107	108
110	111	112	113	114	116	118	124	125	126	128	130	132
133	134	135	137	138	140	141	142	145	146	148	150	151
152	155	157	158	159	162	164	165	166	167	168	169	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Canadian (English)

The development of the Canadian (English) version of the 16PF questionnaire was carried out by Multi-Health Systems, in collaboration with the US distributors IPAT. The impetus for the work came out of IPAT's recognition of the importance of considering cultural differences in the development and use of an instrument.

The development of the Canadian (English) version was done in accordance with IPAT's strict guidelines on test development. These formed the underlying structure of the 16PF adaptation processes.

Chinese (Simplified)

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Response Style Indices

Development of the 16PF questionnaire in Chinese (Simplified)

Chinese (Simplified)

Norm sample description

Chinese (Simplified) – norm sample (N=414), data collected in 2014

Gender	Number in sample	Percent in sample
Male	154	37
Female	260	63

Age (in years)	Number in sample	Percent in sample
Not given	58	14
16–19	2	0.5
20–24	39	9.4
25–34	177	42.8
35–49	134	32.3
50–65	4	1
Total	414	100

Highest educational level	Number in sample	Percent in sample
Not specific or unclear	64	15.5
High school	11	2.7
Diploma	2	0.5
Military university	1	0.2
Bachelor's degree	245	59.2
MBA	6	1.5
Master's degree	79	19.1
PHD	5	1.2
Total	414	100

Occupation	Number in sample	Percent in sample
Employees	181	43
Managers	176	42
Professionals	34	8
Students	25	6
Housewives	4	1
Total	414	100

Employment sector	Number in sample	Percent in sample
Private companies	345	88
State-owned enterprises	23	6
Self-employed	23	6
Total	414	100

Source: Simplified Chinese 16PF—5 Data Supplement 2014, appendix 1

Norm tables

Chinese (Simplified) — overall norm sample (N=414), data collected 2014

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0-4	5-6	7-9	10-12	13-15	16-17	18-19	20-21	22	-
Reasoning	B	0-5	6-7	8	9-10	11-12	13	14	15	-	-
Emotional Stability	C	0-2	3-4	5-7	8-10	11-13	14-15	16-17	18	19	20
Dominance	E	0-2	3-4	5-6	7-9	10-12	13-14	15-16	17-18	19	20
Liveliness	F	0-1	2-3	4-5	6-7	8-10	11-13	14-15	16-17	18	19-20
Rule-Conscious-ness	G	0-4	5-6	7-9	10-11	12-14	15-17	18-19	20-21	22-24	25-26
Social Boldness	H	-	0	1-2	3-6	7-11	12-16	17-19	20	-	-
Sensitivity	I	0-4	5-6	7-9	10-12	13-15	16-17	18-19	20-21	22	-
Vigilance	L	0-4	5-7	8-9	10-11	12-13	14-15	16	17-18	19-21	22-24
Abstract-edness	M	-	-	0	1-2	3-5	6-8	9-12	13-16	17-08	19-22
Private-ness	N	0-1	2	3-5	6-8	9-11	12-14	15-17	18	19-20	-
Apprehen-sion	O	0-1	2-3	4-5	6-7	8-9	10-12	13-14	15-16	17-18	19-20
Openness to Change	Q1	0-4	5-7	8-9	10-11	12-14	15-17	18-19	20-22	-	-
Self-Reliance	Q2	-	0	1-2	3-5	6-8	9-11	12-14	15-17	18-19	20
Perfection-ism	Q3	0-1	2-3	4-6	7-9	10-12	13-15	16-17	18	19-20	-
Tension	Q4	-	0	1-3	4-7	8-10	11-14	15-16	17-19	20	-

Source: Simplified Chinese 16PF—5 Data Supplement 2014, p6

Descriptive statistics

Chinese (Simplified) – overall norm sample

Primary Factor		Number of items	Mean	SD
Warmth	A	11	14.86	4.94
Reasoning	B	15	13.46	1.90
Emotional Stability	C	10	12.50	4.67
Dominance	E	10	12.01	4.41
Liveliness	F	10	10.56	4.81
Rule-Consciousness	G	11	14.17	4.78
Social Boldness	H	11	10.77	6.11
Sensitivity	I	12	14.62	4.62
Vigilance	L	12	10.60	4.13
Abstractedness	M	10	12.82	3.97
Privateness	N	10	6.77	5.19
Apprehension	O	10	10.84	4.58
Openness to Change	Q1	11	10.34	4.71
Self-Reliance	Q2	10	13.85	4.57
Perfectionism	Q3	11	8.52	4.80
Tension	Q4	10	12.46	4.81

Source: Simplified Chinese 16PF–5 Data Supplement 2014, p5

Reliability and Standard Error of Measurement

Chinese (Simplified)

Primary Factor		Number of items	Cronbach's alpha coefficients	SEM (Sten scores)
Warmth	A	11	0.74	1.02
Reasoning	B	15	0.66	1.16
Emotional Stability	C	10	0.72	1.06
Dominance	E	10	0.69	1.10
Liveliness	F	10	0.72	1.06
Rule-Consciousness	G	13	0.64	1.2
Social Boldness	H	10	0.86	0.75
Sensitivity	I	11	0.70	1.10
Vigilance	L	12	0.62	1.20
Abstractedness	M	11	0.76	0.99
Privateness	N	10	0.72	1.06
Apprehension	O	10	0.70	1.10
Openness to Change	Q1	11	0.66	1.16
Self-Reliance	Q2	10	0.74	1.02
Perfectionism	Q3	10	0.72	1.06
Tension	Q4	10	0.76	0.99

Source: Simplified Chinese 16PF–5 Data Supplement 2014, p10

Response Style Indices

Impression Management (IM)

Chinese (Simplified) — raw score cut-off points for IM; based on Chinese sample (N=414)

Raw score	Cut-off point
0–3	Low range
4–17	Acceptable range
18–22	High range

Source: Simplified Chinese 16PF–5 Data Supplement 2014, p12

Chinese (Simplified) — Impression Management (IM) — items/scoring key

Item number	Direction of keyed response
16	A
23	C
34	C
58	C
75	C
85	C
95	C
101	C
115	C
144	C
153	C

Infrequency (INF)

Chinese (Simplified) — raw score cut-off points for INF; based on Chinese sample (N=414)

Raw score	Cut-off point
0–64	Acceptable range
65–101	High range

Source: Simplified Chinese 16PF–5 Data Supplement 2014, p12

Chinese (Simplified) – Infrequency (INF) – items/scoring key

Item number												
1	4	10	12	14	16	20	23	26	28	34	35	38
43	47	48	51	53	56	62	63	65	72	74	75	80
85	86	90	94	98	100	101	102	104	111	115	116	117
123	125	126	136	140	142	145	148	149	152	154	156	168

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Chinese (Simplified) – raw score to percentile conversion for ACQ; based on Chinese sample (N=414)

Raw score	Cut-off point
0–13	Acceptable range
14–52	High range

Source: Simplified Chinese 16PF–5 Data Supplement 2014, p12

Chinese (Simplified) – Acquiescence (ACQ) – items/scoring key

Item number												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	29	33	34	35	36	40	41	43	44	49	50	52
54	57	58	59	60	61	62	63	64	65	66	68	69
71	72	76	77	79	83	85	89	90	91	92	93	97
99	100	102	103	104	105	106	107	108	109	110	111	112
113	114	116	118	120	124	125	126	128	130	132	133	134
135	137	138	140	141	142	145	146	148	149	151	152	155
157	158	159	162	164	165	166	167	168	169			

Note: for each item listed above, an 'a' response receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Chinese (Simplified)

Numerous 16PF translations are used widely across the world, in order that individuals can be assessed in their own language. The traditional Chinese version of the 16PF was created using a thorough and detailed translation and adaptation process, in accordance with the OPP translation standards and the International Test Commission (ITC) Test Adaptation Guidelines (http://www.intestcom.org/). These formed the underlying structure of the 16PF translation process.

OPP and a Chinese company called Skill and Will worked very closely together to create the Simplified Chinese questionnaire.

Skill and Will are a psychometric test and accreditation training provider, with offices in Shanghai and Guangzhou. They also provide leadership training and coaching.

The translation underwent several stages: initially, the Traditional Chinese version of the 16PF questionnaire was translated under the supervision of IPAT into Simplified Chinese. This was then critiqued by a bilingual American psychology consultant living and working in China and a Chinese reviewer. After that, additional questions were translated by Skill and Will into Simplified Chinese, in case any substitute questions would be required. Data analysis and selection of the final items and norms was done by OPP R&D.

Skill and Will collected data from 414 respondents using an initial pool of 259 items to establish item properties and to select the final set of items. The final set of items for the simplified Chinese 16PF is 185. Norm data on the final set of items were collected on a representative sample of 414 respondents.

As with all other versions of the questionnaire, the Simplified Chinese 16PF tool comprises the 16 Primary Factor personality scales, as well as an Impression Management (IM) scale, and Acquiescence (ACQ) and Infrequency (INF) indices.

Chinese (Traditional)

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Chinese (Traditional)

Chinese (Traditional)

Norm sample description

Chinese (Traditional) — norm sample (N=768), data collected in 2003

Gender	Number in sample	Percent in sample	Percent in census
Male	289	38	48.2
Female	479	62	51.8

Age (in years)	Number in sample	Percent in sample	Percent in census
Under 15	0	0	15.7
16–34	405	52.7	28.7
35–64	330	43	43.8
65 and over	2	0.3	11.7
Not given	31	4.0	-
Total	768	100	100

Source: Chinese 16PF–5 User's Manual 2004, p 27

Norm tables

Chinese (Traditional) — overall norm sample (N=768), data collected in 2003

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–5	6	7–9	10–12	13–15	16–18	19–20	21–22	-	-
Reasoning	B	0–4	5–6	7–8	9–10	11–12	13	14	15	-	-
Emotional Stability	C	0	1–2	3–5	6–9	10–12	13–15	16–17	18	19–20	-
Dominance	E	0–2	3–4	5–6	7–8	9–11	12–13	14–15	16	17–18	19–20
Liveliness	F	0	1–2	3–4	5–6	7–9	10–11	12–13	14–15	16–17	18–20
Rule-Conscious-ness	G	0–4	5–6	7–8	9–10	11–12	13–15	16–17	18–19	20	21–22
Social Boldness	H	-	-	0–3	4–6	7–11	12–14	15–17	18–19	20	-
Sensitivity	I	0–6	7–8	9–10	11–12	13–15	16–17	18–19	20	21–22	-
Vigilance	L	0–3	4	5–6	7–8	9–10	11–12	13–14	15–17	18	19–20

Abstract-edness	M	-	0–1	2	3–4	5–7	8–10	11–14	15–17	18–19	20–22
Private-ness	N	0–2	3–4	5–6	7–8	9–10	11–13	14–15	16–17	18	19–20
Apprehen-sion	O	0–2	3–4	5–6	7–8	9–11	12–13	14–15	16–17	18	19–20
Openness to Change	Q1	0–6	7–9	10–12	13–14	15–17	18–19	20–21	22–23	24–25	26–28
Self-Reliance	Q2	0	1–2	3–4	5–7	8–9	10–12	13–15	16–17	18–19	20
Perfection-ism	Q3	0–2	3–4	5–6	7–8	9–11	12–13	14–15	16–17	18–19	20
Tension	Q4	0–1	2	3–5	6–7	8–10	11–13	14–15	16–17	18–19	20

Source: Chinese 16PF–5 User's Manual 2004, p 29

Descriptive statistics

Chinese (Traditional) — overall norm sample

Primary Factor		Number of items	Combined (N=768)	
			Mean	SD
Warmth	A	11	15.56	4.49
Reasoning	B	15	11.83	2.45
Emotional Stability	C	10	11.39	5.29
Dominance	E	10	11.63	4.17
Liveliness	F	10	9.20	4.54
Rule-Consciousness	G	11	12.92	4.27
Social Boldness	H	11	10.44	6.38
Sensitivity	I	12	15.18	4.56
Vigilance	L	12	10.69	4.04
Abstractedness	M	10	8.36	5.45
Privateness	N	10	10.22	4.58
Apprehension	O	10	11.38	5.10
Openness to Change	Q1	11	16.66	5.34
Self-Reliance	Q2	10	9.92	5.00
Perfectionism	Q3	11	10.93	4.58
Tension	Q4	10	10.04	5.15

Source: Chinese 16PF–5 User's Manual 2004, p 28

Reliability and Standard Error of Measurement

Chinese (Traditional)

Primary Factor		Number of items	Cronbach's alpha coefficients	SEM (Sten scores)
Warmth	A	11	0.68	0.91
Reasoning	B	15	0.66	0.91
Emotional Stability	C	10	0.76	0.94
Dominance	E	10	0.59	1.32
Liveliness	F	10	0.66	1.29
Rule-Consciousness	G	11	0.60	1.29
Social Boldness	H	11	0.86	0.71
Sensitivity	I	12	0.68	1.22
Vigilance	L	12	0.62	1.23
Abstractedness	M	10	0.75	1.00
Privateness	N	10	0.68	1.26
Apprehension	O	10	0.73	1.29
Openness to Change	Q1	11	0.63	1.41
Self-Reliance	Q2	10	0.73	1.09
Perfectionism	Q3	11	0.63	1.36
Tension	Q4	10	0.74	1.11

Source: Chinese 16PF–5 User's Manual 2004, p 36

Global weights/factor equations

Chinese (Traditional) – factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		Chi.	UK/US	Chi.	UK/US	Chi.	UK/US	Chi.	UK/US	Chi.	UK/US
Warmth	A	−0.673	0.3			0.477	−0.2				
Emotional Stability	C			−0.775	−0.4						
Dominance	E							0.781	0.6		
Liveliness	F	−0.664	0.3							−0.312	−0.2
Rule-Consciousness	G									0.748	0.4
Social Boldness	H	−0.581	0.2					0.645	0.3		
Sensitivity	I					0.837	−0.5				
Vigilance	L			0.648	0.3			0.109	0.2		
Abstractedness	M					0.005	−0.3			−0.683	−0.3
Privateness	N	0.665	−0.3								
Apprehension	O			0.795	0.4						
Openness to Change	Q1					0.295	−0.5	0.692	0.3		
Self-Reliance	Q2	0.807	−0.3								
Perfectionism	Q3									0.673	0.4
Tension	Q4				0.4						

Source: Chinese 16PF–5 User's Manual 2004, p 37

Response Style Indices

Impression Management (IM)

Chinese (Traditional) — raw score cut-off points for IM

Raw score	Cut-off point
0–3	Low range
4–18	Acceptable range
19–24	High range

Chinese (Traditional) — raw score to percentile conversion for IM; based on Chinese sample (N=768)

Raw score	Percentile	Raw score	Percentile
0–1	1	11	53
2	4	12	69
3	5	13	71
4	10	14	81
5	12	15	83
6	23	16	91
7	25	17	91
8	35	18	96
9	38	19	97
10	50	20–24	99

Source: Chinese 16PF–5 User's Manual 2004, p 31

Chinese (Traditional) — Impression Management (IM) — items/scoring key

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Infrequency (INF)

Chinese (Traditional) — raw score cut-off points for INF

Raw score	Cut-off point
0–4	Acceptable range
5–32	High range

Chinese (Traditional) — raw score to percentile conversion for INF

Raw score	Percentile
0	73
1	88
2	92
3	94
5	97
6–7	98
8–13	99

Source: Chinese 16PF–5 User's Manual 2004, p 33

Chinese (Traditional) – Infrequency (INF) – items/scoring key

Item number												
3	6	8	14	16	21	29	33	34	56	60	61	63
65	67	69	81	83	87	88	94	101	104	106	108	117
118	120	122	125	126	133	136	139	141	142	145	147	156
158	159	164	165	167								

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: Chinese 16PF–5 User's Manual 2004, p 33

Acquiescence (ACQ)

Chinese (Traditional) – raw score to percentile conversion for ACQ; based on Chinese sample (N=768)

Raw score	Cut-off point
0–69	Acceptable range
70–103	High range

Chinese (Traditional) — raw score to percentile conversion for ACQ; based on Chinese sample (N=768)

Raw score	Percentile	Raw score	Percentile
0–35	1	57	53
36–39	2	58	58
40	3	59	64
41–42	4	60	69
43	5	61	73
44	7	62	76
45	9	63	81
46	11	64	85
47	13	65	87
48	15	66	90
49	18	67	92
50	21	68	93
51	25	69	95
52	28	70	96
53	33	71–72	97
54	39	73	98
55	44	74–80	99
56	49		

Source: Chinese 16PF–5 User's Manual 2004, p 32

Chinese (Traditional) — Acquiescence (ACQ) — items/scoring key

Item number												
1	2	4	5	6	8	9	14	15	16	20	21	22
23	24	27	28	29	30	31	35	36	37	38	39	40
42	43	44	45	47	48	49	50	52	55	56	59	60
61	62	63	64	65	67	71	72	73	75	76	77	78
80	82	83	86	88	89	90	92	94	95	98	100	101
102	105	107	108	109	110	113	114	115	117	122	123	126
129	132	133	136	137	138	139	141	144	146	147	149	150
153	155	156	158	160	165	166	167	169	170			

Note: for each item listed above, an 'a' response receives 1 point; otherwise, no points are assigned. Source: Chinese 16PF–5 User's Manual 2004, p 32

Development of the 16PF questionnaire in Chinese (Traditional)

Numerous 16PF translations are used widely across the world. In order to allow the Chinese-speaking community to be able to use this useful tool, the 16PF questionnaire had to be put through a thorough translation process.

The Traditional Chinese 16PF tool comprises the 16 primary personality factor scales, as well as an Impression Management (IM) scale, and Acquiesence (ACQ) and Infrequency (INF) indices.

Traditional Chinese translation needed to be developed in accordance with the OPP translation standards and the International Test Commission (ITC) Test Adaptation Guidelines. These formed the underlying structure of the 16PF translation process.

Previous test adaptations may have literally translated all test items into Traditional Chinese. The danger inherent in such a generic translation process is losing the similarity of the meanings (of certain idiomatic items). In fact, the ITC has set several guidelines that can be applied to translation procedures for all tests, including back-translation. OPP translation standards share many similarities with both the ITC and other published guidelines for test adaptations (such as Hambleton and Patsula, 1999).

Czech

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Czech

Norm sample description

The Czech version of the 16PF currently uses US norms.

US English – norm sample (N=10,261), data collected in 2002

Gender	Number in sample	Percent in sample
Male	5,124	49.9
Female	5,137	50.1

Age (years)	Number in sample	Percent in sample
15–24	3,714	36.2
25–44	4,282	41.7
45–54	1,614	15.7
55–64	577	5.6
65 and over	74	0.7

Education level	Number in sample	Percent in sample
HS graduate, or less	2,541	24.7
Some college	2,901	28.3
College graduate	4,819	47.0

Region	Number in sample	Percent in sample
North–eastern	2,015	19.6
South–eastern	1,264	12.3
North Central	2,859	27.9
South Central	2,506	24.4
Western	1,617	15.8

Race	Number in sample	Percent in sample
White	7,994	77.9
Black/African American	1,113	10.8
American Indian	79	0.8
Asian American	368	3.6
Multiracial	149	1.5
Other	558	5.4
Hispanic origin	887	8.6

Note: totals add up to over 100% because Hispanics also endorsed one of the six race categories.

Source: US 16PF–5 Administrator's Manual 2009, p 107

Norm tables

The Czech version currently uses US norms.

US English – general population (N=10,261), data collected in 2002

Primary Factor		Stens									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Warmth	A	0–3	4–5	6–8	9–11	12–14	15–17	18–19	20	21–22	-
Reasoning	B	0–3	4	5–6	7–8	9–10	11–12	13	14	15	-
Emotional Stability	C	0–2	3–5	6–8	9–12	13–16	17–18	19	20	-	-
Dominance	E	0–2	3–5	6–8	9–11	12–14	15–17	18	19	20	-
Liveliness	F	-	0–3	4–6	7–9	10–12	13–15	16–17	18	19–20	-
Rule-Conscious-ness	G	0–2	3–5	6–8	9–11	12–15	16–18	19–20	21	22	-
Social Boldness	H	-	0–1	2–3	4–7	8–12	13–16	17–18	19	20	-
Sensitivity	I	0	1–2	3–5	6–8	9–12	13–16	17–19	20–21	22	-
Vigilance	L	0–1	2–3	4–5	6–7	8–10	11–13	14–15	16–17	18–19	20
Abstract-edness	M	-	0	1	2–3	4–6	7–10	11–14	15–18	19–20	21–22
Private-ness	N	0	1–2	3–4	5–7	8–10	11–14	15–17	18–19	20	-
Apprehen-sion	O	-	0–1	2–3	4–6	7–10	11–14	15–17	18–19	20	-
Openness to Change	Q1	0–4	5–7	8–9	10–13	14–17	18–20	21–23	24–25	26–27	28
Self-Reliance	Q2	-	0	1	2–3	4–6	7–10	11–14	15–16	17–18	19–20
Perfection-ism	Q3	0–1	2–3	4–5	6–8	9–12	13–15	16–17	18	19–20	-
Tension	Q4	-	0–1	2–3	4–6	7–10	11–14	15–17	18–19	20	-

Source: US 16PF–5 Administrator's Manual 2009, p 110

Descriptive statistics

US English – overall norm sample

Primary Factor		Number of items	Combined (N=10,261)	
			Mean	SD
Warmth	A	11	14.90	4.60
Reasoning	B	15	10.32	3.18
Emotional Stability	C	10	14.61	4.94
Dominance	E	10	13.29	4.28
Liveliness	F	10	12.38	4.82
Rule-Consciousness	G	11	14.80	5.09
Social Boldness	H	10	11.83	6.38
Sensitivity	I	11	12.02	5.86
Vigilance	L	10	10.79	4.54
Abstractedness	M	11	7.59	5.46
Privateness	N	10	10.60	5.21
Apprehension	O	10	10.97	5.65
Openness to Change	Q1	14	17.28	5.51
Self-Reliance	Q2	10	7.55	5.26
Perfectionism	Q3	10	11.63	5.02
Tension	Q4	10	9.85	5.39

Source: US 16PF–5 Administrator's Manual 2009, p 111

Reliability and Standard Error of Measurement

The Czech version currently uses US norms.

US English

Primary Factor		Number of items	Cronbach's alpha coefficients (N=10,261)	SEM (Sten scores)	Test–retest reliability [2 weeks] (N=204)	Test–retest reliability [2 months] (N=159)
Warmth	A	11	0.69	1.00	0.83	0.77
Reasoning	B	15	0.75	0.95	0.69	0.65
Emotional Stability	C	10	0.79	0.82	0.75	0.67
Dominance	E	10	0.68	0.96	0.77	0.69
Liveliness	F	10	0.73	0.96	0.82	0.69
Rule-Consciousness	G	11	0.77	0.86	0.80	0.76
Social Boldness	H	10	0.87	0.71	0.87	0.79
Sensitivity	I	11	0.79	0.83	0.82	0.76
Vigilance	L	10	0.73	0.99	0.76	0.56
Abstractedness	M	11	0.78	0.83	0.84	0.67
Privateness	N	10	0.77	0.87	0.77	0.70
Apprehension	O	10	0.80	0.79	0.79	0.64
Openness to Change	Q1	14	0.68	1.01	0.83	0.70
Self-Reliance	Q2	10	0.79	0.84	0.86	0.69
Perfectionism	Q3	10	0.74	0.94	0.80	0.77
Tension	Q4	10	0.79	0.76	0.78	0.68

Source: US 16PF–5 Administrator's Manual 2009, pp 113 and 130

Global weights/factor equations

The Czech version currently uses US norms.

US English — comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		US	UK/US	US	UK/US	US	UK/US	US	UK/US	US	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Conscious-ness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstracted–ness	M					−0.3	−0.3			−0.3	−0.3
Privateness	N	−0.3	−0.3								
Apprehen-sion	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfection-ism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

Source: US 16PF–5 Administrator's Manual 2009, p 37

Response Style Indices

The Czech version currently uses US norms.

Impression Management (IM)

US English – raw score cut-off points for IM

Raw score	Cut-off point
0–4	Low range
5–20	Acceptable range
21–24	High range

US English – raw score to percentile conversion for IM; based on US sample (N=10,261)

Raw score	Percentile	Raw score	Percentile
0–2	1	13	60
3	4	14	64
4	5	15	73
5	10	16	76
6	12	17	84
7	19	18	86
8	22	19	91
9	32	20	93
10	35	21	96
11	46	22	97
12	50	23–24	99

Source: US 16PF–5 Administrator's Manual 2009, p 96

US English – Impression Management (IM); items/scoring key

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Source: US 16PF–5 Administrator's Manual 2009, p 41

Infrequency (INF)

US English – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–7	Acceptable range
8–32	High range

US English – raw score to percentile conversion for ACQ; based on US sample (N=10,261)

Raw score	Percentile
0–1	55
2	71
3	80
4	86
5	90
6	93
7	95
8	97
9–10	98
11–32	99

Source: US 16PF–5 Administrator's Manual 2009, p 100

US English – Infrequency (INF); items/scoring key

Item numbers												
6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: US 16PF–5 Administrator's Manual 2009, p 42

Acquiescence (ACQ)

US English – raw score to percentile conversion for ACQ; based on US sample (N=10,261)

Raw score	Cut-off point
0–70	Acceptable range
71–103	High range

US English – raw score to percentile conversion; based on US sample (N=10,261)

Raw score	Percentile	Raw score	Percentile
0–24	0.1	52	28.4
25–26	0.2	53	32.3
27–28	0.3	54	36.4
29–30	0.4	55	40.8
31	0.5	56	45.5
32	0.7	57	50.5
33	0.9	58	54.9
34	1.2	59	59.6
35	1.4	60	64.2
36	1.8	61	68.6
37	2.2	62	72.7
38	2.7	63	76.5
39	3.4	64	80.5
40	3.9	65	83.7
41	4.8	66	86.6
42	5.7	67	89.0
43	6.7	68	91.2
44	8.0	69	93.2
45	9.7	70	94.7
46	11.5	71	96.1
47	13.6	72	97.2
48	15.8	73	97.9
49	18.6	74	98.5
50	21.6	75–103	99.0
51	25.0		

Source: US 16PF–5 Administrator's Manual 2009, p 98

US English – Acquiescence (ACQ); items/scoring key

Item numbers												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	47
48	49	50	52	54	57	58	59	60	61	62	63	64
65	66	68	69	71	72	76	77	79	83	85	87	89
90	91	93	94	96	97	99	100	103	105	106	107	108
110	111	112	113	114	116	118	124	125	126	128	130	132
133	134	135	137	138	140	141	142	145	146	148	150	151
152	155	157	158	159	162	164	165	166	167	168	169	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Source: US 16PF–5 Administrator's Manual 2009, p 42

Danish

Norm sample description

Norm tables

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Danish

Danish

Norm sample description

Danish – norm sample (N=434), data collected in the late 1990s

Gender	Number in sample	Percent in sample
Male	214	49.4
Female	220	50.6
Total	434	100

Geographical region	Number in sample	Percent in sample
Jylland	107	24.9
Fyn	20	4.7
Sjælland	93	21.7
Greater Copenhagen	205	47.8
Other	4	0.9

Employment status	Male	Female
Non–executives	93 (33.9%)	181 (66.1%)
Executives	121(75.6%)	39 (24.4%)
Total	214 (100%)	220 (100%)

Number of years as executive	Male		Female	
	Mean	SD	Mean	SD
	13.83	6.48	11.90	5.33

Source: 16PF–5 Danish Manual (Manual Dansk version) 1993, pp 55–6

Age (years)	Male & Female	
	Mean	SD
Non–executives	41.90	9.04
Executives	48.95	5.04
Non–executives & Executives	44.50	8.51

Source: 16PF–5 Danish Manual (Manual Dansk version) 1993, pp 55–6

Norm tables

Danish – overall norm sample (N=434), data collected in the late 1990s

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–5	6–7	8–9	10–11	12–13	14–15	16–17	18–19	20	21–22
Reasoning	B	0–2	3	4–5	6–7	8–9	10–11	12	13	14	15
Emotional Stability	C	0–4	5–7	8–9	10–12	13–14	15	16–17	18–19	20	-
Dominance	E	0–4	5–7	8–10	11–13	14–15	16–17	18	19	20	-
Liveliness	F	0–3	4	5–7	8–9	10–11	12–13	14–15	16–17	18	19–20
Rule-Consciousness	G	0–1	2–3	4–5	6–7	8–9	10–11	12–14	15–16	17	18–20
Social Boldness	H	0	1–2	3–5	6–9	10–12	13–15	16–17	18–19	20	-
Sensitivity	I	0–3	4–5	6–7	8–10	11–13	14–15	16–17	18–19	20–21	22
Vigilance	L	-	0–1	2	3	4–5	6–7	8–10	11–13	14–17	18–20
Abstractedness	M	-	-	0–1	2–3	4–6	7–9	10–12	13–15	16–17	18–22
Privateness	N	-	0–1	2–3	4–6	7–9	10–12	13–15	16–17	18–19	20
Apprehension	O	0	1	2–3	4–5	6–8	9–11	12–15	16–18	19	20
Openness to Change	Q1	0–7	8–9	10–12	13–16	17–20	21–23	24–25	26	27	28
Self-Reliance	Q2	-	0	1	2–4	5–6	7–9	10–12	13–15	16–17	18–20
Perfectionism	Q3	-	0–1	2–3	4–5	6–9	10–12	13–14	15–17	18–19	20
Tension	Q4	0–1	2–3	4–5	6–7	8–10	11–13	14–15	16–17	18–19	20

Reliability and Standard Error of Measurement

Danish

Primary Factor		Number of items	Cronbach's alpha coefficients (Nª=725, Nᵇ=434)	SEM (Sten scores)
Warmth	A	11	0.59b	1.28
Reasoning	B	15		
Emotional Stability	C	10	0.69a	1.11
Dominance	E	10	0.60b	1.26
Liveliness	F	10	0.61b	1.25
Rule-Consciousness	G	11	0.62a	1.23
Social Boldness	H	10	0.83a	0.82
Sensitivity	I	11	0.70a	1.10
Vigilance	L	10	0.70a	1.10
Abstractedness	M	11	0.74a	1.02
Privateness	N	10	0.78a	0.94
Apprehension	O	10	0.78a	0.94
Openness to Change	Q1	14	0.73a	1.04
Self-Reliance	Q2	10	0.73a	1.04
Perfectionism	Q3	10	0.73a	1.04
Tension	Q4	10	0.65a	1.18

Note[a]: for these factors, none of the items were changed after the pilot study and all respondents from the pilot study and the standardisation study are included (N=725).

Note[b]: for these factors, some of the items were changed after the pilot study and only respondents from the standardisation study are included (N= 434).

Source: 16PF–5 Danish Manual (Manual Dansk version) 1993, pp 60–1

Global weights/factor equations

Danish – comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		Dan.	UK/US	Dan.	UK/US	Dan.	UK/US	Dan.	UK/US	Dan.	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Consciousness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstractedness	M					−0.3	−0.3			−0.3	−0.3
Privateness	N	−0.3	−0.3								
Apprehension	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfectionism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.65	1.60	13.75	13.80	−2.20	−2.20	3.85	3.80

Note: US factor weights are applied to the Danish 16PF version.

Response Style Indices

Impression Management (IM)

Danish – raw score cut-off points for IM; based on Danish sample (N=434)

Raw score	Cut-off point
0–2	Low range
3–9	Acceptable range
10–12	High range

Note: IM items of the Danish 16PF version are scored 0–0–1, hence only a range from 0 to 12.

Danish – raw score to percentile conversion for IM

Raw score	Percentile
0–1	1
2	5
3	7
4	16
5	31
6	50
7	69
8	84
9	93
10	95
11	97
12	99

Note: data based on a normal distribution and percentiles calculated according to this.

Danish – Impression Management (IM); items/scoring key*

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Infrequency (INF)

Danish – raw score cut-off points for INF; based on Danish sample (N=434)

Raw score	Cut-off point
0–7	Acceptable range
8–32	High range

Danish – raw score to percentile conversion for INF

Raw score	Percentile
0–1	55
2	71
3	80
4	86
5	90
6	93
7	95
8	97
9–10	98
11–32	99

Note: data based on a normal distribution and percentiles calculated according to this.

Danish – Infrequency (INF); items/scoring key*

Item numbers												
6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Danish – raw score to percentile conversion for ACQ; 103 items (similar to US version); cut-offs most likely based on Danish norm sample (N=434) but no further description in the manual

Raw score	Cut-off point
0–66	Acceptable range
67–103	High range

Danish – Acquiescence (ACQ); raw score to percentile conversion

Raw score	Percentile	Raw score	Percentile
0–33	1	53	54
34–35	2	54	59
36–37	3	55	63
38	4	56	67
39	5	57	71
40	6	58	76
41	8	59	80
42	10	60	84
43	11	61	87
44	14	62	88
45	18	63	89
46	23	64	90
47	26	65	92
48	31	66	95
49	35	67	97
50	39	68–69	98
51	44	70–94	99
52	49		

Note: data based on a normal distribution and percentiles calculated according to this.

Danish – Acquiescence (ACQ); items/scoring key*

Item numbers												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	47
48	49	50	52	54	57	58	59	60	61	62	63	64
65	66	68	69	71	72	76	77	79	83	85	87	89
90	91	93	94	96	97	99	100	103	105	106	107	108
110	111	112	113	114	116	118	124	125	126	128	130	132
133	134	135	137	138	140	141	142	145	146	148	150	151
152	155	157	158	159	162	164	165	166	167	168	169	

For each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Danish

The development of the Danish 16PF questionnaire was carried out by Dansk Psykologisk Forlag (DPF), a Danish test publisher.

The 16PF Questionnaire was translated by an associate professor of psychology, who is knowledgeable about English. It was then back–translated by an English native speaker who has lived in Denmark for many years. The latter of the two is also associate professor of psychology. They both hold a doctorate in psychology. A so-called bilingual test-retest study comprising 33 English major university students was conducted to allow an initial analysis of the psychometric properties of the translated version. The students were first asked to complete the Danish version of the questionnaire and two weeks later the US English version. The result of this study showed an average test correlation of 0.86 (range from 0.78 to 0.93). The results of the study were used to amend items where necessary before conducting a pilot study with 291 respondents (mean age 28.7 years and SD 8.5 years; roughly 40% male and 60% female) The respondents were primarily recruited among students at institutions of higher education, typically within the humanities fields, which explains the unequal distribution between men and women. Furthermore, a number of randomly selected groups recruited among employees at the DPF also form part of the study, as well as a number of executives who were assessed as part of an executive development programme. The data from this study were used to examine the internal consistencies and the corrected item–total correlations.

Furthermore, the item endorsement frequencies were calculated and compared to the item endorsement frequency of the original US English version. A number of items were rejected based on the analysis, primarily because their correlation with the total score on the scale they were part of was too low. These items were translated and tested again on a university sample consisting of approximately 80 students. In all instances, the newly translated items worked better than the originally translated items (ie they had a higher item–total correlation), and therefore they were included in the final standardisation edition.

The normative data for the 16PF–5 have been collected in cooperation with the Danish School of Public Administration and incorporate both executives and non–executives. The data were sent to 850 non-executives and 450 executives all over Denmark. Of the consulted executives, 160 (36%) completed and returned the questionnaire, while this number was 274 (32%) for the non-executive group

Source: 16PF–5 Danish Manual (Manual Dansk version) 1993, pp 54–5

Dutch

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Dutch

Dutch

Norm sample description

Dutch – norm sample (N=1,002), data collected in 2011

Gender	Number in sample	Percent in sample
Male	501	50
Female	501	50
Total	1,400	100

Age (years)	Number in sample	Percent in sample
16–20	50	5.0%
21–30	261	26.0%
31–40	261	26.0%
41–50	248	24.8%
51–60	149	14.9%
61–65	33	3.3%

Netherlands education level	Number in sample	Percent in sample
Primary education (basisonderwijs)	36	4.2%
Vocational education 12–16 (lager beroepsonderwijs 12- tot 16-jarigen)	164	19.1%
Lower secondary education (lager voortgezet onderwijs)	71	8.3%
Secondary vocational education 16–18 (middelbaar beroepsonderwijs 16- tot 18-jarigen)	249	29.0%
Upper secondary education (hoger voortgezet onderwijs)	151	17.6%
Bachelor's degree (WO Bachelor)	113	13.2%
Master's degree (WO Master)	49	5.7%
PhD (Promoveren)	25	2.9%

Belgium educational level	Number in sample	Percent in sample
Primary education (lager onderwijs)	4	2.8%
General secondary education (algemeen secundair onderwijs)	26	18.1%
Technical secondary education (technisch secundair onderwijs)	43	29.9%
Higher education (hoger scholen onderwijs)	49	34.0%
Undergraduate degree (universiteit – kandituur)	2	1.4%
Graduate degree (universiteit – licentiaat)	15	10.4%
Doctorate (universiteit – doctoraat)	5	3.5%

Region	Number in sample	Percent in sample
Friesland	28	5.0%
Groningen	25	4.5%
Drenthe	17	3.0%
Zeeland	17	3.0%
Noord-Brabent	76	13.6%
Limburg	39	7.0%
Noord-Holland	87	15.6%
Zuid-Holland	125	22.4%
Utrecht	37	6.6%
Gelderland	61	10.9%
Overijssel	30	5.4%
Flevoland	16	2.9%
Friesland	28	5.0%
Groningen	25	4.5%

Employment status	Number in sample	Percent in sample
Full-time (for an employer) (full-time (voor een werkgever))	549	54.8%
Self-employed (sole trader) (self-employed (zelfstandig ondernemer))	59	5.9%
Part-time (for an employer) (part-time (voor een werkgever))	266	26.5%
Unemployed (Werkloos)	17	1.7%
Employed, not salaried (Werk niet voor inkomen)	13	1.3%
Student (Student)	33	3.3%
Housewife/husband (Huisvrouw/man)	48	4.8%
Retired (Gepensioneerd)	17	1.7%

Occupational level	Number in sample	Percent in sample
Director/owner (Directie/eigenaar)	37	4.2%
Top management (Top management)	37	4.2%
Middle management (Midden management)	187	21.4%
Operational management (Operationeel management)	79	9.0%
Employee (Werknemer)	497	56.9%
Other (Anders)	37	4.2%

Work area	Number in sample	Percent in sample
Agriculture, horticulture and fisheries (Lansbouw, tuinbouw en visserij)	4	0.7%
Mining and metalworks (Mijn- en metaalindustrie)	12	2.2%
Manufacturing (Productie)	33	5.9%
Energy sector (electric/gas) (Energiesector (Elektra/gas))	8	1.4%
Water sector (water board) (Watersector (waterschap))	1	0.2%
Construction (Bouw)	8	1.4%
Wholesale and retail (Groot en detailhandel)	50	9.0%
Hospitality (bar, restaurant, hotel) (Horeca (café, restaurant, hotel))	26	4.7%
Public transport and freight (Vervoer (openbaar), transport, vrachtvervoer)	16	2.9%
Information and communications (Informatie en communicatiesector)	31	5.6%
Banking and insurance (Bank en verzekeringssector)	26	4.7%
Estate agents (Makelaardij)	2	0.4%
Professional, scientific and technological activities (Professionele. Wetenschappelijke en technische activiteiten)	16	2.9%
Administrative and support services (Administratieve en ondersteunende diensten)	39	7.0%
Government and defence (Overheid en Defensie)	39	7.0%
Education (Onderwijs)	42	7.5%
Health and welfare (Gezond en Welzijnszorg)	92	16.5%
Art, entertainment and tourism (Kunst, Entertainment en Recreatie)	13	2.3%
Services other (Dienstverlening anders)	79	14.2%
Activities of private households (Activiteiten van huishoudens als werkgever ongedifferentiee)	19	3.4%
Activities of extra-territorial organisations and bodies (Activiteiten van extra territoriale organisaties en lichamen)	2	0.4%

Source: Dutch 16PF data supplement 2011, p 13

Norm tables

Dutch – norm sample (N=1,002), data collected in 2011

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–2	3–4	5–6	7–8	9–11	12–13	14–15	16–17	18–19	20
Reasoning	B	0–2	3	4	5–6	7–8	9–10	11	12	13–14	15
Emotional Stability	C	0–1	2–5	6–8	9–11	12–14	15–17	18	19–20	-	-
Dominance	E	0–2	3–4	5–7	8–10	11–13	14–16	17–18	19–20	21–22	-
Liveliness	F	0–1	2–3	4–5	6–8	9–11	12–14	15–16	17–18	19–20	-
Rule-Conscious-ness	G	0–3	4–5	6–7	8–10	11–13	14–16	17–18	19–20	21–22	-
Social Boldness	H	-	0–1	2–3	4–7	8–12	13–16	17–19	20	21–22	-
Sensitivity	I	0–1	2–3	4–6	7–9	10–12	13–15	16–17	18–19	20–21	22–24
Vigilance	L	0–2	3–4	5–6	7–9	10–12	13–15	16–18	19–20	21–22	23–24
Abstract-edness	M	-	-	0–1	2–3	4–6	7–9	10–12	13–16	17–18	19–20
Private-ness	N	0–1	2	3–4	5–7	8–11	12–14	15–17	18	19–20	-
Apprehen-sion	O	0	1–2	3–4	5–6	7–10	11–14	15–16	17–18	19–20	-
Openness to Change	Q1	0–3	4–5	6–7	8–10	11–13	14–16	17–18	19–20	21	22
Self-Reliance	Q2	-	0	1–2	3–5	6–8	9–11	12–14	15–17	18–19	20
Perfection-ism	Q3	0–1	2–3	4–5	6–8	9–11	12–15	16–17	18–19	20–21	22
Tension	Q4	0–1	2	3–4	5–7	8–10	11–13	14–15	16–17	18–19	20

Source: Dutch 16PF data supplement 2011, p 5

Descriptive statistics

Dutch – norm sample (N=1,002), data collected in 2011

Primary Factor		Number of items	Mean	SD
Warmth	A	11	11.43	4.31
Reasoning	B	15	8.61	3.07
Emotional Stability	C	10	14.09	4.76
Dominance	E	10	13.33	4.78
Liveliness	F	10	11.39	4.61
Rule-Consciousness	G	11	13.24	4.78
Social Boldness	H	10	11.79	6.60
Sensitivity	I	11	12.50	5.11
Vigilance	L	10	12.40	5.12
Abstractedness	M	11	6.93	4.85
Privateness	N	10	10.98	5.29
Apprehension	O	10	10.29	5.52
Openness to Change	Q1	14	13.30	4.60
Self-Reliance	Q2	10	8.66	5.26
Perfectionism	Q3	10	11.80	5.13
Tension	Q4	10	10.20	4.77
Impression Management	IM	11	9.88	4.50

Source: Dutch 16PF data supplement 2011, pp 4 and 8

Reliability and Standard Error of Measurement

Dutch – norm sample (N=1,002), data collected in 2011

Primary Factor		Number of items	Cronbach's alpha coefficients (N=500)	SEM (Sten scores)
Warmth	A	10	0.64	1.2
Reasoning	B	15	0.70	1.1
Emotional Stability	C	10	0.78	0.9
Dominance	E	11	0.73	1.0
Liveliness	F	10	0.72	1.1
Rule-Consciousness	G	11	0.70	1.1
Social Boldness	H	11	0.87	0.7
Sensitivity	I	12	0.69	1.1
Vigilance	L	12	0.76	1.0
Abstractedness	M	10	0.75	1.0
Privateness	N	10	0.79	0.9
Apprehension	O	10	0.80	0.9
Openness to Change	Q1	11	0.65	1.2
Self-Reliance	Q2	10	0.79	0.9
Perfectionism	Q3	11	0.72	1.1
Tension	Q4	10	0.70	1.1

Source: Dutch 16PF data supplement 2011, p 8

Global weights/factor equations

Dutch – comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Indepen-dence		Self-Control	
		Dutch	UK/US	Dutch	UK/US	Dutch	UK/US	Dutch	UK/US	Dutch	UK/US
Warmth	A	0.3	0.3			−0.3	−0.2				
Emotional Stability	C			−0.3	−0.4						
Dominance	E							0.5	0.6		
Liveliness	F	0.4	0.3								−0.2
Rule-Conscious-ness	G									0.5	0.4
Social Boldness	H		0.2					0.3	0.3		
Sensitivity	I					−0.6	−0.5				
Vigilance	L			0.3	0.3				0.2		
Abstractedness	M					−0.3	−0.3			−0.3	−0.3
Privateness	N	−0.3	−0.3								
Apprehension	O			0.3	0.4						
Openness to Change	Q1					−0.3	−0.5	0.5	0.3		
Self-Reliance	Q2	−0.4	−0.3								
Perfectionism	Q3									0.6	0.4
Tension	Q4			0.4	0.4						
Constant value		5.50	4.40	1.60	1.60	13.80	13.80	−1.70	−2.20	1.10	3.80

Source: Dutch 16PF Manual (Nederlandse 16PF Testhandleiding) 2007, p 133

To define the global factor scores for the Dutch 16PF questionnaire, the Primary Factor scores were factor analysed using the norm sample (N=500). A principal component factor analysis was conducted of the 15 Primary Factors (excluding Factor B) including a Promax rotation with Kaiser Normalisation. A five-factor solution was extracted that accounted for 66% of the total variance in the sample. This five-factor solution yielded the best simple structure.

The results obtained in this analysis were used to develop the factor weightings that are now used to compute the Global Factor scores.

There are only minor differences between the Dutch 16PF Global Factors and the US Global Factor loadings:

- Three Global Factors (Extraversion, Independence and Self-Control) have one contributing Primary Factor fewer and consequently also a different constant value in comparison to the US equation:
  - +0.2 H on Extraversion
  - +0.2 L on Independence
  - −0.2 F on Self-Control
- In addition, there are some small differences in the weighting of each Primary Factor between US and Dutch equations (see table).

Source: Dutch 16PF Manual (Nederlandse 16PF Testhandleiding) 2007, pp 131–3

Response Style Indices

Impression Management (IM)

Dutch — raw score cut-off points for IM; based on Dutch sample (N=500)

Raw score	Cut-off point
0–2	Low range
3–18	Acceptable range
10–12	High range

Dutch – raw score to percentile conversion for IM; based on Dutch sample (N=500)

Raw score	Percentile	Raw score	Percentile
0–1	1	12	73
2	5	13	77
3	8	14	84
4	14	15	88
5	17	16	93
6	25	17	94
7	29	18	95
8	40	19	97
9	44	20	98
10	54	21–22	99
11	60		

Source: Dutch 16PF Manual (Nederlandse 16PF Testhandleiding) 2007, p 114

Dutch – Impression Management (IM); items/scoring key

Item number	Direction of keyed response
17	c
35	c
53	c
71	c
89	c
107	c
125	c
141	c
143	c
159	c
161	c

Infrequency (INF)

Dutch – raw score cut-off points for INF; based on Dutch sample (N=500)

Raw score	Cut-off point
0–8	Acceptable range
9–44	High range

Dutch – raw score to percentile conversion for INF; based on Dutch sample (N=500)

Raw score	Percentile	Raw score	Percentile
0–1	58	7	93
2	68	8	96
3	75	9	97
4	81	10	98
5	88	11–44	99
6	91		

Source: Dutch 16PF Manual (Nederlandse 16PF Testhandleiding) 2007, p 117

Dutch – Infrequency (INF); items/scoring key; item selection based on Dutch sample; items selected with endorsement rate lower than 6.5%

Item numbers												
3	6	8	14	16	21	29	33	34	56	60	61	63
65	67	69	81	83	87	88	94	101	104	106	108	117
118	120	122	125	126	133	136	139	141	142	145	147	156
158	159	164	165	167								

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: Dutch 16PF Manual (Nederlandse 16PF Testhandleiding) 2007, p 116

Acquiescence (ACQ)

Dutch – raw score to percentile conversion for ACQ; based on Dutch sample (N=500)

Raw score	Cut-off point
0–52	Acceptable range
53–101	High range

Dutch – raw score to percentile conversion for ACQ; based on Dutch sample (N=500)

Raw score	Percentile	Raw score	Percentile
0–22	1	40	46
23	2	41	50
24	3	42	57
25	4	43	62
26	5	44	67
27	6	45	73
28	7	46	78
29	8	47	82
30	10	48	87
31	12	49	89
32	15	50	92
33	18	51	94
34	21	52	95
35	24	53	96
36	30	54	97
37	34	55–57	98
38	39	58–101	99
39	43		

Source: Dutch 16PF Manual (Nederlandse 16PF Testhandleiding) 2007, pp 115–6

Dutch — Acquiescence (ACQ); items/scoring key

Item numbers

1	2	4	5	6	8	9	14	15	16	20	21	22
23	24	27	28	29	30	31	35	36	37	38	39	40
42	43	44	45	47	48	49	50	52	55	56	59	60
61	62	63	64	65	67	71	72	73	75	76	77	78
80	82	83	86	88	89	90	92	94	95	98	100	101
102	105	107	108	109	110	113	114	115	117	122	123	126
129	132	133	136	137	138	139	141	144	146	147	149	150
153	155	156	158	160	165	166	167	169	170			

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Source: Dutch 16PF Manual (Nederlandse 16PF Testhandleiding) 2007, p 115

Development of the 16PF questionnaire in Dutch

The Dutch version of the 16PF questionnaire was developed by OPP in 2004.

Translation

The 263 16PF 'Form S' items were translated independently by two translators from English into Dutch (double forward translation). This US English version contains an extended number of trial items per scale. A reconciliation meeting followed.

To ensure the accessibility of the trial items to Flemish-speaking Belgians, the items were reviewed by a Flemish-speaking Belgian psychologist. Reconciliation Meeting B was then held for the translation team to incorporate subsequent changes to each trial item. A back-translation of the entire set of trial Dutch items was then conducted by an independent translator. The resultant English trial item set was reviewed by the English-speaking members of the translation team. At a final reconciliation meeting, the expanded translation team were present and all comments were discussed and a consensus agreed on any changes that needed to be made. The trial item set produced from this meeting was reviewed and the resultant version was finally revised for spelling and grammar to create the final trial item set.

Pilot study

An electronic macro version of the trial item set that incorporated a series of biographical questions was produced at the start of the questionnaire, together with the standard instructions for introducing the personality and general reasoning item sets. A small pilot study was run with eight respondents. These people ranged in age, sex and occupation, and two were Belgian. They were asked to fill in the questionnaire and comment on anything that they would recommend changing. Most of these suggestions were implemented.

Online trialling

An Internet-based questionnaire survey was used to collect norm data and item analysis data simultaneously in 2004 using an online data collection agency with extensive data collection experience across continental Europe.

The restrictions placed upon eligibility to participate were that the person should be working (part-time, full-time or self-employed), in the 16 to 64 age range and either resident in the Netherlands or Vlaanderen. The online agency used screeners in such a way that only Dutch people in the Netherlands and Flemish people could answer the online survey. The agency determined an appropriate level of incentive for the participants to take part in this project. Participants given random answers were removed (based upon the INF cut-off for US 16PF). In addition, respondents who took less than 25 minutes were screened out. A final data set on 500 respondents was collected online and was used for the data analysis and norm generation.

Source: Dutch 16PF Manual (Nederlandse 16PF Testhandleiding) 2007, pp 93–102

In 2011 a new sample was collected. The sample consisted of 1,002 respondents (501 female and 501 male.), 558 of whom completed the Dutch version of the 16PF Fifth Edition questionnaire between February and March 2011 via an online data collection platform, and 444 of whom completed the same questionnaire in 2007. The sample was representative of the Dutch-speaking working-age population.

Filipino

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Filipino

Filipino

Norm sample description

The norms of the 16PF in Filipino generally reflect the 2003 Philippine Census, where 48.9% of the population are male and 50.1% are female, compared with 44% male and 56% female in the norm sample. The mean age of the sample is 28, while the age range is 16–71 years old.

Filipino – norm sample (N=1,038)

Gender	Number in sample	Percent in sample
Male	456	44
Female	582	56
Total	1,038	100
Age (years)	**Mean**	
16–71	28	

Source: 16PF–5 Filipino Manual Chapter 1, p 4

Norm tables

Filipino – overall norm sample (N=1,038)

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–7	8–9	10–12	13–14	15–17	18–19	20–22	23–24	25–26	-
Reasoning	B	0–3	4	5	6	7	8–9	10	11	12	13–24
Emotional Stability	C	0–7	8–9	10–11	12–13	14–15	16–17	18–19	20–21	22	-
Dominance	E	0–3	4–6	7–8	9–10	11–12	13–15	16–17	18–19	20	-
Liveliness	F	0–3	4–5	6–7	8–9	10–11	12–13	14–15	16–17	18–19	20
Rule-Conscious-ness	G	0–13	14–16	17–18	19–20	21–23	24–25	26–27	28–30	-	-
Social Boldness	H	0–2	3–5	6–7	8–10	11–13	14–16	17–18	19–21	22	-
Sensitivity	I	0	1–3	4–5	6–7	8–10	11–12	13–15	16–17	18–19	20
Vigilance	L	0–1	2–3	4–5	6–7	8–9	10–11	12–13	14–15	16–17	18
Abstracted–ness	M	-	-	0	1–2	3–4	5–6	7–8	9–10	11–12	13–18
Privateness	N	0–2	3–4	5–6	7–8	9–10	11–12	13–14	15–16	17–18	19–20
Apprehen-sion	O	0–2	3–4	5–7	8–10	11–12	13–15	16–18	19–20	21–22	-
Openness to Change	Q1	0–8	9–11	12–13	14–16	17–19	20–21	22–24	25–27	28–29	30
Self-Reliance	Q2	-	0–1	2–3	4–6	7–8	9–10	11–12	13–15	16–17	18–20
Perfection-ism	Q3	0–11	12–13	14–15	16–17	18–19	20–21	22–23	24	-	-
Tension	Q4	-	0	1–3	4–5	6–8	9–10	11–13	14–16	17–19	20

Descriptive statistics

Filipino – raw score means and standard deviations (N=1,038)

Primary Factor		Combined (N=1,038)	
		Mean	SD
Warmth	A	17.4	5.0
Reasoning	B	8.0	2.3
Emotional Stability	C	15.7	4.2
Dominance	E	12.9	4.5
Liveliness	F	11.7	4.1
Rule-Consciousness	G	23.2	4.7
Social Boldness	H	13.4	5.5
Sensitivity	I	10.3	4.7
Vigilance	L	9.4	4.0
Abstractedness	M	4.8	3.9
Privateness	N	10.6	4.0
Apprehension	O	12.9	5.3
Openness to Change	Q1	19.2	5.3
Self-Reliance	Q2	8.3	4.5
Perfectionism	Q3	19.6	3.9
Tension	Q4	8.4	5.2

Source: 16PF–5 Filipino Appendix A, p 107

Filipino – Sten score means and standard deviations (N=1,038)

Primary Factor		Combined (N=1,038)	
		Mean	SD
Warmth	A	6.5	2.2
Reasoning	B	5.5	1.5
Emotional Stability	C	5.1	1.2
Dominance	E	6.0	2.1
Liveliness	F	5.6	1.5
Rule-Consciousness	G	8.3	1.3
Social Boldness	H	6.4	1.8
Sensitivity	I	4.9	1.7
Vigilance	L	5.5	1.7
Abstractedness	M	4.8	1.5
Privateness	N	5.3	1.6
Apprehension	O	4.4	2.1
Openness to Change	Q1	6.1	1.8
Self-Reliance	Q2	6.0	1.2
Perfectionism	Q3	8.2	1.3
Tension	Q4	4.4	1.9

Source: 16PF–5 Filipino Appendix A, p 108

Reliability and Standard Error of Measurement

Filipino – raw score Standard Error of Measurement for the 16PF Primary Factor scales

Primary Factor		SEM Combined (N=1,038)
Warmth	A	3.0
Reasoning	B	1.4
Emotional Stability	C	2.7
Dominance	E	2.7
Liveliness	F	2.6
Rule-Consciousness	G	2.8
Social Boldness	H	2.6
Sensitivity	I	2.6
Vigilance	L	2.5
Abstractedness	M	2.3
Privateness	N	2.5
Apprehension	O	3.0
Openness to Change	Q1	3.3
Self-Reliance	Q2	2.7
Perfectionism	Q3	2.4
Tension	Q4	2.7

Source: 16PF–5 Filipino Appendix A, p 109

Filipino – Sten score Standard Error of Measurement for the 16PF Primary Factor scales

Primary Factor		SEM Combined (N=1,038)
Warmth	A	1.3
Reasoning	B	0.9
Emotional Stability	C	0.8
Dominance	E	1.2
Liveliness	F	0.9
Rule-Consciousness	G	0.8
Social Boldness	H	0.8
Sensitivity	I	0.9
Vigilance	L	1.0
Abstractedness	M	0.9
Privateness	N	1.0
Apprehension	O	1.2
Openness to Change	Q1	1.1
Self-Reliance	Q2	0.7
Perfectionism	Q3	0.8
Tension	Q4	1.0

Source: 16PF–5 Filipino Appendix A, p 110

Global weights/factor equations

Primary Factor		Extraversion	Anxiety	Tough-Mindedness	Indepen-dence	Self-Control
		US	US	US	US	US
Warmth	A	0.3		−0.2		
Emotional Stability	C		−0.4			
Dominance	E				0.6	
Liveliness	F	0.3				−0.2
Rule-Consciousness	G					0.4
Social Boldness	H	0.2			0.3	
Sensitivity	I			−0.5		
Vigilance	L		0.3		0.2	
Abstractedness	M			−0.3		−0.3
Privateness	N	−0.3				
Apprehension	O		0.4			
Openness to Change	Q1			−0.5	0.3	
Self-Reliance	Q2	−0.3				
Perfectionism	Q3					0.4
Tension	Q4		0.4			
Constant value		4.40	1.70	13.80	−2.20	3.80

Source: US 16PF–5 Administrator's Manual 2009, p 37

Response Style Indices

Impression Management (IM)

Filipino – raw to percentile conversions for IM; based on Filipino sample (N=1,038)

Raw score	Cut-off point
0–8	Low range
9–22	Acceptable range
23–24	High range

Source: 16PF–5 Filipino Appendix C, p 123

Filipino – raw score to percentile conversion for IM

Raw score	Percentile	Raw score	Percentile
0–7	1	15	50
8	2	16	59
9	7	17	69
10	11	18	77
11	15	19	84
12	23	20	93
13	31	21–22	97
14	40	23–24	99

Note: data based on a normal distribution and percentiles calculated according to this.

Filipino — Impression Management (IM); items/scoring key*

Item number	Direction of keyed response
15	c
33	a
51	c
66	c
85	c
101	c
119	c
137	a
154	a
169	c
170	c
177	c

Source: 16PF–5 Filipino Appendix C, p 124

Infrequency (INF)

Filipino — raw score cut-off points for INF; based on Filipino sample (N=1,038)

Raw score	Cut-off point
0–4	Acceptable range
5–59	High range

Source: 16PF–5 Filipino Appendix C, p 127

Filipino — raw score to percentile conversion for INF

Raw score	Percentile
0	64
1	81
2	88
3	92
4	95
5	96
6	97
7	98
8–59	99

Note: data based on a normal distribution and percentiles calculated according to this.

Filipino — Infrequency (INF); items/scoring key*

Item numbers												
6	10	14	21	22	32	33	35	45	59	50	52	53
56	57	61	66	67	68	71	80	82	85	86	90	92
98	99	104	105	107	108	111	112	113	118	120	123	128
129	133	134	138	139	140	141	142	147	155	156	160	161
168	171	172	173	174	176	178	181	182	185	186		

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: 16PF–5 Filipino Appendix C, p 127

Acquiescence (ACQ)

Filipino — raw score cut-off points; based on Filipino sample (N=1,038)

Raw score	Cut-off point
0–74	Acceptable range
75–102	High range

Source: 16PF–5 Filipino Appendix C, p 125

Filipino – raw score to percentile conversion for ACQ

Raw score	Percentile	Raw score	Percentile
0–33	1	56	53
34–35	2	57	57
36	3	58	62
37	4	59	66
38	5	60	69
39	6	61	73
40	7	62	76
41	8	63	79
42	9	64	81
43	11	65	85
44	14	66	87
45	15	67	88
46	18	68	89
47	21	69	90
48	24	70	91
49	27	71	92
50	30	72	93
51	34	73	94
52	38	74	95
53	42	75	96
54	46	76–80	98
55	50	81–102	99

Filipino – Acquiescence (ACQ); items/scoring key*

Item numbers												
1	6	8	9	12	14	15	19	21	22	23	24	26
30	32	39	40	42	43	49	50	51	52	53	55	56
57	58	59	61	63	65	66	67	68	71	73	74	75
76	78	81	83	85	86	87	88	89	90	94	96	98
99	105	106	108	110	111	112	113	114	117	119	121	122
123	124	125	126	128	130	131	134	136	139	140	141	142
143	144	146	149	150	153	158	159	160	161	162	163	164
165	166	167	168	171	172	173	174	175	178	179		

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Source: 16PF–5 Filipino Appendix C, p 126

Development of the 16PF questionnaire in Filipino

Philippine psychology, despite the efforts of local psychologists to develop a psychology that is attuned to the cultural and lingual diversity of the Filipinos, has not yet gained its independence from western psychology. Thus, translation and adaptation of well-established psychological tests to better suit the Filipino setting are called for. Taking into consideration that a large number of the Filipino-speaking populace are used to their local dialect and may therefore have a hard time understanding the English 16PF fully, the Philippine Psychological Corporation (PhilPsyCor) embarked on the task of translating the 16PF Fifth Edition to the Philippine language.

The 16PF Test is one of the most respected and widely used personality tests in the Philippines. In business and industry, 16PF is frequently used for the selection, placement and promotion of personnel by predicting important job-related criteria such as work efficiency, conscientiousness, resiliency to stress, interpersonal relations and many other measures relevant to specific jobs and professions. The16PF is widely used for profiling, counselling and research purposes in schools and psychological service centres.

This Filipino translation/adaptation project of the 16PF test was undertaken to address the need for empirical translation and adaptation of established standardised English psychological instruments in the Philippines.

French (European)

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in French (European)

French (European)

Norm sample description

French (European) — norm sample (N=1,400), data collected in 2011

Gender	Number in sample	Percent in sample
Male	570	50
Female	570	50
Total	1,400	100

Age (years)	Number in sample	Percent in sample
18–24	143	12.5%
25–29	145	12.7%
30–34	160	14.0%
35–39	144	12.6%
40–44	149	13.1%
45–49	127	11.1%
50–54	110	9.6%
55–59	85	7.5%
60–64	77	6.8%

Education level	Number in sample	Percent in sample
No qualifications (Aucun diplôme, CEP)	24	2.1%
Secondary diploma age 16 (Brevet des collèges)	54	4.7%
Vocational diploma (BEP–CAP)	269	23.6%
Baccalauréat	233	20.4%
Undergraduate diploma (Bac+2/DEUG)	190	16.7%
Bachelor's degree (Bac+3/Licence)	141	12.4%
Master's degree (Bac+4 /Maîtrise)	84	7.4%
Postgraduate diploma (Bac+5/ Masters/DESS/DEA)	121	10.6%
Doctorate (Doctorat)	24	2.1%

Region	Number in sample	Percent in sample
Nord et Picardie	120	10.5%
Bretagne	70	6.1%
Normandie	70	6.1%
Alsace-Lorraine	84	7.4%
Champagne-Ardennes	32	2.8%
Ile de France	238	20.9%
Centre	60	5.3%
Pays de Loire	66	5.8%
Bourgogne et Franche-comté	53	4.6%
Poitou-Charente	34	3.0%
Limousin-Auvergne	30	2.6%
Midi-Pyrénées	55	4.8%
Languedoc-Roussillon	41	3.6%
PACA-Corse	6	0.5%

Source: French 16PF data supplement 2011, p 13

Employment status	Number in sample	Percent in sample
Full-time (for an employer) (Travail à plein temps (pour un employeur))	759	66.6%
Full-time (self-employed) (Travail à plein temps (à votre compte))	49	4.3%
Part-time (for an employer) (Travail à mi-temps (pour un employeur))	148	13.0%
Part-time (self-employed) (Travail à mi-temps (à votre compte))	19	1.7%
Unemployed (Sans emploi)	40	3.5%
Employed, not salaried (Travail non rémunéré)	4	0.4%
Student (Etudiant)	37	3.2%
Homemaker (Personne au foyer)	30	2.6%
Retired (Retraité)	54	4.7%

Occupational level	Number in sample	Percent in sample
Top level (Management exécutif / Chef d'entreprise)	32	3.3%
Top management/Senior Manager (Management supérieur/Cadre supérieur)	54	5.5%
Middle management (Management intermédiaire/Cadre)	184	18.9%
First level management/Supervisor (Superviseur/Premier niveau de management/Agent de maitrise)	123	12.6%
Employee (Employé)	534	54.8%
Other (Autre)	48	4.9%

Work area	Number in sample	Percent in sample
Agriculture, forestry and fisheries (Agriculture, forêt et pêche)	15	1.5%
Mining (Exploitation minière)	4	0.3%
Manufacturing (Industrie de transformation)	64	6.8%
Electricity, gas and air conditioning supply (Fourniture d'électricité, gaz et air conditionné_	10	1.0%
Water supply, waste processing and water treatment (Approvisionnement en eau, traitement des déchets et eaux usées)	2	0.2%
Construction	53	5.4%
Wholesale and retail, vehicle repair (Commerce de gros et de détail, réparation de véhicules à moteur)	81	8.1%
Hospitality (Hébergement et restauration)	33	3.4%
Transport and warehousing (Transport et stockage)	46	4.4%
Information technology (Information et communication)	44	4.5%
Financial services (Services financiers et assurances)	34	3.2%
Property (Immobilier)	14	1.8%
Professional, scientific and technical activities (Activités professionelles, scientifiques et techniques)	56	5.6%
Administration and customer services (Activités administratives et services d'assistance technique)	30	3.8%
Civil service, defence, social security (Administration publique et défense; sécurité sociale)	98	9.1%
Education (Education)	86	9.7%
Health and welfare (Santé publique et services sociaux)	110	10.5%
Arts and recreation (Arts et loisirs)	19	2.8%
Other service activities (Autres activités de service)	158	16.2%
Private household employment (Activités ménagères en tant qu'employeurs; biens et services divers produisant des activités ménagères à usage personnel)	15	1.7%
Extra-territorial organisations (Organisations extra-territoriales)	3	0.3%

Source: French 16PF data supplement 2011, p 13–15

Norm tables

French (European) − general population (N=1,400), data collected in 2011

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–5	6–7	8–9	10–11	12–13	14–15	16–17	18	19–20	21–22
Reasoning	B	0–3	4	5	6	7	8–9	10	11	12	13–15
Emotional Stability	C	0–2	3–5	6–8	9–10	11–13	14–15	16–17	18	19	20
Dominance	E	0–3	4–5	6–7	8–9	10–12	13–14	15–16	17–18	19	20
Liveliness	F	0–3	4	5–6	7–8	9–11	12–13	14–15	16–17	18	19–20
Rule-Conscious-ness	G	0–2	3–4	5–6	7–9	10–11	12–14	15–16	17–18	19–20	21–22
Social Boldness	H	-	0	1–2	3–5	6–8	9–12	13–15	16–17	18–19	20
Sensitivity	I	0–2	3–4	5–6	7–8	9–11	12–14	15–16	17–18	19–20	21–22
Vigilance	L	0–4	5–6	7–8	9–10	11–12	13–14	15–16	17–18	19	20
Abstract-edness	M	0	1	2–3	4–5	6–8	9–11	12–13	14–16	17–18	19–22
Private-ness	N	0–1	2–4	5–6	7–9	10–12	13–14	15–16	17–18	19	20
Apprehen-sion	O	0–1	2–3	4–5	6–8	9–11	12–14	15–16	17–18	19	20
Openness to Change	Q1	0–7	8–10	11–12	13–15	16–18	19–21	22–23	24–25	26	27–28
Self-Reliance	Q2	0–1	2–3	4–5	6–7	8–10	11–13	14–16	17–18	19	20
Perfection-ism	Q3	0–3	4–5	6–8	9–10	11–13	14–15	16–17	18–19	20	-
Tension	Q4	0–1	2–3	4–5	6–7	8–10	11–12	13–15	16–17	18–19	20

Source: French 16PF data supplement 2011, p 5

Descriptive statistics

French (European) − general population (N=1,400), data collected in 2011

Primary Factor		Number of items	Mean	SD
Warmth	A	11	13.15	3.74
Reasoning	B	15	7.86	2.42
Emotional Stability	C	10	12.93	4.45
Dominance	E	10	11.87	4.20
Liveliness	F	10	11.07	4.08
Rule-Consciousness	G	11	11.78	4.52
Social Boldness	H	10	8.89	5.63
Sensitivity	I	11	11.36	4.66
Vigilance	L	10	12.26	3.91
Abstractedness	M	11	8.71	4.83
Privateness	N	10	11.75	4.67
Apprehension	O	10	11.30	4.86
Openness to Change	Q1	14	17.91	5.04
Self-Reliance	Q2	10	10.81	4.79
Perfectionism	Q3	10	13.16	4.39
Tension	Q4	10	10.11	4.60
Impression Management	IM	12	14.28	4.49

Source: French 16PF data supplement 2011 p 4; French 16PF Manual 1995, p 65

Reliability and Standard Error of Measurement

French (European) – general population (N=1,400), data collected in 2011

Primary Factor		Number of items	Cronbach's alpha coefficients (N=1,400)	SEM (Sten scores)
Warmth	A	11	0.51	1.4
Reasoning	B	15	0.44	1.5
Emotional Stability	C	10	0.72	1.1
Dominance	E	10	0.65	1.2
Liveliness	F	10	0.63	1.2
Rule-Consciousness	G	11	0.67	1.1
Social Boldness	H	10	0.84	0.8
Sensitivity	I	11	0.66	1.2
Vigilance	L	10	0.65	1.2
Abstractedness	M	11	0.72	1.1
Privateness	N	10	0.74	1.0
Apprehension	O	10	0.75	1.0
Openness to Change	Q1	14	0.66	1.2
Self-Reliance	Q2	10	0.75	1.0
Perfectionism	Q3	10	0.70	1.1
Tension	Q4	10	0.68	1.1

Source: French 16PF data supplement 2011, p 8

Global weights/factor equations

French (European) — comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Indepen-dence		Self-Control	
		FR (E)	UK/US	FR (E)	UK/US	FR (E)	UK/US	FR (E)	UK/US	FR (E)	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Conscious-ness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstract-edness	M					−0.3	−0.3			−0.3	−0.3
Private-ness	N	−0.3	−0.3								
Apprehen-sion	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfection-ism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

Note: the Global Factor weights of the French 16PF are based on US weights and are consequently exactly the same as US/UK weights.

A principal component factor analysis with oblique rotation of the French 16PF data was carried out including the 15 personality factors. The analysis was based on the norm sample of 1,000 respondents. Overall the results are very similar to the results of the US data analysis. It was decided to use the UK/US weighting to allow cross–cultural research.

Source: French 16PF Manual (16PF–5 Manual) 1995, p 55f.

Response Style Indices

Impression Management (IM)

French (European) — raw to percentile conversions for IM

Raw score	Cut-off point
0–6	Low range
7–21	Acceptable range
22–24	High range

French (European) — raw score to percentile conversion for IM; based on French sample (N=1,000)

Raw score	Percentile	Raw score	Percentile
0–4	1	14	46
5	2	15	54
6	4	16	62
7	6	17	70
8	9	18	78
9	14	19	84
10	19	20	90
11	24	21	94
12	31	22	97
13	38	23–24	99

Source: French 16PF Manual (16PF–5 Manual) 1995, p 69

French (European) — Impression Management (IM); items/scoring key

Item number	Direction of keyed response
17	c
35	c
53	c
71	c
89	a
107	c
125	c
141	c
143	a
159	c
161	c
162	c

Source: French 16PF Manual (16PF–5 Manual) 1995, p 72

Infrequency (INF)

French (European) — raw score cut-off points for INF

Raw score	Cut-off point
0–8	Acceptable range
9–50	High range

French (European) – raw score to percentile conversion for INF; based on French sample (N=1,000)

Raw score	Percentile
0	28
1	64
2	76
3	83
4	88
5	91
6	92
7	94
8	95
9	96
10	97
11	98
12–50	99

Source: French 16PF Manual (16PF–5 Manual) 1995, p 73

French (European) – Infrequency (INF); items/scoring key; item selection based on French sample (N=1,000); all items with response frequency of less than 5%

Item numbers												
2	4	10	13	14	15	17	18	21	23	27	29	35
42	46	53	54	57	59	62	65	67	70	71	72	79
80	83	87	88	89	92	107	110	112	118	132	137	138
140	141	144	146	148	150	159	160	161	162	163		

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

French (European) — raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–65	Acceptable range
66–94	High range

French (European) — raw score to percentile conversion for ACQ; based on French sample (N=1,000)

Raw score	Percentile	Raw score	Percentile
0–33	1	53	54
34–35	2	54	59
36–37	3	55	63
38	4	56	67
39	5	57	71
40	6	58	76
41	8	59	80
42	10	60	84
43	11	61	87
44	14	62	89
45	18	63	91
46	23	64	93
47	26	65	95
48	31	66	96
49	35	67	97
50	39	68–69	98
51	44	70–94	99
52	49		

Source: French 16PF Manual (16PF–5 Manual) 1995, p 73

French (European) — Acquiescence (ACQ); items/scoring key

Item numbers												
1	2	4	6	8	9	10	11	12	16	17	18	19
20	21	22	24	25	27	28	29	31	33	35	38	39
41	42	44	47	48	49	52	53	55	57	58	59	60
62	64	65	67	69	72	74	75	76	77	79	80	81
83	84	87	88	89	91	92	95	96	97	99	101	104
106	107	113	115	117	122	124	126	129	132	135	136	137
139	140	143	145	149	150	151	156	157	158	160	165	166
168	169	170										

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in French (European)

The French 16PF Fifth Edition was developed by the test publisher ECPA (Les Editions du Centre de Psychologie Appliquee), the distributor of the 16PF Fourth Edition in France at the time. The development was carried out in close collaboration with the Associate Professors Jean-Luc Mogenet and Jean-Pierre Rolland from the Department of Occupational Psychology at the University of Paris. The two academics also published a paper on the construct validity of the new French version:

Rolland, J. P & Mogenet, J. L. (1996). Éléments de validité des dimensions primaires de l'adaptation française de l'inventaire 16PF–5 [Evidence on the primary dimensions of the 16PF–5 French form.]. European Review of Applied Psychology/ Revue Europeenne de Psychologie Appliquee, 46(1), 25–31.

I. Translation and adaptation of items

For the French version of 16PF–5, IPAT provided a set of 249 experimental items: 14 for each of the 15 dimensions of personality, 14 for IM, 18 for Reasoning (B) and seven experimental personality items. It was decided to undertake a complete overhaul of the French version, and therefore not take into account earlier French versions of the 16PF.

All 249 items were translated independently by two translators/psychologists (double forward translation). An expert committee (three people) considered the two translations, using these criteria: closeness to the US version, representation of the construct, suitable adaptation considering cultural contexts and semantics in modern French. This resulted in a first experimental version with 249 items which was then back-translated into English by a third translator/psychologist. A comparative analysis by a committee of experts on both English versions (original and back-translation) was used to correct the conceptual issues and the wording of some French items. At this point, the French items were reviewed again to select the best version.

II. First experimental version

This resulted in a questionnaire version containing 253 items (210 personality items, 14 IM items, seven experimental personality items and 22 items of Reasoning (B) which were reviewed again by a panel which decided on the final experimental version. This version was then completed by a sample of 249 subjects.

A confirmatory factor analysis* (multigroup, centroid on criteria) was carried out including the 231 personality and IM items and to test if the items belong to a respective factor as hypothesised. The analysis showed that, overall, the selected items fitted well into the model: 16 dimensions were identified (15 personality dimensions and IM), which established the validity of the original structure of the questionnaire.

Based on a detailed analysis of loadings of each item on various factors some items were eliminated (insufficient loading and/or loading onto more than one factor). In addition, a qualitative analysis led to changes to the wording of some items. This selection and these changes resulted in the development of the second experimental version.

III. Second experimental version

This second experimental version consisted of 217 items (185 personality items, 15 IM items and 17 items for Reasoning (B). It was completed by 304 subjects.

A confirmatory factor analysis* of the 200 items (personality and IM) confirmed the general validity of the model. A new analysis of the results led to further changes to some items that had insufficient loading and/or loadings onto more than one factor. Some items were reworded. After deciding on the final set of items, the internal consistency coefficients

(Cronbach's alpha) for the 15 personality factors ranged from 0.60 to 0.85 (median 0.71). This selection and these changes resulted in the third test version.

A comparison of item and scale statistics between the French and the American versions was carried out.

A. Differences of Item Endorsement Frequency

The endorsement percentages of the items were compared between the American sample (N=1,369) and the French sample (N=304). The items were then classified according to their concordance rate. Of the 200 personality items, 170 were similar for the French and American versions. Of these similar items, 19 showed a significant difference in the endorsement frequency (25% difference between samples).

B. Comparison of scales

a – Item endorsement frequency per scale

The number of items per factor that had a difference in the Item Endorsement Frequency of over 25% between the French and American samples was identified. The problematic items were distributed uniformly on all scales apart from Factor Q1 (five of 14 items had more than 25% difference). These differences were investigated and addressed in the light of other results (see III.D).

b – Average profiles

The raw score means of the scales for the French male (N=170) and female (N=134) samples were transformed into z scores according to US standards (male: N=767; female: N=602). Taking 40% of the standard deviation as a threshold for both genders, Factors E and Q1 were significantly higher in the French sample, Factors G and Q2 significantly lower.

C. Second-order factor analysis

Five factors emerged in a second-order factor analysis that was carried out to verify whether the same five Global Factors emerged in the French factorial structure. The sixth factor that emerged was composed of Factor B and corresponds to the Reasoning scale.

- Factor 1 was equivalent to US Factor 1 (Extraversion) and was composed of A+, F+, H+, N–, Q2–.
- Factor 2 was equivalent to US Factor 3 (Self-Control) and was composed of G+, Q3+, F–, M–.
- Factor 3 was equivalent to US Factor 2 (Anxiety) and was composed of O+, L+, Q4+, C–.
- Factor 4 was equivalent to US Factor 4 (Independence) and was composed of E +, H +, L+, Q1+.
- Factor 5 was the opposite of US Factor 5 (Tough-Mindedness) and was composed of A+, I+, M+, Q1+.

D. Discussion and analysis of items

The results of these studies helped to revise the content of certain items in order to reduce disparities between the American and French samples. Each of the items that showed more than 25% difference between the two samples or too low factor loadings on its respective factor was reviewed by the committee of experts. Two situations were encountered:

- Translation was not specific enough and did not sufficiently reflect the underlying construct. In this case, a new translation was developed.
- Translation was correct with regard to language and context, in which case the hypothesis was developed that this reflects a real cultural difference:
    - o Either it seemed possible to move away from the original US content to 'pull' the item towards the scale, by using the clinical and cultural expertise of the experts, and the items were reformulated in this manner;

> o   or it was essential to create new items more suited to the French cultural context.

The work of this cultural translation was carried out on three levels: formal changes, adaptation to account for cultural differences and radical changes (more details and examples in the French manual).

IV. Third experimental version

The third experimental version included 218 items (186 personality items, 15 IM items and 17 items for Reasoning (B). It was completed by 560 subjects. The 201 items were subjected to a confirmatory factor analysis* which validated once again the correspondence between the theoretical model and the data. For the 15 primary factors, as well as the IM scale, the internal consistency coefficients (Cronbach's alpha) ranged from 0.62 to 0.86 (median 0.73). The examination of loadings and consistency coefficients allowed the final selection of items.

V. Final version

A final set of items was decided on based on the results of the data analysis conducted with the third experimental version. This final French 16PF questionnaire contains 158 personality items, 12 IM items and 15 Reasoning items.

In 2011 an udated sample was collected. The sample consisted of 1,140 respondents (570 female and 570 male) who completed the French version of the 16PF Fifth Edition questionnaire between February and March 2011 via an online data collection platform. The sample was representative of the French working-age population. Full sample details are shown in Appendix 1.

* There is no certainty that it was really a CFA that was carried out even though it is described that way in the French manual. It seems unlikely.

Source: French 16PF Manual (16PF–5 Manual) 1995, pp 37–40

German

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in German

German

Norm sample description

German – norm sample (N=1,209), data collected in 1998

Age (years)	Total		Male		Female	
	Number	%	Number	%	Number	%
18–29	242	20	112	21	130	19
30–49	491	41	213	40	278	41
50 and older	476	39	207	39	269	40
Total	1209	100	532	100	677	100

Education	Number in sample	Percent in sample
9 years of school education – lower level than GCSE (Volks-/Hauptschule)	510	42
GCSE or equivalent (weiterführende Schule/ohne Abitur)	523	43
A-Level (Abitur)	94	8
University (Universität/Hochschule)	82	7

Region	Number in sample	Percent in sample
Western Germany	942	78
Eastern Germany	267	22

Source: German 16PF Manual (16PF–R Testmanual) 1998, pp 12 and 103

Norm tables

German – general population (N=1,209), data collected in 1998*

Primary Factor		Stens									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Warmth	A	9–11	12–13	14–16	17–18	19–20	21–23	24	25	26	27
Reasoning	B	0	1–2	3	4–5	6–7	8–9	10	11	12	13
Emotional Stability	C	11–13	14–16	17–18	19–22	23–24	25–27	28–29	30	31–32	33
Dominance	E	11–12	13–14	15–17	18–20	21–22	23–25	26–28	29	30	31–33
Liveliness	F	-	9	10	11–12	13–15	16–18	19–20	21–22	23–24	25–27
Rule-Conscious-ness	G	11–12	13–14	15–16	17–19	20–22	23–24	25–26	27–28	29–30	31–33
Social Boldness	H	12	13	14–15	16–20	21–26	27–30	31–33	34	35	36
Sensitivity	I	11–12	13–14	15–16	17–20	21–23	24–26	27–28	29–30	31–32	33
Vigilance	L	10–13	14–15	16–18	19–21	22–23	24–25	26–27	28	29	30
Abstract-edness	M	-	11	12	13–14	15–16	17–19	20–22	23–24	25–27	28–33
Private-ness	N	11–12	13–14	15–17	18–20	21–24	25–26	27–28	29–30	31–32	33
Apprehen-sion	O	11–12	13–14	15–17	18–20	21–24	25–27	28–30	31	32	33
Openness to Change	Q1	11–12	13–14	15	16–18	19–21	22–24	25–26	27–29	30	31–33
Self-Reliance	Q2	11	12	13–14	15–16	17–20	21–23	24–26	27–29	30–31	32–33
Perfection-ism	Q3	11–12	13–14	15–17	18–20	21–24	25–26	27–29	30	31–32	33
Tension	Q4	11	12	13–16	17–19	20–22	23–26	27–28	29–30	31–32	33
IM		10–11	12	13–14	15	16–18	19–21	22–23	24–25	26–27	28–30

*Note: the German 16PF questionnaire is scored 1–2–3 rather than 0–1–2.

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 106

Descriptive statistics

German – overall norm sample*

Primary Factor		Number of items	Combined (N=1,209)	
			Mean	SD
Warmth	A	9	21.0	4.2
Reasoning	B	13	7.6	3.2
Emotional Stability	C	11	24.8	5.0
Dominance	E	11	23.2	5.0
Liveliness	F	9	16.4	4.5
Rule-Consciousness	G	11	22.5	4.6
Social Boldness	H	12	25.7	7.6
Sensitivity	I	11	23.8	5.5
Vigilance	L	10	23.7	4.2
Abstractedness	M	11	17.9	4.4
Privateness	N	11	23.8	5.2
Apprehension	O	11	24.4	5.7
Openness to Change	Q1	11	21.8	5.1
Self-Reliance	Q2	11	20.9	5.5
Perfectionism	Q3	11	24.1	5.5
Tension	Q4	11	23.1	5.7
Impression Management	IM	10	19.3	4.2

*Note: the German 16PF questionnaire is scored 1–2–3 rather than 0–1–2.

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 104f

Reliability and Standard Error of Measurement

German

Primary Factor		Number of items	Cronbach's alpha coefficients (N=1,209)	SEM (Sten scores)*	Test–retest reliability [1 month] (N=111)
Warmth	A	9	0.68	1.23	0.84
Reasoning	B	13	0.79	0.95	0.60
Emotional Stability	C	11	0.72	1.09	0.72
Dominance	E	11	0.73	1.06	0.84
Liveliness	F	9	0.71	1.04	0.87
Rule-Consciousness	G	11	0.66	1.16	0.79
Social Boldness	H	12	0.89	0.70	0.92
Sensitivity	I	11	0.76	1.03	0.89
Vigilance	L	10	0.66	1.20	0.80
Abstractedness	M	11	0.66	1.06	0.81
Privateness	N	11	0.74	1.05	0.88
Apprehension	O	11	0.78	0.98	0.84
Openness to Change	Q1	11	0.71	1.11	0.75
Self-Reliance	Q2	11	0.76	0.94	0.87
Perfectionism	Q3	11	0.75	1.06	0.82
Tension	Q4	11	0.78	0.97	0.84

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 17

Global weights/factor equations

German – comparison against UK/US factor weights

OPPassessment: When computing the German Global Factors on OPPassessment, the same factor equations are used as for US/UK (see table below).

German factor weights as used on OPPassessment

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Indepen-dence		Self-Control	
		GE	UK/US	GE	UK/US	GE	UK/US	GE	UK/US	GE	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Conscious-ness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstract-edness	M					−0.3	−0.3			−0.3	−0.3
Private-ness	N	−0.3	−0.3								
Apprehen-sion	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfection-ism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

German factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		GE	UK/US	GE	UK/US	GE	UK/US	GE	UK/US	GE	UK/US
Warmth	A	0.2	0.3				−0.2	−0.2			
Emotional Stability	C			−0.3	−0.4						
Dominance	E	0.1						0.5	0.6		
Liveliness	F	0.3	0.3								−0.2
Rule-Consciousness	G									0.5	0.4
Social Boldness	H	0.2	0.2						0.3		
Sensitivity	I						−0.5	−0.5			
Vigilance	L	−0.3			0.3				0.2		
Abstractedness	M					−0.6	−0.3				−0.3
Privateness	N		−0.3								
Apprehension	O			0.3	0.4			−0.2			
Openness to Change	Q1					−0.7	−0.5		0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfectionism	Q3									0.6	0.4
Tension	Q4			0.5	0.4						
Constant value		3.7	4.40	2.8	1.60	12.5	13.80	8.2	−2.20	0.9	3.80

Note: weights and constants are adapted to match commonly used format.

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 90

German factor weights based on German data analysis

A principal component factor analysis with oblimin rotation of the German 16PF data was carried out including the 15 personality factors as well as the Reasoning scale (Factor B). The analysis was based on the norm sample of 1,209 respondents.

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 17f.

Response Style Indices

Impression Management (IM)

German – raw score cut-off points for IM

Raw score	Cut-off point
0–12	Low range
3–26	Acceptable range
27–30	High range

German – raw score to percentile conversion for IM; based on German sample (N=1,209)*

Raw score	Percentile	Raw score	Percentile
10–11	1	21	68
12	5	22	79
13	7	23	81
14	15	24	89
15	19	25	90
16	31	26	95
17	34	27	96
18	48	28–29	99
19	52	30	100
20	66		

Note: the German 16PF questionnaire is scored 1–2–3 rather than 0–1–2.

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 79

German — Impression Management (IM); items/scoring key

Item number	Direction of keyed response
17	c
24	c
40	c
63	c
84	c
114	c
134	c
144	a
153	c
161	a

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 13

Infrequency (INF)

German — raw score cut-off points for INF

Raw score	Cut-off point
0–9	Acceptable range
10–51	High range

German – raw score to percentile conversion for INF; based on German sample (N=1,209)

Raw score	Percentile	Raw score	Percentile
1	67.0	14	98.6
2	76.3	15	99.1
3	82.0	16	99.3
4	85.4	17	99.4
5	88.6	18	99.5
6	91.2	19	99.6
7	92.8	20	99.8
8	93.8	21	99.9
9	95.2	22	99.9
10	95.7	23	99.9
11	96.7	24	99.9
12	97.6	25	99.9
13	98.0	26–51	99.9

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 81

German – Infrequency (INF); items/scoring key; item selection based on German sample (N=1,209); all items with response frequency of less than 5%

Item numbers												
3	4	9	10	11	12	17	19	24	25	29	33	35
40	43	51	58	63	65	68	69	72	74	82	84	85
86	88	93	98	102	110	112	115	116	117	120	132	133
134	137	139	141	143	145	153	155	157	164	165	166	

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 79

Acquiescence (ACQ)

German – raw score cut-off points for ACQ

Raw score	Cut-off point
0–70	Acceptable range
71–100	High range

German – raw score to percentile conversion for ACQ; based on German sample (N=1,209)

Raw score	Percentile	Raw score	Percentile
0–33	1	56	53
34–35	2	57	57
36	3	58	62
37	4	59	66
38	5	60	69
39	6	61	73
40	7	62	76
41	8	63	79
42	9	64	81
43	11	65	85
44	14	66	87
45	15	67	90
46	18	68	93
47	21	69	94
48	24	70	95
49	27	71	96
50	30	72	97
51	34	73	97
52	38	74	97
53	42	75	98
54	46	76–80	99
55	50	81–100	100

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 80

German – Acquiescence (ACQ); items/scoring key

Item numbers												
1	5	7	8	9	10	11	12	17	18	20	23	24
25	28	29	31	33	34	35	36	40	41	42	43	44
46	48	49	51	54	55	57	58	61	63	65	67	68
69	70	71	72	73	74	75	77	79	81	82	83	85
87	92	93	95	97	98	99	100	101	103	104	106	107
108	109	110	112	116	118	119	122	124	125	126	127	131
132	133	134	135	137	140	141	143	144	145	148	152	153
154	156	157	159	161	164	165	167	171				

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 79.

Development of the 16PF questionnaire in German

The German 16PF was developed in 1998 by Klaus Schneewind, Professor at the University of Munich, Germany (together with Johanna Graf who is also the co-author of the manual). The edition was called 16PF–R (R for 'Revised') is a further development of the German Fourth Edition. Data from 618 respondents were collected on an initial pool of 282 items to establish item properties and to select the final set of items. These 282 items are partly old 16PF Fourth Edition items, partly translated items of the US Fourth Edition and partly newly written items. Norm data on the final set of items were collected on a representative sample of 1,209 respondents. The final questionnaire was distributed in Germany, Switzerland and Austria by Hogrefe until OPP bought it back in October 2009.

Source: German 16PF Manual (16PF–R Testmanual) 1998, p 11f

Greek

Norm tables

Descriptive statistics

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Greek

Greek

Norm tables

Greek – overall norm sample (N=1,123, data collected in 2001)

Primary Factor		Stens									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Warmth	A	0–6	7	8–10	11	12–14	15–16	17–18	19	20	21–22
Reasoning	B	0–4	5	6	7–8	9–10	11	12	13	14	15
Emotional Stability	C	0–2	3–4	5–6	7–8	9–10	11–13	14–15	16–18	19	20
Dominance	E	0–4	5–6	7–8	9–10	11–13	14–15	16–17	18	19–20	-
Liveliness	F	0–4	5	6–7	8–9	10–11	12	13–14	15–16	17	18–20
Rule-Consciousness	G	0–2	3–4	5–6	7–9	10–12	13–14	15–16	17–18	19–20	21–22
Social Boldness	H	0	1–2	3–5	6–8	9–12	13–15	16–18	19	20	-
Sensitivity	I	0–2	3–5	6–8	9–12	13–15	16–18	19	20–21	22	-
Vigilance	L	0–8	9–11	12–13	14–15	16	17	18	19	20	-
Abstract-edness	M	0	1–2	3–4	5–6	7–9	10–12	13–15	16–17	18–19	20–22
Private-ness	N	0–3	4–5	6–8	9–10	11–12	13–15	16–17	18	19–20	-
Apprehen-sion	O	0–4	5–6	7–10	11–12	13–14	15–16	17–18	19	20	-
Openness to Change	Q1	0–8	9–10	11–12	13–16	17–18	19–20	21–23	24	25–26	27–28
Self-Reliance	Q2	0	1–2	3–4	5–6	7	8–10	11–12	13–14	15–16	17–20
Perfection-ism	Q3	0–3	4–6	7–8	9–11	12–14	15–16	17	18	19–20	-
Tension	Q4	0–4	5–6	7–8	9–10	11–13	14–16	17	18	19–20	-

Descriptive statistics

Greek

Primary Factor		Number of items	Primary Factor		Number of items
Warmth	A	11	Abstractedness	M	11
Reasoning	B	15	Privateness	N	10
Emotional Stability	C	10	Apprehension	O	10
Dominance	E	10	Openness to Change	Q1	14
Liveliness	F	10	Self-Reliance	Q2	10
Rule-Consciousness	G	11	Perfectionism	Q3	10
Social Boldness	H	10	Tension	Q4	10
Sensitivity	I	11	Impression Management	IM	12
Vigilance	L	10			

Global weights/factor equations

Greek – comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Indepen-dence		Self-Control	
		Greek	UK/US	Greek	UK/US	Greek	UK/US	Greek	UK/US	Greek	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Conscious-ness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstract-edness	M					−0.3	−0.3			−0.3	−0.3
Private-ness	N	−0.3	−0.3								
Apprehen-sion	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfection-ism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.4	4.40	1.65	1.60	13.75	13.80	−2.20	−2.20	3.85	3.80

Note: the Global Factor weights of the Greek 16PF are based on US weights and are consequently exactly the same as the US/UK weights.

Response Style Indices

Impression Management (IM)

Greek – raw score cut-off points for IM

Raw score	Cut-off point
0–3	Low range
4–19	Acceptable range
20–24	High range

Greek – raw score to percentile conversion for IM

Raw score	Percentile	Raw score	Percentile
0–1	1	12	70
2	3	13	77
3	5	14	84
4	7	15	89
5	11	16	92
6	16	17	93
7	22	18	94
8	30	19	95
9	40	20	97
10	50	21	98
11	60	22–24	99

Note: data based on a normal distribution and percentiles calculated according to this.

Greek – Impression Management (IM); items/scoring key

Item number	Direction of keyed Response	Item number	Direction of keyed response
16	a	85	c
23	c	95	c
34	c	101	c
48	c	115	c
58	c	144	c
75	c	153	c

Infrequency (INF)

Greek – raw score cut-off points for INF

Raw score	Cut-off point
0–3	Acceptable range
4–32	High range

Greek – raw score to percentile conversion for INF

Raw score	Percentile
0	32
1	73
2	85
3	95
4	97
5	98
6–32	99
7–32	99

Note: data based on a normal distribution and percentiles calculated according to this.

Greek – Infrequency (INF); items/scoring key

Item numbers												
10	14	15	16	20	26	28	35	51	70	75	80	90
91	92	94	96	97	101	119	122	123	126	141	143	146
148	149	151	152	154	155							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Greek – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–70	Acceptable range
71–103	High range

Greek – raw score to percentile conversion for ACQ

Raw score	Percentile	Raw score	Percentile
0–24	0.1	52	28.4
25–26	0.2	53	32.3
27–28	0.3	54	36.4
29–30	0.4	55	40.8
31	0.5	56	45.5
32	0.7	57	50.5
33	0.9	58	54.9
34	1.2	59	59.6
35	1.4	60	64.2
36	1.8	61	68.6
37	2.2	62	72.7
38	2.7	63	76.5
39	3.4	64	80.5
40	3.9	65	83.7
41	4.8	66	86.6
42	5.7	67	89.0
43	6.7	68	91.2
44	8.0	69	93.2
45	9.7	70	94.7
46	11.5	71	96.1
47	13.6	72	97.2
48	15.8	73	97.9
49	18.6	74	98.5
50	21.6	75–103	99.0
51	25.0		

Note: data based on a normal distribution and percentiles calculated according to this.

Greek — Acquiescence (ACQ); items/scoring key

Item numbers												
1	2	6	10	11	12	13	14	15	22	23	25	27
28	29	33	34	35	36	39	40	41	43	44	47	48
49	50	51	54	57	58	59	60	61	62	63	64	65
66	68	69	71	76	77	79	80	83	85	87	89	90
91	92	93	96	97	99	100	103	105	106	107	108	110
111	112	113	114	116	118	124	125	126	128	130	131	132
133	134	135	137	138	140	141	142	143	145	146	148	150
151	152	155	157	158	159	162	164	165	166	168	169	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Greek

The Greek version of the 16PF–5 was developed by Mr Naoum Karaminas, (MSc in Industrial Psychology, Psychometrics Expert of the Hellenic Air Force). Mr Karaminas had also standardised the previous version of the 16PF for the Greek language. The Greek questionnaire comprises fully of the American version items, twice back-translated, presented in exactly the same order as the original. This was deemed necessary in order to ensure compatibility with international research findings. The normative sample of 1,123 subjects of both genders were selected according to demographic data provided by the Hellenic Statistical Authority (based on the 2001 census results). The sample was distributed across a wide age range (15 to 64 years old) and covered all educational levels from elementary school to university level. The questionnaire was administered to subjects in various parts of Greece, including the islands.

Indian (English)

Norm tables

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Indian (English)

Indian (English)

Norm tables

Indian (English) – General Population; sample size and year of data collection unknown

Primary Factor		Stens									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Warmth	A	0–6	7–9	10–12	13–14	15	16–17	18–19	20	21	22
Reasoning	B	0–2	3	4–5	6–7	8–9	10–11	12	13	14	15
Emotional Stability	C	0–7	8–10	11–13	14–16	17	18	19	20	-	-
Dominance	E	0–6	7–9	10–11	12–13	14–15	16	17	18	19–20	-
Liveliness	F	0–5	6–9	10–12	13–14	15–16	17	18–19	20	-	-
Rule-Conscious-ness	G	0–4	5–6	7–9	10–11	12–14	15–16	17–19	20	21	22
Social Boldness	H	0–1	2–4	5–8	9–12	13–16	17–18	19	20	-	-
Sensitivity	I	0–1	2	3–5	6–7	8–10	11–13	14–16	17–18	19–20	21–22
Vigilance	L	0–1	2	3–4	5–6	7–8	9–11	12–13	14–15	16–17	18–20
Abstract-edness	M	-	0	1	2	3–4	5–7	8–10	11–14	15–16	17–22
Private-ness	N	0	1–2	3–4	5–6	7–9	10–12	13–14	15–17	18	19–20
Apprehen-sion	O	0	1	2	3–4	5–7	8–10	11–13	14–16	17–18	19–20
Openness to Change	Q1	0–5	6–9	10–12	13–15	16–17	18–20	21–22	23–25	26	27–28
Self-Reliance	Q2	-	-	0	1	2–3	4–6	7–9	10–12	13–15	16–20
Perfection-ism	Q3	0–2	3–5	6–8	9–11	12–14	15–16	17	18–19	20	-
Tension	Q4	-	-	0	1–2	3–4	5–7	8–10	11–13	14–16	17–20

Global weights/factor equations

Indian (English) – Comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		Ind (Eng)	UK/US	Ind (Eng)	UK/US	Ind (Eng)	UK/US	Ind (Eng)	UK/US	Ind (Eng)	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Consciousness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstractedness	M					−0.3	−0.3			−0.3	−0.3
Privateness	N	−0.3	−0.3								
Apprehension	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfectionism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

The Global Factor weights of the English (Indian) 16PF are based on English (US) weights and are consequently exactly the same as English (US/UK) weights.

Response Style Indices

Impression Management (IM)

Indian (English) — raw score cut-off points for IM

Raw score	Cut-off point
0–6	Low range
7–22	Acceptable range
23–24	High range

Indian (English) — raw score to percentile conversion for IM

Raw score	Percentile	Raw score	Percentile
0–2	1	14	50
3	2	15	58
4	3	16	65
5	4	17	72
6	5	18	80
7	7	19	84
8	11	20	87
9	16	21	90
10	22	22	95
11	30	23	97
12	35	24	99
13	42		

Note: Data based on a normal distribution and percentiles calculated according to this.

US English — Impression Management (IM) — items/scoring key

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Source: Score checker spreadsheet

Infrequency (INF)

Indian (English) — raw score to percentile conversion for INF

Raw score	Cut-off point
0–7	Acceptable range
8–32	High range

Indian (English) – raw score to percentile conversion for INF

Raw score	Percentile
0–1	55
2	71
3	80
4	86
5	90
6	93
7	95
8	96
9	97
10	98
11–32	99

Note: Data based on a normal distribution and percentiles calculated according to this.

Indian (English) – Infrequency (INF) – items/scoring key

Item numbers												
6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: For each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Note: Item selection based on a large English (US) sample (N = 4,346) → items selected with endorsement rate of 6.5% or lower

Acquiescence (ACQ)

Indian (English) – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–73	Acceptable range
74–103	High range

Indian (English) – raw score to percentile conversion ACQ

Raw score	Percentile	Raw score	Percentile
0–42	1	61	55
43–44	2	62	59
45–46	3	63	64
47	5	64	68
48	6	65	72
49	7	66	76
50	9	67	80
51	11	68	83
52	14	69	86
53	17	70	89
54	20	71	92
55	24	72	94
56	30	73	95
57	34	74	98
58	39	75–103	99
59	45		
60	50		

Note: Data based on a normal distribution and percentiles calculated according to this.

Indian (English) — Acquiescence (ACQ) — items/scoring key

Item numbers												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	47
48	49	50	52	54	57	58	59	60	61	62	63	64
65	66	68	69	71	72	76	77	79	83	85	87	89
90	91	93	94	96	97	99	100	103	105	106	107	108
110	111	112	113	114	116	118	124	125	126	128	130	132
133	134	135	137	138	140	141	142	145	146	148	150	151
152	155	157	158	159	162	164	165	166	167	168	169	

Note: For each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF in Indian (English)

The item content as well as the item order of the Indian (English) version of the 16PF questionnaire is identical to the English (US) version. Ma Foi, a recruitment and HR agency, collected data in India and produced norms.

Italian

Norm sample description

Norm tables

Descriptive statistics

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Italian

Italian

Norm sample description

Italian – norm sample (N=766), data collected in 1999–2000

Gender	Number in sample	Percent in sample
Male	394	51.4
Female	372	48.6
Total	766	100
Age (years)		
16–75		
Education level		
Ranges from secondary school to degree level		
Region		
Various regions in Northern and Central Italy		

Source: Italian 16PF Manual (16PF–5 Manuale) 2001, p 127 and 129

Norm tables

Italian – overall norm sample (N=766), data collected in 1999–2000

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–6	7–8	9–10	11–12	13–14	15–16	17–18	19–20	21–22	-
Reasoning	B	0–5	6	7	8–9	10	11	12–13	14	15	-
Emotional Stability	C	0–3	4–5	6–7	8–9	10–11	12–14	15–16	17–18	19–20	-
Dominance	E	0–6	7–8	9	10–11	12–13	14–15	16	17–18	19–20	-
Liveliness	F	0–3	4–5	6–7	8–9	10	11–12	13–14	15–16	17–18	19–20
Rule-Conscious-ness	G	0–4	5–6	7–8	9–11	12–13	14–15	16–17	18–19	20–22	-
Social Boldness	H	0	1–3	4–6	7–9	10–11	12–14	15–17	18–20	-	-
Sensitivity	I	0–2	3–5	6–8	9–10	11–13	14–15	16–18	19–20	21–22	-
Vigilance	L	0–3	4–5	6–7	8–9	10–11	12–13	14–15	16–17	18–19	20
Abstract-edness	M	-	0	1–3	4–6	7–8	9–11	12–14	15–16	17–19	20–22
Private-ness	N	0	1–3	4–5	6–7	8–10	11–12	13–14	15–17	18–19	20
Apprehen-sion	O	0–2	3–4	5–7	8–9	10–11	12–14	15–16	17–18	19–20	-
Openness to Change	Q1	0–9	10–11	12–14	15–16	17–18	19–21	22–23	24–26	27–28	-
Self-Reliance	Q2	-	-	0–1	2–3	4–5	6–8	9–10	11–12	13–14	15–20
Perfection-ism	Q3	0–3	4–5	6–7	8–9	10–11	12–13	14–15	16–17	18–19	20
Tension	Q4	0–1	2–3	4–5	6–7	8–10	11–12	13–14	15–16	17–19	20

Source: Italian 16PF Manual (16PF–5 Manuale) 2001, p 130

Descriptive statistics

Italian – overall norm sample

Primary Factor		Number of items	Combined (N=766)	
			Mean	**SD**
Warmth	A	11	14.39	3.87
Reasoning	B	15	10.59	2.77
Emotional Stability	C	10	11.96	4.43
Dominance	E	10	13.40	3.43
Liveliness	F	10	11.00	3.94
Rule-Consciousness	G	11	13.24	4.46
Social Boldness	H	10	11.90	5.65
Sensitivity	I	11	13.09	5.05
Vigilance	L	10	11.52	3.81
Abstractedness	M	11	8.84	5.32
Privateness	N	10	10.17	4.74
Apprehension	O	10	11.87	4.69
Openness to Change	Q1	14	19.00	4.73
Self-Reliance	Q2	10	5.89	4.24
Perfectionism	Q3	10	11.52	4.19
Tension	Q4	10	10.22	4.51
Impression Management	IM	12	13.19	4.46

Source: Italian 16PF Manual (16PF–5 Manuale) 2001, p 129

Global weights/factor equations

Italian – comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		IT	UK/US	IT	UK/US	IT	UK/US	IT	UK/US	IT	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Consciousness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstractedness	M					−0.3	−0.3			−0.3	−0.3
Privateness	N	−0.3	−0.3								
Apprehension	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfectionism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

Note: the Global Factor weights of the Italian 16PF are based on US weights and are consequently exactly the same as the US/UK weights.

Response Style Indices

Italian – Impression Management (IM)

Italian – raw score cut-off points for IM

Raw score	Cut-off point
0–5	Low range
6–20	Acceptable range
21–24	High range

Italian – raw score to percentile conversion for IM; based on Italian sample (N=766)

Raw score	Percentile	Raw score	Percentile
0–3	1	14	61
4	2	15	68
5	3	16	77
6	7	17	81
7	10	18	88
8	16	19	91
9	21	20	95
10	29	21	96
11	34	22–23	98
12	42	24	99
13	49		

Source: Italian 16PF Manual (16PF–5 Manuale) 2001, p 134

Italian – Impression Management (IM); items/scoring key

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Source: Italian 16PF Manual (16PF–5 Manuale) 2001, p 134

Infrequency (INF)

Italian – raw score cut-off points for INF

Raw score	Cut-off point
0–10	Acceptable range
11–32	High range

Italian – raw score to percentile conversion for INF; based on Italian sample (N=766)

Raw score	Percentile	Raw score	Percentile
0	30	7	89
1	48	8	92
2	58	9	94
3	68	10	95
4	75	11	97
5	81	12–14	98
6	85	15–32	99

Source: Italian 16PF Manual (16PF–5 Manuale) 2001, p 135

Italian – Infrequency (INF); items/scoring key; item selection based on US sample

Item numbers												
6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: Italian 16PF Manual (16PF–5 Manuale) 2001, p 135

Acquiescence (ACQ)

Italian – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–68	Acceptable range
69–103	High range

Italian – raw score to percentile conversion for INF; based on Italian sample (N=766)

Raw score	Percentile	Raw score	Percentile
0–28	1	52	50
29–31	2	53	54
32	3	54	57
33–34	4	55	61
35	5	56	65
36	6	57	69
37	7	58	72
38	9	59	75
39	10	60	77
40	11	61	80
41	13	62	83
42	16	63	86
43	19	64	89
44	21	65	91
45	24	66	92
46	27	67	94
47	31	68	95
48	34	69	96
49	38	70–72	97
50	42	73–75	98
51	46	76–103	99

Source: Italian 16PF Manual (16PF–5 Manuale) 2001, p 136

Italian − Acquiescence (ACQ); items/scoring key (same key as for US)

Item numbers												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	47
48	49	50	52	54	57	58	59	60	61	62	63	64
65	66	68	69	71	72	76	77	79	83	85	87	89
90	91	93	94	96	97	99	100	103	105	106	107	108
110	111	112	113	114	116	118	124	125	126	128	130	132
133	134	135	137	138	140	141	142	145	146	148	150	151
152	155	157	158	159	162	164	165	166	167	168	169	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Source: Italian 16PF Manual (16PF−5 Manual) 2001, p 137

Development of the 16PF questionnaire in Italian

The Italian version of 16PF−5 was published in 2001 and was developed by Saulo Sirigatti, Professor at the Università Europea di Roma, and Cristina Stefanile, Professor and director of the Department of Psychology at Florence University. After the translation the questionnaire was submitted to back-translation. It was then administered to 20 Italian-English native speakers in order to assess the correspondence of the items. From 1997 to 1999 several studies were carried out to establish item properties and the psychometric characteristics (validity and reliability) of the test. Norm data were collected on a representative sample of 766 respondents (394 males and 372 females) between 1999 and 2000.

Japanese

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Japanese

Japanese

Norm sample description

Japanese – norm sample (N=2,080)

Gender	Number in sample	Percent in sample
Male	1649	79.3
Female	419	20.7
Total	2080	100

Source: 16PF–5 Japanese Technical Manual, p 31

Norm tables

Japanese – overall norm sample (N=2,080)

Primary Factor		Stens									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Warmth	A	0–1	2	3–5	6–7	8–10	11–14	15–17	18–20	21–22	23–24
Reasoning	B	0–10	11–12	13–14	15–16	17–18	19	20	21	22	23–24
Emotional Stability	C	0–3	4–5	6–10	11–13	14–17	18–19	20–21	22–23	24	-
Dominance	E	0–1	2–3	4–6	7–9	10–13	14–16	17–19	20–21	22–23	24
Liveliness	F	0–3	4–6	7–9	10–12	13–15	16–18	19–20	21–22	23–24	-
Rule-Conscious-ness	G	0–3	4–5	6–8	9–10	11–13	14–16	17–19	20–21	22	23–24
Social Boldness	H	-	0	1–3	4–7	8–13	14–18	19–21	22–23	24	-
Sensitivity	I	0–2	3–4	5–6	7–8	9–11	12–14	15–16	17–18	19–20	21–24
Vigilance	L	0	1–2	3–4	5–6	7–9	10–11	12–14	15–18	19–21	22–24
Abstract-edness	M	-	0–1	2–3	4–5	6–8	9–10	11–13	14–17	18–19	20–24
Private-ness	N	-	0–1	2–3	4–5	6–9	10–13	14–16	17–19	20–21	22–24
Apprehen-sion	O	0	1–2	3–6	7–9	10–13	14–16	17–19	20–21	22–23	24
Openness to Change	Q1	0–5	6–8	9–11	12–13	14–16	17–18	19–20	21–22	23	24
Self-Reliance	Q2	-	0	1–2	3–4	5–7	8–10	11–14	15–17	18–21	22–24
Perfection-ism	Q3	0–1	2–3	4–7	8–10	11–14	15–18	19–21	22	23–24	-
Tension	Q4	-	0	1–2	3–4	5–7	8–10	11–14	15–18	19–21	22–24

Source: Japanese 16PF–5 Technical Manual, p 31

Descriptive statistics

Japanese – raw score means and standard deviations (N=2,080)

Primary Factor		Combined	
		Mean	SD
Warmth	A	11.1	5.82
*Reasoning	B	17.8	3.32
Emotional Stability	C	16.7	5.62
Dominance	E	13.0	5.94
Liveliness	F	15.2	5.47
Rule-Consciousness	G	13.7	5.11
Social Boldness	H	12.8	7.62
Sensitivity	I	11.4	4.75
Vigilance	L	9.1	5.31
Abstractedness	M	8.4	5.16
Privateness	N	10.1	5.97
Apprehension	O	13.1	6.29
Openness to Change	Q1	16.0	4.61
Self-Reliance	Q2	7.8	5.93
Perfectionism	Q3	14.3	6.14
Tension	Q4	8.1	5.79

Note: N=1,042

Source: 16PF–5 Japanese Technical Manual, p 33

Japanese — Sten score means and standard deviations (N=2,080)

Primary Factor		Combined	
		Mean	SD
Warmth	A	5.5	1.99
*Reasoning	B	5.6	2.16
Emotional Stability	C	5.8	2.02
Dominance	E	5.5	1.99
Liveliness	F	5.5	1.95
Rule-Consciousness	G	5.6	1.96
Social Boldness	H	5.5	1.89
Sensitivity	I	5.4	1.99
Vigilance	L	5.3	2.11
Abstractedness	M	5.5	1.95
Privateness	N	5.6	1.90
Apprehension	O	5.6	2.12
Openness to Change	Q1	5.5	1.95
Self-Reliance	Q2	5.3	2.10
Perfectionism	Q3	5.5	1.86
Tension	Q4	5.4	1.99

Note: N=1,042

Source: 16PF—5 Japanese Technical Manual, p 33

Reliability and Standard Error of Measurement

Japanese

Primary Factor		Number of items	Cronbach's alpha coefficients (N=2,080)	SEM (raw scores)	SEM (Sten Scores)
Warmth	A	12	0.79	2.67	0.91
Reasoning	B	24	0.67	1.91	1.24
Emotional Stability	C	12	0.80	2.51	0.90
Dominance	E	12	0.79	2.72	0.91
Liveliness	F	12	0.76	2.68	0.96
Rule-Consciousness	G	12	0.68	2.89	1.11
Social Boldness	H	12	0.89	2.53	0.63
Sensitivity	I	12	0.63	2.89	1.21
Vigilance	L	12	0.75	2.66	1.06
Abstractedness	M	12	0.73	2.68	1.01
Privateness	N	12	0.80	2.67	0.85
Apprehension	O	12	0.80	2.81	0.95
Openness to Change	Q1	12	0.66	2.69	1.14
Self-Reliance	Q2	12	0.81	2.58	0.92
Perfectionism	Q3	12	0.81	2.68	0.81
Tension	Q4	12	0.79	2.65	0.91
Impression Management	IM	11	0.60		

Source: Japanese 16PF–5 Technical Manual, pp 33–7

Global weights/factor equations

Japanese

Primary Factor		Extraversion	Anxiety	Tough-Mindedness	Independence	Self-Control
		US	US	US	US	US
Warmth	A	0.3		−0.2		
Emotional Stability	C		−0.4			
Dominance	E				0.6	
Liveliness	F	0.3				−0.2
Rule-Consciousness	G					0.4
Social Boldness	H	0.2			0.3	
Sensitivity	I			−0.5		
Vigilance	L		0.3		0.2	
Abstractedness	M			−0.3		−0.3
Privateness	N	−0.3				
Apprehension	O		0.4			
Openness to Change	Q1			−0.5	0.3	
Self-Reliance	Q2	−0.3				
Perfectionism	Q3					0.4
Tension	Q4		0.4			
Constant value		4.40	1.60	13.80	−2.20	3.80

Source: US 16PF−5 Administrator's Manual 2009, p 37

Response Style Indices

Impression Management (IM)

Japanese – raw score cut-off points for IM

Raw score	Cut-off point
0–3	Low range
4–16	Acceptable range
17–22	High range

Japanese – raw score to percentile conversion for IM

Raw score	Percentile	Raw score	Percentile
0–1	1	10	50
2	2	11	60
3	5	12	70
4	7	13	84
5	10	14	89
6	15	15	93
7	22	16	95
8	30	17	97
9	40	18–22	99

Note: data based on a normal distribution and percentiles calculated according to this.

Japanese — Impression Management (IM); items/scoring key

Item number	Direction of keyed response
4	a
19	C
30	C
46	C
73	C
89	A
99	C
114	C
152	C
166	C
180	C

Infrequency (INF)

Japanese — raw score cut-off points for INF

Raw score	Cut-off point
0–7	Acceptable range
8–35	High range

Source: Japanese 16PF—5 Technical Manual, p 25

Japanese — raw score to percentile conversion for INF

Raw score	Percentile	Raw score	Percentile
0–1	58	7	95
2	68	8	96
3	75	9	97
4	81	10	98
5	88	11–45	99
6	91		

Note: data based on a normal distribution and percentiles calculated according to this.

Japanese — Infrequency (INF); items/scoring key*

Item numbers												
3	4	7	8	11	19	22	25	30	32	35	38	39
50	55	68	80	81	88	92	93	94	99	100	102	108
109	114	120	127	132	140	152	153	156	158	166	170	171
172	175	177	183	188								

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Japanese — raw score to percentile conversion for ACQ; based on Japanese sample (N=2,080)

Raw score	Cut-off point
0–63	Acceptable range
64–102	High range

Source: Japanese 16PF–5 Technical Manual, p 26

Japanese — raw score to percentile conversion for ACQ

Raw score	Percentile	Raw score	Percentile
0–30	1	50	58
31–32	2	51	62
33	3	52	66
34	4	53	69
35	6	54	73
36	7	55	76
37	9	56	79
38	11	57	82
39	14	58	84
40	17	59	87
41	20	60	89
42	24	61	91
43	27	62	93
44	32	63	95
45	36	64	96
46	40	65	97
47	45	66	98
48	50	67–102	99
49	54		

Note: data based on a normal distribution and percentiles calculated according to this.

Japanese — Acquiescence (ACQ); items/scoring key*

Item numbers												
2	7	8	11	12	13	15	17	18	20	22	24	26
30	31	32	35	38	39	41	42	43	44	45	47	49
51	52	55	57	58	60	61	63	65	66	67	69	71
72	73	76	78	79	80	81	85	87	88	89	91	95
96	97	99	101	105	109	111	115	119	120	121	122	124
127	128	129	133	134	136	142	144	145	146	147	149	150
151	154	155	157	159	160	162	165	167	168	169	172	174
175	176	177	178	179	181	183	184	185	186	188		

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Japanese

In the development of the Japanese 16PF, the Form S Research Version was used so that there were an extended number of trial items per scale. In total, 265 items were translated into Japanese by a translation team, which included Japanese psychologist Dr. Naotaka Watanabe and a professional translator. A revision of the items was conducted after initial data were available to evaluate the quality of the translated items along with a back-translation. Finally, the third version of the standardisation form included a second revision of the Factor B items. Each phase of the adaptation process is described below.

The number of respondents who completed each version of the questionnaire is shown in Table 4.1 below.

Sample size and questionnaire version used for each stage of development

Stage of questionnaire development	Sample size	Version
Study 1 – pilot study/initial item trialling	*241	I
Study 2 – exploratory/further item trialling	4,591	I
Study 3 – item selection	939	II
Study 4 – validation studies	1,209	II
Study 5 – standardisation and norm collection	1,142	III

Note: including 48 test-retest takers.

Version I: Initial item translations

Certain items were identified as being difficult to translate directly into an equivalent item in Japanese. Dr Watanabe applied his knowledge of the 16PF factors in order to adapt such items appropriately. A second Japanese psychologist checked the translation and highlighted those expressions that he considered to be inadequate. Next a different professional translator compared the original questionnaire with the translated one. Finally, a reconciliation meeting was held by Dr Watanabe with two Japanese psychologists and a psychometrician to discuss the item translations and suggestions for amendments. Together they agreed on the most appropriate Japanese translation to use for each item, thus providing the item content for the first version of the Japanese 16PF.

Study 1: Pilot study to evaluate the item psychometric properties

The first version of the Japanese 16PF was administered to Masters students at Keio University and undergraduates at Ube University (N=193) between June and July 2002. Analysis of these pilot study data revealed that the internal consistency estimates for most scales on the 16PF were already fairly high. The following scales had values for Cronbach's alpha that were below the minimum acceptable value of 0.60: Factor B (0.47); Factor I (0.44); and the IM scale (0.38).

Test-retest reliability was assessed by administering the first Japanese 16PF version to 48 Masters students at Keio University. The test-retest reliability was high for all scales, except for Factor B (Pearson's correlation coefficient = 0.43).

Study 2: Extension of the pilot study

Rather than modifying items as a result of the pilot study, a second phase of data collection was conducted. The main reason for collecting additional data on the initial version was that the low reliability results for the B scale might have been due to the pilot study's small sample size as well as being a relatively homogenous group at the upper end of the ability distribution assessed by Factor B.

In September 2002, the first Japanese 16PF version was administered to employees of a large technology firm, including subsidiaries, via an Intranet common to the organisation and its subsidiaries (N=4,591). This second item trialling study resulted in comparable reliability results to the first pilot study. Once again, the internal reliability estimates of the B, I and IM scales – as measured by Cronbach's alpha – were less than 0.60. However, each coefficient had improved: B=0.53; I=0.55; and IM=0.43.

Version II: The revised Japanese questionnaire

At this stage, a back-translation of the questionnaire had been completed. The decision was made to create a second version of the Japanese 16PF by modifying specific items that were not functioning well or had been identified as misinterpreted after examining the back-translation. Several items from Factors B and I were deleted in order to improve internal consistency. However, this was not a viable option for the IM scale because there were not any items with sufficiently poor psychometric properties where deletion would have improved the overall scale functioning.

Study 3

The second version of the Japanese 16PF was administered to 939 employees. These individuals were employed at a large technology company or a large manufacturing organisation. Item-level analyses and reliability analyses were conducted using both classical test theory and item response theory. The goal of the item selection (deletion) process was to attain acceptable internal reliability using an appropriate number of items per scale. In

some instances this process required a compromise to be made in terms of certain aspects of a scale's psychometric properties. In summary, items were removed from consideration according to the following criteria:

- Based upon classical test theory, items with particularly low item–total correlations compared to the other items on that scale
- Based upon item response theory, items with particularly low a-parameters and/or extremely high or low b-parameters
- A goal of retaining 12 items for each scale
- A goal of retaining 24 items for Factor B

The latter two criteria were instituted for the purpose of creating uniform raw score totals across all of the factors on the 16PF. The application of these criteria enhanced the internal consistency reliability of each 16PF scale relative to the corresponding estimates in Version I of the questionnaire. In particular, the internal consistency estimates were improved for Factor B to 0.63, for Factor I to 0.60 and for IM to 0.57.

Version III: Further revision of Factor B items

An analysis of the means and standard deviations for the Factor B items on Version II of the questionnaire revealed that the distribution was heavily skewed indicating that these items were too easy for the Japanese respondents. As such, another revision of the questionnaire was undertaken, specifically targeting the pool of items for Factor B. Approximately 66% of the Factor B items included in the Version II were replaced in Version III with more difficult items. These items were either completely new items or modified items from Version II.

Version III was administered to a sample of 1,142, consisting of primarily managers from a large technical manufacturing organisation. Approximately 18% of the sample consisted of university students.

From this third version a single Impression Management item was removed to improve the internal consistency reliability and the most appropriate Factor B items were selected to give an acceptable internal consistency (0.67). The criteria for selecting the Factor B items were similar to the criteria specified earlier. In addition, Factor B items were selected such that the type of items were well represented within the scale. A total of 24 Factor B items were retained. This version became the 215-item final version Japanese 16PF–5 questionnaire.

Norwegian

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Norwegian

Norwegian

Norm sample description

Norwegian – overall norm sample (N=3,249), data collected in 1996–2000

Gender	Number in sample	Percent in sample
Male	2118	65
Female	1024	32
Total	3,249	97
Age (years)	**Overall sample**	
Mean	34.2	
Range	17–64	
SD	8.6	

Note: 107 respondents (3%) did not provide information on gender.

Source: Norwegian Manual (Manual Norsk versjon) 2004, p 58

Job title	Number in sample	Percent in subsample (N=1,800)*	Percent in overall sample
Economists (Okonomer)	121	6.7	3.7
Consultants (Konsulenter)	37	2.1	1.1
Psychologists/students of Psychology (Psykologer/Psykol stud)	82	4.6	2.5
Engineers (Ingeniorer)	127	7.1	3.9
Salespeople (Selgere)	267	14.8	8.2
Senior managers/leaders (Toppledere)	39	2.2	1.2
Managers (Ledere)	281	15.6	8.7
Researchers (Forskere)	16	0.9	0.5
Primary school teachers (Forskolelae)	161	8.9	5.00
Entrepreneurs (Grundere)	19	1.1	0.6
Nurses (Sykepleiere)	20	1.1	0.6
Doctors (Lege)	66	3.7	2.0
IT Consultants (Datakons)	72	4.0	2.2
Manual workers (Praktisk)	101	5.6	3.1
Office (Kontor)	207	11.5	6.4
Works managers (Arbeidsled)	71	3.9	2.2
Psy Patient (Psy pasient)	20	1.1	0.6
Clients in rehabilitation (Attf klienter)	83	4.6	2.6
Artists (Kunstner yr)	10	0.6	0.3
Total	1,800	100	55.4

Note: Only 1,800 respondents provided information on their occupation.

Source: Norwegian Manual (Manual Norsk versjon) 2004, p 105

Norm tables

Norwegian – overall norm sample (N=3,249), data collected in 1996–2000

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–7	8–10	11–13	14–15	16–17	18	19	20	21	22
Reasoning	B	0–4	5	6–7	8–9	10	11–12	13	14	15	-
Emotional Stability	C	0–5	6–9	10–12	13–15	16–17	18	19	20	-	-
Dominance	E	0–5	6–7	8–10	11–12	13–14	15–16	17	18	19	20
Liveliness	F	0–4	5–6	7–9	10–11	12–13	14–15	16	17–18	19	20
Rule-Conscious-ness	G	0–3	4–5	6–7	8–10	11–13	14–15	16–17	18–19	20	21–22
Social Boldness	H	0–2	3–5	6–9	10–13	14–16	17–18	19	20	-	-
Sensitivity	I	0	1–2	3–4	5–6	7–9	10–12	13–15	16–18	19–20	21–22
Vigilance	L	0	1	2	3–4	5–6	7–8	9–11	12–14	15–16	17–20
Abstract-edness	M	-	0	1	2	3–4	5–7	8–10	11–13	14–16	17–22
Private-ness	N	0	1	2–3	4–5	6–7	8–10	11–14	15–16	17–18	19–20
Apprehen-sion	O	0	1	2	3–4	5–6	7–9	10–13	14–16	17–18	19–20
Openness to Change	Q1	0–8	9–11	12–13	14–16	17–19	20–22	23–24	25–26	27	28
Self-Reliance	Q2	-	0	1	2	3–4	5–6	7–8	9–11	12–14	15–20
Perfection-ism	Q3	0–1	2–3	4–5	6–7	8–10	11–13	14–15	16	17–18	19–20
Tension	Q4	0	1	2–3	4–5	6–8	9–11	12–14	15–16	17–18	19–20

Source: Norwegian Manual (Manual Norsk versjon) 2004, p 102

Descriptive statistics

Norwegian – split into overall norm sample

Primary Factor		Number of items	Combined (N=3,249)	
			Mean	SD
Warmth	A	11	16.2	3.5
Reasoning	B	15	10.5	2.9
Emotional Stability	C	10	16.5	3.6
Dominance	E	10	14.2	3.5
Liveliness	F	10	13.2	3.8
Rule-Consciousness	G	11	12.9	4.5
Social Boldness	H	10	15.4	4.7
Sensitivity	I	11	9.7	5.1
Vigilance	L	10	7.0	4.0
Abstractedness	M	11	5.3	4.2
Privateness	N	10	8.3	5.0
Apprehension	O	10	7.2	4.8
Openness to Change	Q1	14	19.2	5.1
Self-Reliance	Q2	10	4.5	4.0
Perfectionism	Q3	10	10.7	4.4
Tension	Q4	10	8.5	4.9
Impression Management	IM	12	12.5	4.4

Source: Norwegian Manual (Manual Norsk versjon) 2004, pp 102–3

Reliability and Standard Error of Measurement

Norwegian

Primary Factor		Number of items	Cronbach's alpha coefficients (N=500)	SEM (Sten scores)
Warmth	A	11	0.55	1.33
Reasoning	B	15	0.65	1.17
Emotional Stability	C	10	0.72	1.05
Dominance	E	10	0.62	1.22
Liveliness	F	10	0.61	1.24
Rule-Consciousness	G	11	0.65	1.17
Social Boldness	H	10	0.82	0.84
Sensitivity	I	11	0.75	0.99
Vigilance	L	10	0.63	1.20
Abstractedness	M	11	0.76	0.97
Privateness	N	10	0.74	1.01
Apprehension	O	10	0.72	1.05
Openness to Change	Q1	14	0.66	1.15
Self-Reliance	Q2	10	0.72	1.05
Perfectionism	Q3	10	0.63	1.20
Tension	Q4	10	0.72	1.05

Source: Norwegian Manual (Manual Norsk versjon) 2004, p 107

Global weights/factor equations

Norwegian – comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		Norw.	UK/US	Norw.	UK/US	Norw.	UK/US	Norw.	UK/US	Norw.	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Consciousness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstract-edness	M					−0.3	−0.3			−0.3	−0.3
Private-ness	N	−0.3	−0.3								
Apprehension	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfection-ism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

Note: a factor analysis was carried out based on the Norwegian data (see Norwegian 16PF Manual Appendix B table B7a–b). The results were very similar to the US data, therefore US weighting was applied to the Norwegian version.

Response Style Indices

Impression Management (IM)

Norwegian – raw score cut-off points for IM

Raw score	Cut-off point
0–3	Low range
4–17	Acceptable range
18–24	High range

Norwegian – raw score to percentile conversion for IM

Raw	Percentile	Mean	SD	z-score
1	0.5	12.4	4.35	−2.62069
2	1	12.4	4.35	−2.3908
3	2	12.4	4.35	−2.16092
4	3	12.4	4.35	−1.93103
5	5	12.4	4.35	−1.70115
6	9	12.4	4.35	−1.47126
7	13	12.4	4.35	−1.24138
8	18	12.4	4.35	−1.01149
9	25	12.4	4.35	−0.78161
10	32	12.4	4.35	−0.55172
11	40	12.4	4.35	−0.32184
12	50	12.4	4.35	−0.09195
13	60	12.4	4.35	0.137931
14	70	12.4	4.35	0.367816
15	77	12.4	4.35	0.597701
16	82	12.4	4.35	0.827586
17	88	12.4	4.35	1.057471
18	91	12.4	4.35	1.287356
19	95	12.4	4.35	1.517241
20	96	12.4	4.35	1.747126
21	97	12.4	4.35	1.977011
22–24	99	12.4	4.35	2.206897

Note: data based on a normal distribution and percentiles calculated according to this.

Norwegian – Impression Management (IM); items/scoring key

Item number	Direction of keyed response	Item number	Direction of keyed response
17	c	125	c
35	c	141	c
53	c	143	a
71	c	159	c
89	c	161	c
107	c	162	c

Source: Norwegian Manual (Manual Norsk versjon) 2004

Infrequency (INF)

Norwegian – raw score cut-off points for INF

Raw score	Cut-off point
0–6	Acceptable range
7–32	High range

Norwegian – raw score to percentile conversion for INF; based on subsample of Norwegian sample (N=500)

Raw score	Percentile	Raw score	Percentile
0	56	5	94
1	71	6	95
2	81	7	97
3	88	8–10	98
4	91	11–32	99

Source: Norwegian Manual (Manual Norsk versjon) 2004, p 108

Norwegian – Infrequency (INF); items/scoring key

Item numbers												
4	14	15	21	28	34	37	56	61	65	67	69	72
75	87	88	96	107	108	122	125	132	136	139	141	142
143	147	154	159	166	170							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Norwegian – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–65	Acceptable range
66–103	High range

Norwegian – raw score to percentile conversion for ACQ; based on subsample of Norwegian sample (N=500)

Raw score	Percentile	Raw score	Percentile
0–33	1	54	47
34–36	2	55	52
37–38	3	56	56
39	4	57	62
40–41	5	58	68
42	7	59	72
43	8	60	77
44	10	61	83
45	11	62	87
46	13	63	90
47	15	64	93
48	17	65	95
49	21	66	96
50	25	67	97
51	29	68	98
52	34	69–103	99
53	41		

Source: Norwegian Manual (Manual Norsk versjon) 2004, p 108

Norwegian – Acquiescence (ACQ); items/scoring key

Item numbers												
1	2	3	4	6	8	9	10	11	16	19	20	21
22	23	24	25	27	28	29	30	31	34	35	36	38
39	40	42	43	44	48	49	52	54	55	56	58	59
60	61	62	63	65	69	71	72	73	75	76	77	78
80	82	83	86	88	89	90	92	94	95	96	98	99
100	101	102	105	106	107	108	109	110	113	114	115	117
118	122	123	126	129	132	133	137	138	139	140	141	144
147	149	150	153	155	157	158	160	165	166	169	170	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Norwegian

The development of the Norwegian version of the 16PF questionnaire started in 1996. The British standardisation version of the questionnaire was used as a template for the Norwegian version because the British answer sheet and scoring system were easier to apply than the American material. The questionnaire was translated into Norwegian with support from Norwegian consultants and psychologists. The development of Norwegian norms was carried out based on the principle of 'norming by use'. That means certified users were instructed to use the questionnaire with British or US norms. All users were obliged to send their data to the databank of NTNU in Trondheim. The Norwegian norms were created based on this data. The data were revised a number of times until August 2000. The sample size by then was 3,249 respondents, which was considered as a sufficient sample size to discontinue the data collection and implement the Norwegian norms.

A factor analysis was carried out to investigate the factorial similarity with the US version. Both were found to be very similar in terms of loading of the Primary Factors onto the Global Factors (see Norwegian manual pp 107–8 for details).

Source: Norwegian Manual (Manual Norsk versjon) 2004, pp 58–63

Portuguese (Brazilian)

Norm sample description

Norm tables

Descriptive statistics

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Portuguese (European)

Portuguese (Brazilian)

Norm sample description

Portuguese (Brazilian) — norm sample (N=3,238)

Gender	Number in sample	Percent in sample
Male	1655	51.11
Female	1583	48.89

Age (years)	Number in sample	Percent in sample
14–56	3238	100

Source: English 2004 16PF standardisation (technical manual), p 2f

Education level	Number in sample	Percent in sample
Incomplete fundamental teaching	52	1.6
Complete fundamental teaching	-	-
Incomplete medium teaching	666	20.57
Complete medium teaching	1387	42.84

Geographic distribution	Number in sample	Percent in sample
Acre	31	1
Alagoas	30	0.9
Amapá	29	0.9
Amazonas	30	0.9
Bahia	31	1
Ceará	33	1
Distrito Federal	27	0.8
Espírito Santo	30	0.9
Goiás	30	0.9
Maranhão	30	0.9
Mato Grosso	88	2.7
Mato Grosso do Sul	118	3.6
Minas Gerais	89	2.7
Pará	174	5.4
Paraíba	31	1
Paraná	29	0.9
Pernambuco	29	0.9
Piauí	30	0.9
Rio de Janeiro	2,025	62.5
Rio Grande do Norte	29	0.9
Rio Grande do Sul	89	2.7
Rondônia	30	0.9
Roraima	29	0.9
Santa Catarina	30	0.9
São Paulo	55	1.7
Sergipe	30	0.9
Tocantins	32	1

Note: only frequencies are presented in the manual. The percent in the sample have been calculated here to provide complete information.

Source: English 2004 16PF standardisation (technical manual), p 2f

Norm tables

Portuguese (Brazilian) − general population (N=3,238)

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–6	7–8	9–10	11–12	13–14	15–16	17–18	19	20–21	22
Reasoning	B	0–1	2–3	4–5	6	7–8	9–10	11	12–13	14	15
Emotional Stability	C	0–7	8–9	10–11	12–13	14–15	16–17	18–19	20	-	-
Dominance	E	0–5	6–7	8–9	10–11	12–13	14–15	16	17–18	19–20	-
Liveliness	F	0–1	2–4	5–6	7–8	9–10	11–13	14–15	16–17	18–20	-
Rule-Conscious-ness	G	0–6	7–8	9–10	11–13	14–15	16–17	18–20	21–22	-	-
Social Boldness	H	0–1	2–3	4–6	7–9	10–12	13–15	16–18	19–20	-	-
Sensitivity	I	-	0–2	3–5	6–7	8–10	11–12	13–15	16–17	18–20	21–22
Vigilance	L	0–5	6–7	8–9	10–11	12	13–14	15–16	17	18–19	20
Abstract-edness	M	-	-	0	1–2	3–5	6–7	8–10	11–12	13–15	16–22
Private-ness	N	0–1	2–4	5–6	7–9	10–11	12–13	14–16	17–18	19–20	-
Apprehen-sion	O	0–2	3–4	5–6	7–8	9–11	12–13	14–15	16–17	18–20	-
Openness to Change	Q1	0–6	7–8	9–11	12–13	14–15	16–18	19–20	21–22	23–25	26–28
Self-Reliance	Q2	-	-	0	1–2	3–4	5–6	7–9	10–11	12–13	14–20
Perfection-ism	Q3	0–6	7–8	9–10	11–12	13–14	15–16	17–19	20	-	-
Tension	Q4	-	0–1	2–3	4–6	7–8	9–11	12–14	15–16	17–19	20

Source: English 2004 16PF standardisation (technical manual), p 9f

Descriptive statistics

Portuguese (Brazilian)

Primary Factor		Number of items	Combined	
			Mean	**SD**
Warmth	A	11	14.21	3.81
Reasoning	B	10	8.37	3.27
Emotional Stability	C	10	15.42	4.03
Dominance	E	10	13.22	3.69
Liveliness	F	10	10.90	4.59
Rule-Consciousness	G	10	15.53	4.55
Social Boldness	H	10	12.61	5.78
Sensitivity	I	11	10.12	5.08
Vigilance	L	9	12.68	3.36
Abstractedness	M	11	5.41	4.88
Privateness	N	10	11.58	4.83
Apprehension	O	10	11.13	4.52
Openness to Change	Q1	13	15.84	4.59
Self-Reliance	Q2	10	4.77	4.34
Perfectionism	Q3	10	14.93	4.13
Tension	Q4	10	8.96	5.08

Source: English 2004 16PF standardisation (technical manual), p 4f

Global weights/factor equations

Portuguese (Brazilian) — comparison against UK/US factor weight sample

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Indepen-dence		Self-Control	
		PT (BR)	UK/US	PT (BR)	UK/US	PT (BR)	UK/US	PT (BR)	UK/US	PT (BR)	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Conscious-ness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstract-edness	M					−0.3	−0.3			−0.3	−0.3
Private-ness	N	−0.3	−0.3								
Apprehen-sion	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfection-ism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant Value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

Note: the English (US) weightings and constants are applied to the global factor equations of the Portuguese (Brazilian) questionnaire.

Response Style Indices

Impression Management (IM)

Portuguese (Brazilian) – raw score cut-off points for IM

Raw score	Cut-off point
0–3	Low range
4–19	Acceptable range
20–24	High range

Source: 16PF Quinta Edição manual 2002, p 113

Portuguese (Brazilian) – raw score to percentile conversion

Raw score	Percentile	Raw score	Percentile
0–2	1	12	54
3	2	13	58
4	6	14	69
5	7	15	72
6	12	16	82
7	14	17	85
8	23	18	92
9	26	19	93
10	38	20	98
11	42	21–24	99

Source: 16PF Quinta Edição manual 2002, p 113

Portuguese (Brazilian) — items/scoring key

Item number	Direction of keyed response	Item number	Direction of keyed response
16	A	85	C
23	C	95	C
34	C	101	C
48	C	115	C
58	C	144	C
75	C	153	C

Infrequency (INF)

Portuguese (Brazilian) — raw score cut-off points for INF

Raw score	Cut-off point
0–6	Acceptable range
7–32	High range

Source: 16PF Quinta Edição manual 2002, p 111

Portuguese (Brazilian) — raw score to percentile conversion for INF

Raw score	Percentile	Raw score	Percentile
0	1	6	95
1	73	7	96
2	82	8	97
3	87	9–11	98
4	91	12–32	99
5	94		

Portuguese (Brazilian) — items/scoring key

Item numbers												
3	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: 16PF Quinta Edição manual 2002, p 97

Acquiescence (ACQ)

Portuguese (Brazilian) — raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–74	Acceptable range
75–103	High range

Portuguese (Brazilian) — raw score to percentile conversion

Raw score	Percentile	Raw score	Percentile
0–31	1	57	44
32–34	2	58	49
35	3	59	53
36–38	4	60	58
39–40	5	61	63
41	6	62	66
42	7	63	71
43	8	64	74
44	9	65	77
45	10	66	81
46	11	67	83
47	13	68	86
48	15	69	89
49	17	70	90
50	19	71	92
51	23	72	93
52	26	73	94
53	29	74	95
54	32	75	97
55	36	76–77	98
56	40	78–103	99

Source: 16PF Quinta Edição manual 2002, p 113

Portuguese (Brazilian) – items/scoring key

Item numbers												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	47
48	49	50	52	54	57	58	59	60	61	62	63	64
65	66	68	69	71	72	76	77	79	83	85	87	89
90	91	93	94	96	97	99	100	103	105	106	107	108
110	111	112	113	113	116	118	124	125	126	128	130	132
133	134	135	137	138	140	141	142	145	146	148	150	151
152	155	157	158	159	162	164	165	166	167	168	169	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Portuguese (Brazilian)

The first translation, adaptation and standardisation of the 16PF Fifth Edition for the Brazilian population were carried out between June and September 1998, in the community districts of Rio de Janeiro and Niterói. At this time the population was mostly students in high school or college or of graduate level. From 1998 to the present day the 16PF has been used successfully in personnel selection, public training and careers guidance. In the current edition, the Department of Studies at the CEPA carried out a new study based on the results from the Fifth Edition of the 16PF. This compared the previous edition in Brazil to the current version, using a sample of 3,238 participants.

Portuguese (European)

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Portuguese

Portuguese (European)

Norm sample description

Portuguese (European) – norm sample (N=442)

Gender	Number in sample	Percent in sample
Male	196	44.34
Female	246	55.66

Education	Number in sample	Percent in sample
State education	355	80.4
University education	87	19.6

Source: 16PF–5 Portuguese Manual 1999, p 18

Norm tables

Portuguese (European) — norm sample (N=442)

Primary Factor		Stens									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Warmth	A	0–4	5–7	8–9	10–12	13–14	15–17	18–18	19–20	2–22	-
Reasoning	B	0–3	4–4	5–5	6–7	8–8	9–9	10–11	12–12	13–13	14–15
Emotional Stability	C	0–4	5–7	8–10	11- 12	13–14	15–16	17–18	-	19–20	-
Dominance	E	0–5	6–8	9–10	11- 12	13–14	15–16	17–17	18–18	19–19	20–20
Liveliness	F	0–4	5–6	7–8	9–10	11–13	14–15	16–16	17–18	19–20	-
Rule-Conscious-ness	G	0–4	5–8	9–9	10–12	13–14	15–16	17–18	19–20	21–22	-
Social Boldness	H	0	-	1–4	5–8	9–12	13–16	17–18	19–20	-	-
Sensitivity	I	0–2	3–4	5–6	7–8	9–12	13–15	16–18	19–20	21–22	-
Vigilance	L	0–2	3–4	5–6	7–9	10–12	13–14	15–16	17–18	19–19	20–20
Abstract-edness	M	0	-	1–2	3–4	5–6	7–10	11–12	13–16	17–20	21–22
Private-ness	N	0–2	3–4	5–6	7–8	9–12	13–14	15–16	17–18	19–20	-
Apprehen-sion	O	0–2	3–4	5–6	7–10	11–12	13–15	16–18	19–19	20–20	-
Openness to Change	Q1	0–8	9–10	11–12	13–14	15–17	18–19	20–21	22–23	24–25	26–28
Self-Reliance	Q2	0	-	-	1–2	3–3	4–6	7–8	9–14	15–16	17–20
Perfection-ism	Q3	0–3	4–6	7–10	11–12	13–15	16–18	-	19–20	-	-
Tension	Q4	0	1–2	3–4	5–7	8–10	11–13	14–16	17–18	19–20	-

Source: 16PF–5 Portuguese Manual 1999, p 88

Descriptive statistics

Portuguese (European)

Primary Factor		Combined	
		Mean	SD
Warmth	A	14.19	4.41
Reasoning	B	7.94	2.52
Emotional Stability	C	13.63	4.09
Dominance	E	13.74	3.36
Liveliness	F	12.64	4.01
Rule-Consciousness	G	13.86	4.46
Social Boldness	H	11.06	6.15
Sensitivity	I	11.73	5.33
Vigilance	L	11.12	4.32
Abstractedness	M	7.02	5.18
Privateness	N	11.25	4.82
Apprehension	O	12.10	4.93
Openness to Change	Q1	16.72	4.43
Self-Reliance	Q2	4.33	4.51
Perfectionism	Q3	14.21	4.59
Tension	Q4	10.03	5.26

Source: 16PF–5 Portuguese Manual 1999, p 68

Reliability and Standard Error of Measurement

Portuguese (European)

Primary Factor		Cronbach's alpha coefficients (N=442)	SEM (Sten scores)
Warmth	A	0.65	1.18
Reasoning	B	0.55	1.34
Emotional Stability	C	0.64	1.20
Dominance	E	0.50	1.41
Liveliness	F	0.65	1.18
Rule-Consciousness	G	0.62	1.23
Social Boldness	H	0.85	0.77
Sensitivity	I	0.75	1
Vigilance	L	0.63	1.21
Abstractedness	M	0.75	1
Privateness	N	0.73	1.03
Apprehension	O	0.70	1.09
Openness to Change	Q1	0.47	1.45
Self-Reliance	Q2	0.78	.93
Perfectionism	Q3	0.73	1.03
Tension	Q4	0.65	1.18

Source: 16PF–5 Portuguese Manual, 1999, p 19

Global weights/factor equations

Portuguese (European)

Primary Factor		Extraversion	Anxiety	Tough-Mindedness	Indepen-dence	Self-Control
		US	US	US	US	US
Warmth	A	0.3		−0.2		
Emotional Stability	C		−0.4			
Dominance	E				0.6	
Liveliness	F	0.3				−0.2
Rule-Consciousness	G					0.4
Social Boldness	H	0.2			0.3	
Sensitivity	I			−0.5		
Vigilance	L		0.3		0.2	
Abstractedness	M			−0.3		−0.3
Privateness	N	−0.3				
Apprehension	O		0.4			
Openness to Change	Q1			−0.5	0.3	
Self-Reliance	Q2	−0.3				
Perfectionism	Q3					0.4
Tension	Q4		0.4			
Constant value		4.40	1.60	13.80	−2.20	3.80

Note: The English (US) weightings are applied to the Global Factor equations of the Portuguese (European) questionnaire.

Source: US 16PF–5 Administrator's Manual 2009, p 37

Response Style Indices

Impression Management (IM)

Portuguese (European) — raw score cut-off points for IM

Raw score	Cut-off point
0–5	Low range
6–21	Acceptable range
22–24	High range

Portuguese (European) – raw score to percentile conversion

Raw score Min	Raw score Max	Percentile
0	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	8
7	7	12
8	8	16
9	9	24
10	10	32
11	11	40
12	12	50
13	13	60
14	14	68
15	15	77
16	16	84
17	17	89
18	18	92
19	19	93
20	20	94
21	21	95
22	24	99

Note: data based on a normal distribution and percentiles calculated according to this.

Portuguese (European) — items/scoring key

Item number	Direction of keyed response	Item number	Direction of keyed response
16	A	85	C
23	C	95	C
34	C	101	C
48	C	115	C
58	C	144	C
75	C	153	C

Infrequency (INF)

Portuguese (European) — raw score cut-off points for INF

Raw score	Cut-off point
0–5	Acceptable range
6–32	High range

Portuguese (European) — raw score to percentile conversion for INF

Raw score Min	Raw score Max	Percentile
0	1	55
2	2	71
3	3	80
4	4	86
5	5	95
6	6	96
7	7	97
8	8	98
9	32	99

Note: data based on a normal distribution and percentiles calculated according to this.

Portuguese (European) — items/scoring key

Item numbers												
5	8	10	14	22	24	26	27	28	35	36	51	56
63	80	90	91	92	98	102	111	116	121	123	125	128
130	131	140	151	154	158	160						

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Portuguese (European) — raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–74	Acceptable range
75–103	High range

Portuguese (European) – raw score to percentile conversion

Raw score Min	Raw score Max	Percentile
0	33	1
34	35	2
36	37	3
38	38	4
39	39	5
40	40	6
41	41	8
42	42	10
43	43	11
44	44	14
45	45	18
46	46	23
47	47	26
48	48	31
49	49	35
50	50	39
51	51	44
52	52	49
53	53	54
54	54	59
55	55	63
56	56	67
57	57	71
58	58	76
59	59	80
60	60	84
61	61	87
62	62	89
63	63	91
64	64	92
65	65	93
66	66	94
67	67	95
68	68	96
69	69	97
70	90	99

Note: data based on a normal distribution and percentiles calculated according to this.

Portuguese (European) — items/scoring key

Item numbers												
2	4	5	6	9	10	12	13	14	27	28	29	33
35	36	39	40	41	43	44	47	49	50	54	57	59
61	62	63	64	65	66	68	69	71	76	77	79	83
87	89	90	91	92	93	96	97	99	100	103	105	106
107	108	110	111	113	114	116	117	118	124	125	126	128
130	132	133	134	135	137	138	141	142	145	146	148	149
150	151	152	155	156	157	159	161	165	166	167	169	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Portuguese (European)

The development of the Portuguese language version of the 16PF Fifth Edition was supported by TEA Ediciones. The first translation, adaptation and standardisation of the 16PF Fifth Edition for a Portuguese population was carried out in 1998 with a sample of 442 people.

Slovak

Norm sample description

Norm tables

Descriptive statistics

Global weights/factor equations

Response Style Indices

Slovak

No local norms are available for the Slovak 16PF version. Instead US norms (2002) are applied.

Norm sample description

Slovak — US norms are applied to the Slovak 16PF version; US norm sample (N=10,261), data collected in 2002

Gender	Number in sample	Percent in sample
Male	5,124	49.9
Female	5,137	50.1

Age (years)	Number in sample	Percent in sample
15–24	3,714	36.2%
25–44	4,282	41.7%
45–54	1,614	15.7%
55–64	577	5.6%
65 and over	74	0.7%

Education level	Number in sample	Percent in sample
HS graduate, or less	2,541	24.7%
Some college	2,901	28.3%
College graduate	4,819	47.0%

Region	Number in sample	Percent in sample
North-eastern	2,015	19.6%
South-eastern	1,264	12.3%
North Central	2,859	27.9%
South Central	2,506	24.4%
Western	1,617	15.8%

Race	Number in sample	Percent in sample
White	7,994	77.9%
Black/African American	1,113	10.8%
American Indian	79	0.8%
Asian American	368	3.6%
Multiracial	149	1.5%
Other	558	5.4%
Hispanic origin	887	8.6%

Note: totals add up to over 100% because Hispanics also endorsed one of the six race categories.

Source: US 16PF–5 Administrator's Manual 2009, p 107

Norm tables

Slovak – US norms are applied; overall US norm sample (N=10,261), data collected in 2002

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–3	4–5	6–8	9–11	12–14	15–17	18–19	20	21–22	-
Reasoning	B	0–3	4	5–6	7–8	9–10	11–12	13	14	15	-
Emotional Stability	C	0–2	3–5	6–8	9–12	13–16	17–18	19	20	-	-
Dominance	E	0–2	3–5	6–8	9–11	12–14	15–17	18	19	20	-
Liveliness	F	-	0–3	4–6	7–9	10–12	13–15	16–17	18	19–20	-
Rule-Conscious-ness	G	0–2	3–5	6–8	9–11	12–15	16–18	19–20	21	22	-
Social Boldness	H	-	0–1	2–3	4–7	8–12	13–16	17–18	19	20	-
Sensitivity	I	0	1–2	3–5	6–8	9–12	13–16	17–19	20–21	22	-
Vigilance	L	0–1	2–3	4–5	6–7	8–10	11–13	14–15	16–17	18–19	20
Abstract-edness	M	-	0	1	2–3	4–6	7–10	11–14	15–18	19–20	21–22
Private-ness	N	0	1–2	3–4	5–7	8–10	11–14	15–17	18–19	20	-
Apprehen-sion	O	-	0–1	2–3	4–6	7–10	11–14	15–17	18–19	20	-
Openness to Change	Q1	0–4	5–7	8–9	10–13	14–17	18–20	21–23	24–25	26–27	28
Self-Reliance	Q2	-	0	1	2–3	4–6	7–10	11–14	15–16	17–18	19–20
Perfection-ism	Q3	0–1	2–3	4–5	6–8	9–12	13–15	16–17	18	19–20	-
Tension	Q4	-	0–1	2–3	4–6	7–10	11–14	15–17	18–19	20	-

Descriptive statistics

Primary Factor		Number of items	Primary Factor		Number of items
Warmth	A	11	Abstractedness	M	11
Reasoning	B	15	Privateness	N	10
Emotional Stability	C	10	Apprehension	O	10
Dominance	E	10	Openness to Change	Q1	14
Liveliness	F	10	Self-Reliance	Q2	10
Rule-Consciousness	G	11	Perfectionism	Q3	10
Social Boldness	H	10	Tension	Q4	10
Sensitivity	I	11	Impression Management	IM	12
Vigilance	L	10			

Global weights/factor equations

Slovak – Comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		Slov	UK/US	Slov	UK/US	Slov	UK/US	Slov	UK/US	Slov	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Consciousness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstractedness	M					−0.3	−0.3			−0.3	−0.3
Privateness	N	−0.3	−0.3								
Apprehension	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfectionism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.65	1.60	13.75	13.80	−2.20	−2.20	3.85	3.80

Note: the Global Factor weights of the Slovak 16PF are based on US weights and are consequently exactly the same as US/UK weights.

Response Style Indices

Impression Management (IM)

Slovak — raw score cut-off points for IM

Raw score	Cut-off point
0–4	Low range
5–20	Acceptable range
21–24	High range

Slovak — raw score to percentile conversion for IM; based on US sample (N=10,621), data collected in 2002

Raw score	Percentile	Raw score	Percentile
0–2	1	14	64
3	4	15	73
4	5	16	76
5	10	17	84
6	12	18	86
7	19	19	91
8	22	20	93
9	32	21	96
10	35	22	97
11	46	23	99
12	50	24	99
13	60		

Source: US 16PF–5 Administrator's Manual 2009, p 96

Slovak – Impression Management (IM); items/scoring key

Item number	Direction of keyed response	Item number	Direction of keyed response
16	a	85	c
23	c	95	c
34	c	101	c
48	c	115	c
58	c	144	c
75	c	153	c

Infrequency (INF)

Slovak – raw score cut-off points for INF

Raw score	Cut-off point
0–7	Acceptable range
8–32	High range

Slovak – raw score to percentile conversion for INF; based on US sample (N=10,621), data collected in 2002

Raw score	Percentile	Raw score	Percentile
0–1	55	6	93
2	71	7	95
3	80	8	97
4	86	9–10	98
5	90	11–32	99

Source: US 16PF–5 Administrator's Manual 2009, p 100

Slovak — Infrequency (INF); items/scoring key

Item numbers

6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Slovak — raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–70	Acceptable range
71–103	High range

Slovak – raw score to percentile conversion for ACQ; based on US sample (N=10,621), data collected in 2002

Raw score	Percentile	Raw score	Percentile
0–24	0.1	52	28.4
25–26	0.2	53	32.3
27–28	0.3	54	36.4
29–30	0.4	55	40.8
31	0.5	56	45.5
32	0.7	57	50.5
33	0.9	58	54.9
34	1.2	59	59.6
35	1.4	60	64.2
36	1.8	61	68.6
37	2.2	62	72.7
38	2.7	63	76.5
39	3.4	64	80.5
40	3.9	65	83.7
41	4.8	66	86.6
42	5.7	67	89.0
43	6.7	68	91.2
44	8.0	69	93.2
45	9.7	70	94.7
46	11.5	71	96.1
47	13.6	72	97.2
48	15.8	73	97.9
49	18.6	74	98.5
50	21.6	75–103	99.0
51	25.0		

Source: US 16PF–5 Administrator's Manual 2009, p 98

Slovak – Acquiescence (ACQ); items/scoring key

Item numbers												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	47
48	49	50	52	54	57	58	59	60	61	62	63	64
65	66	68	69	71	72	76	77	79	83	85	87	89
90	91	93	94	96	97	99	100	103	105	106	107	108
110	111	112	113	114	116	118	124	125	126	128	130	132
133	134	135	137	138	140	141	142	145	146	148	150	151
152	155	157	158	159	162	164	165	166	167	168	169	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Spanish (American)

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Spanish (American)

Spanish (American)

Norm sample description

Spanish (American) — norm sample (N=385), data collected around 2003

Gender	Number in sample	Percent in sample
Male	173	45
Female	212	55

Age (years)	Number in sample	Percent in sample
15–24	123	33.1
24–44	187	50.3
45–64	55	14.8
65 and over	7	1.9

Note: 13 respondents did not provide information on age.

Educational attainment (>= 15 years)	Number in sample	Percent in sample
Primary/ elementary	12	3.2
Some high school	17	4.5
High school graduate	38	10.1
Vocational/technical school graduate	45	12.0
Some college	134	35.7
College graduate (Bachelor's degree)	86	22.9
Master's degree	36	9.6
Doctorate degree	7	1.9
Total	375	100

Note: 10 respondents did not provide information on level of education.

Educational attainment (>= 25 years, subsample of norm sample)	Number in sample	Percent in sample
Primary/elementary	10	4.0
Some high school	10	4.0
High school graduate	22	8.9
Vocational/technical school graduate	31	12.5
Some college	61	24.6
College graduate (Bachelor's degree)	74	29.8
Master's degree	33	13.3
Doctorate degree	7	2.8
Total	248	100

Note: 1 respondent did not provide information on level of education.

Geographic location	Number in sample	Percent in sample
Midwest	39	10.9
North-east	25	7.0
Puerto Rico	26	7.3
South	229	64.1
West	38	10.6
Total	357	100

Primary language	Number in sample	Percent in sample
Only Spanish	62	16.5
Spanish better than English	175	46.7
Both equal	91	24.3
English better than Spanish	43	11.2
Other	4	1.1
Total	375	100

Note: 10 respondents did not provide information on primary language.

Breakdown of years in the US	Number in sample	Percent in sample
5 years or under	101	28.9
6–10 years	58	16.6
11–15 years	53	15.2
16–20 years	31	8.9
21–25 years	41	11.8
26–30 years	20	5.7
31–35 years	19	5.4
36 years and over	26	7.4
Total	349	100

Note: 36 respondents did not provide information on years in the US.

Parental country of origin	Mother			Father		
	Number	Percent		Number	Percent	
Mexico	220	60.6		213	57.7	
Cuba	7	1.9		6	1.6	
Puerto Rico	32	8.8		34	9.2	
Dominican Republic	14	3.9		18	4.9	
El Salvador	8	2.2		8	2.2	
Nicaragua	2	0.6	14.9	2	0.5	13.2
Other Central American country	8	2.2		9	2.4	
Other South American country	36	9.9		30	8.1	
Other country	36	9.9		49	13.3	
Total	363	100		369	100	

Source: Spanish (American) 16PF–5 Technical Manual Supplement 2005, pp 11–16

Norm tables

Spanish (American) – general population (N=385), data collected around 2003

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–3	4–6	7–9	10–12	13–15	16–17	18–19	20	21	22
Reasoning	B	0–2	3–4	5–6	7–8	9–10	11–12	13	14	15	-
Emotional Stability	C	0–7	8–9	10–12	13–15	16–17	18–19	20	21	22	-
Dominance	E	0–4	5–6	7–9	10–12	13–15	16–17	18–19	20	21	22
Liveliness	F	0–1	2–3	4–6	7–9	10–12	13–15	16–17	18	19	20
Rule-Conscious-ness	G	0–6	7–8	9–11	12–14	15–17	18–20	21–22	23	24	-
Social Boldness	H	0	1–2	3–5	6–9	10–12	13–15	16–17	18–19	20	-
Sensitivity	I	0–2	3–4	5–6	7–9	10–12	13–15	16–17	18	19	20
Vigilance	L	0–1	2–3	4–6	7–8	9–11	12–13	14–15	16–17	18–19	20–22
Abstract-edness	M	-	0	1–2	3–4	5–7	8–9	10–11	12–15	16–19	20–22
Private-ness	N	0–1	2	3–4	5–7	8–11	12–14	15–17	18–19	20–21	22
Apprehen-sion	O	0	1–2	3–5	6–8	9–11	12–14	15–16	17–18	19	20
Openness to Change	Q1	0–7	8–9	10–11	12–14	15–17	18–20	21–22	23–24	25	26
Self-Reliance	Q2	-	0	1–2	3–4	5–7	8–10	11–13	14–16	17–18	19–20
Perfection-ism	Q3	0–3	4–7	8–10	11–12	13–15	16–18	19–20	21	22	-
Tension	Q4	0	1–2	3–4	5–7	8–11	12–14	15–16	17–18	19–21	22

Source: Spanish (American) 16PF–5 Technical Manual Supplement 2005, p 21

Descriptive statistics

Spanish (American)

Primary Factor		Number of items	Combined (N=385)		Puerto Rico sample (N=140)	
			Mean	SD	Mean	SD
Warmth	A	11	14.86	4.74	15.51	4.84
Reasoning	B	15	10.54	3.36	9.73	3.26
Emotional Stability	C	11	17.09	4.15	17.19	4.11
Dominance	E	11	15.07	4.65	14.71	4.93
Liveliness	F	10	11.60	4.79	10.87	4.77
Rule-Consciousness	G	12	17.01	4.90	17.77	4.59
Social Boldness	H	10	11.68	5.62	11.55	5.77
Sensitivity	I	10	12.53	4.70	12.85	4.68
Vigilance	L	11	11.56	4.70	11.29	4.62
Abstractedness	M	11	7.20	4.87	6.58	4.79
Privateness	N	11	11.49	5.36	11.43	5.61
Apprehension	O	10	11.24	4.92	11.02	5.02
Openness to Change	Q1	13	17.50	4.74	17.15	5.05
Self-Reliance	Q2	10	7.16	4.85	7.26	4.86
Perfectionism	Q3	11	14.94	4.96	15.04	4.83
Tension	Q4	11	11.18	5.50	11.15	5.49

Source: Spanish (American) 16PF–5 Technical Manual Supplement 2005, pp 17–18

Reliability and Standard Error of Measurement

Spanish (American)

Primary Factor		Number of items	Cronbach's alpha coefficients (N ~ 380)	SEM (Sten scores)*
Warmth	A	11	0.70	1.10
Reasoning	B	15	0.80	0.89
Emotional Stability	C	11	0.68	1.13
Dominance	E	11	0.70	1.10
Liveliness	F	10	0.72	1.06
Rule-Consciousness	G	12	0.72	1.06
Social Boldness	H	10	0.83	0.82
Sensitivity	I	10	0.70	1.10
Vigilance	L	11	0.73	1.04
Abstractedness	M	11	0.71	1.08
Privateness	N	11	0.76	0.98
Apprehension	O	10	0.71	1.08
Openness to Change	Q1	13	0.63	1.22
Self-Reliance	Q2	10	0.74	1.02
Perfectionism	Q3	11	0.73	1.04
Tension	Q4	11	0.76	0.98
Mean			0.73	
Impression Management	IM	12	0.63	

Note: SEM was computed based on available information on reliability provided in the Spanish (American) manual. The theoretical SD of 2 was used as the actual SD is not reported in the manual.

Source: Spanish (American) 16PF–5 Technical Manual Supplement 2005, p 18

Global weights/factor equations

Spanish (American) – comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Indepen-dence		Self-Control	
		Span (Am)	UK/US	Span (Am)	UK/US	Span (Am)	UK/US	Span (Am)	UK/US	Span (Am)	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Conscious-ness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstract-edness	M					−0.3	−0.3			−0.3	−0.3
Private-ness	N	−0.3	−0.3								
Apprehen-sion	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfection-ism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

Note: the Global Factor weights of the Spanish-American 16PF are based on US weights and are consequently exactly the same as US/UK weights.

Response Style Indices

Impression Management (IM)

Spanish (American) – raw score cut-off points for IM

Raw score	Cut-off point
0–5	Low range
6–20	Acceptable range
21–24	High range

Spanish (American) – raw score to percentile conversion for IM

Raw score	Percentile	Raw score	Percentile
0–2	0.5	14	60
3	1	15	69
4	2	16	77
5	5	17	84
6	6	18	89
7	7	19	93
8	11	20	95
9	16	21	96
10	22	22	97
11	30	23	99
12	40	24	99
13	50		

Note: data based on a normal distribution and percentiles calculated according to this.

Spanish (American) − Impression Management (IM); items/scoring key

Item number	Direction of keyed response
16	A
23	C
34	C
48	C
58	C
75	C
85	C
95	A
101	C
115	A
144	C
153	C

Infrequency (INF)

Spanish (American) − raw score cut-off points for INF

Raw score	Cut-off point
0–10	Acceptable range
11–32	High range

Spanish (American) – raw score to percentile conversion for INF

Raw score	Percentile	Raw score	Percentile
0	30	7	89
1	48	8	92
2	58	9	94
3	68	10	95
4	75	11	97
5	81	12–14	98
6	85	15–32	99

Note: data based on a normal distribution and percentiles calculated according to this.

Spanish (American) – Infrequency (INF); items/scoring key

Item numbers												
6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Spanish (American) – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–70	Acceptable range
71–103	High range

Spanish (American) — raw score to percentile conversion for ACQ

Raw score	Percentile	Raw score	Percentile
0–24	0.1	52	28.4
25–26	0.2	53	32.3
27–28	0.3	54	36.4
29–30	0.4	55	40.8
31	0.5	56	45.5
32	0.7	57	50.5
33	0.9	58	54.9
34	1.2	59	59.6
35	1.4	60	64.2
36	1.8	61	68.6
37	2.2	62	72.7
38	2.7	63	76.5
39	3.4	64	80.5
40	3.9	65	83.7
41	4.8	66	86.6
42	5.7	67	89.0
43	6.7	68	91.2
44	8.0	69	93.2
45	9.7	70	94.7
46	11.5	71	96.1
47	13.6	72	97.2
48	15.8	73	97.9
49	18.6	74	98.5
50	21.6	75–103	99.0
51	25.0		

Note: data based on a normal distribution and percentiles calculated according to this.

Spanish (American) — Acquiescence (ACQ); items/scoring key

Item numbers

1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	45
47	48	49	50	52	54	57	58	59	60	61	62	63
64	65	66	68	69	71	72	76	77	79	83	85	87
88	89	90	91	92	93	94	95	96	97	99	100	103
105	106	107	108	110	111	112	113	114	115	116	118	119
124	125	126	128	130	132	133	134	135	137	138	140	141
142	145	146	148	149	150	151	152	155	157	158	159	162
164	165	166	167	168	169							

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Spanish (American)

The Spanish (American) 16PF questionnaire was developed by Heather Cattell at IPAT in collaboration with Alan Mead, Barbara Ellis and Ryan Ladd.

Translation

The goal of this translation was to develop a test that could be understood by all the different kinds of Spanish speakers typically found in the US, including those coming from Mexico, Puerto Rico, Cuba, the Dominican Republic and the many countries of Central America and South America. Note that although there has long been a Castillian (ie European) version of the 16PF questionnaire that is distributed in Spain, Castillian Spanish was not widely understood by the many kinds of American Spanish speakers, and so this version was not used in the translation process.

In order to create a 'pan-Spanish edition' a thorough and iterative translation process took place, which continued over several years. Great effort was focused on trying to find the simplest language possible to convey the meaning of items — the 'lowest common denominator' linguistically among the many cultures, and to remove words that were specific and unique to individual cultures, such as those specific to the Mexican or Cuban culture.

First, the 16PF Fifth Edition Questionnaire (Form S) was independently translated by two separate teams of translators. The first team of translators included Heather Cattell, PhD, Esmeralda Goldsmith (a fluent English speaker who was born, raised, and college-educated in Nicaragua), and Marcel Ponton, PhD (an American psychologist, born and raised in Venezuela, who has published a book on the assessment of Hispanic individuals – Ponton and Leon-Carrion, 2001). The second group of translators included Richard Ford, PhD and Marilú Gámez, PhD (both Spanish language specialists of Mexican origin from the Department of Languages and Linguistics at the University of Texas, El Paso).

These two groups independently translated the entire test. They then worked to reconcile the discrepancies between their two translations. There were 12 items for which differences could not be easily resolved, and so both versions of these 12 items were included in the initial research. The final version of the test was back-translated by a professional translator whose native language was English and second language was Mexican-Spanish. Heather Cattell resolved all discrepancies indicated in the back-translation in consultation with various translators.

Research

Dr Barbara Ellis (University of Texas, El Paso) and Dr Alan Mead (IPAT) conducted a joint research project to examine the quality of this translation (Ellis, 1995; Ellis and Mead, 2000).

The studies examined the measurement equivalence of the Spanish and English versions of the 16PF questionnaire, measuring both differential item functioning (DIF) as well as differential functioning of items and tests (DFIT).

This research included 833 participants: a sample of 280 English-dominant Spanish-Americans, 244 Spanish-dominant Americans and Mexicans, and 309 English-speaking Anglo-Americans. In the first study, only seven of the total 173 items in the test showed differential functioning (using a constrained 3PL IRT model) at the 5% confidence level – a reassuring result since eight or nine such items would be expected on the basis of chance alone (Ellis, 1995). In the second study (Ellis and Mead, 2000), several different statistical tests for DFIT resulted in different numbers of items showing a lack of measurement equivalence. However, in both studies, the verbal ability items in the Reasoning scale (Factor B) showed the highest level of differential item functioning.

As a consequence, all items were reviewed and improved in a second translation process before the large standardisation testing. The goals were: (1) to improve all items, especially

those that showed differential item functioning; (2) to use translators from a wider range of diverse Spanish speaking regions; and (3) to try to simplify the language and lower the reading level to a third or fourth grade reading level. The test author, Heather Cattell, worked with professional translators representing a range of countries, including Mexico, Cuba, Puerto Rico, the Dominican Republic, Ecuador, Colombia, Spain and Argentina. To improve items, the results from the previously described DFIT analyses were carefully examined, as well as other IRT parameters, plus all classical test theory statistics such as item-scale correlations, inter-scale correlations, and internal consistency reliabilities. All suggestions for improvements from one source were reviewed by at least one other translator.

These revised items were then back-translated a final time to confirm that all changes were, in fact, improvements. These final revisions resulted in between 13 and 17 items per scale for the personality scales, and 25 items for the Factor B Reasoning scale. These were combined to make the standardisation version of the test, Form S, which was administered to about 800 participants.

Reasoning Scale (Factor B)

At each stage of the test development process, special attention was given to the items in the brief Reasoning ability scale (Factor B). The translation of the Reasoning scale was the most difficult because of the nature of the items (ability items with right/wrong answers) and because the items were often based on subtle verbal distinctions, for example, in the verbal analogies items. Equivalent translation into Spanish required not only that the item stem mean the same in Spanish as in English, but also that the several answer choices be the same as the English version, have the same relationship to each other, require the same type of thinking, and have the same difficulty level and distracter qualities. Because three of the seven items on the test that displayed differential item functioning were on this scale, items flagged as DIF in any of the analyses were examined by translators and improved, and new items were written at various difficulty levels. These new items were pilot tested in three samples of Spanish-speaking Americans. Results were factor-analysed, examined for internal consistency reliability and IRT parameters, and validated against other ability measures (Mead, 1998). Because these items were the most difficult to translate, more items for this scale were included in the standardisation form than for the other scales.

Standardisation and norms

In addition to the hundreds of people of Spanish-American origin tested during the development stages of the Spanish (American) 16PF–5, over 600 people were tested in the final standardisation stage. These subjects were solicited from current users of the 16PF questionnaire, as well as from members of relevant divisions of the American Psychological Association and from State psychological associations. Thus, they are likely to be representative of Americans who typically use psychological tests. About 200 of the participants were nationals from countries in Central or South America, and these individuals were removed from the American standardisation. To ascertain that only valid protocols were included, extreme scorers on the Infrequency validity scale were omitted. In addition, an item was included at the end of the personality items asking whether the test-taker was able to read and understand the test.

A stratified random sampling was used to create the final normative sample of 385. Sample stratification was done on the bases of gender, age, educational attainment and country of origin variables, with the target number for each variable being derived from the latest US Census figures (US Bureau of the Census, 2003). This final sample was used in the analyses for the final item selection, including the calculation of internal consistency reliabilities, as well as for the norm table calculations.

The final Spanish (American) test contains 190 multiple choice items. The content and scoring for the personality scales on the Spanish (American) test are almost exactly the

same as for the US English version. One additional item was added to each of the following scales to add extra strength in the translated version across the many diverse Spanish countries, dialects and cultures: C, E, G, L, N, Q3 and Q4. These are added onto the end of the test. In addition, two items (one each from Factor I and Q1) were removed because they were not easily translatable into Spanish, and thus these two scales are one item shorter in the Spanish version.

Source: Spanish (American) 16PF–5 Technical Manual Supplement 2005, pp 7, 9–11.

Spanish (European)

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Spanish (European)

Spanish (European)

Norm sample description

Spanish (European) – overall norm sample (N=3,448), exact year of data collection unknown but between 1994 and 2000

Gender	Number in sample	Percent in sample
Male	2,804	81
Female	644	19
Total	3,448	100

Source: Spanish 16PF–5 Manual 2000, pp 111–12

Norm tables

Spanish (European) — overall norm sample (N=3,448), exact year of data collection unknown but between 1994 and 2000

Primary Factor		Stens									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Warmth	A	0–4	5–6	7–9	10–13	14–15	16–17	18–19	20	21	22
Reasoning	B	0–3	4–5	6–7	8–9	-	10–11	-	12	13	14–15
Emotional Stability	C	0–2	3–5	6–9	10–15	16	17–18	19	20	-	-
Dominance	E	0–5	6–8	9–10	11–14	15	16	17–18	19	20	-
Liveliness	F	0–3	4–6	7–9	10–13	14	15–16	17	18	19–20	-
Rule-Conscious-ness	G	0–3	4–6	7–8	9–14	15	16–18	19–20	21	22	-
Social Boldness	H	0	1–2	3–6	7–14	15–16	17–18	19	20	-	-
Sensitivity	I	0	1	2–3	4–6	7–8	9–10	11–14	15–18	19–20	21–22
Vigilance	L	-	0	1–2	3–7	8–9	10–12	13–15	16–17	18	19–20
Abstract-edness	M	-	-	0	1–2	3	4–7	8–11	12–14	15–17	18–22
Private-ness	N	0	1	2–4	5–7	8–9	10–12	13–15	16–17	18–19	20
Apprehen-sion	O	-	0	1	2–5	6–7	8–12	13–15	16–18	19	20
Openness to Change	Q1	0–3	4–6	7–8	9–12	13	14–16	17–18	19–21	22–23	24–28
Self-Reliance	Q2	-	-	0	1	2	3–4	5–7	8–11	12–14	15–20
Perfection-ism	Q3	0–3	4–6	7–9	10–14	15	16–18	19	20	-	-
Tension	Q4	-	-	0	1–4	5	6–9	10–13	14–15	16–18	19–20
Impression Manage-ment	IM	0–2	3–4	5–7	8–12	13	14–17	18–19	20–22	23	24

Source: Spanish 16PF–5 Manual 2000, p 113

Descriptive statistics

Spanish (European) – overall norm sample

Primary Factor		Number of items	Combined (N=3,448)	
			Mean	**SD**
Warmth	A	11	14.53	4.49
Reasoning	B	15	9.60	2.41
Emotional Stability	C	10	14.99	4.98
Dominance	E	10	14.48	3.64
Liveliness	F	10	13.95	3.97
Rule-Consciousness	G	11	14.77	5.05
Social Boldness	H	10	14.04	6.01
Sensitivity	I	11	8.86	5.27
Vigilance	L	10	8.98	5.41
Abstractedness	M	11	5.24	5.25
Privateness	N	10	9.59	5.14
Apprehension	O	10	8.48	6.21
Openness to Change	Q1	14	13.57	5.06
Self-Reliance	Q2	10	3.69	4.07
Perfectionism	Q3	10	14.89	4.61
Tension	Q4	10	6.68	5.47
Impression Management	IM	12	13.62	5.71

Source: Spanish 16PF–5 Manual 2000, pp 111–13

Reliability and Standard Error of Measurement

Primary Factor		Number of items	Split-half (N=3,448)	SEM (Sten scores)*
Warmth	A	11	0.40	1.55
Reasoning	B	15	0.39	1.56
Emotional Stability	C	10	0.70	1.10
Dominance	E	10	0.44	1.50
Liveliness	F	10	0.44	1.50
Rule-Consciousness	G	10	0.65	1.18
Social Boldness	H	10	0.81	0.90
Sensitivity	I	12	0.49	1.43
Vigilance	L	10	0.67	1.15
Abstractedness	M	11	0.67	1.15
Privateness	N	10	0.62	1.23
Apprehension	O	10	0.77	1.0
Openness to Change	Q1	14	0.46	1.50
Self-Reliance	Q2	10	0.66	1.20
Perfectionism	Q3	10	0.60	1.30
Tension	Q4	10	0.70	1.10

Source: Spanish 16PF–5 Manual 2000, Appendix B, pp 95 and 113

Global weights/factor equations

Spanish (European) – comparison against UK/US factor weights*

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Indepen-dence		Self-Control	
		Span (E)	UK/US	Span (E)	UK/US	Span (E)	UK/US	Span (E)	UK/US	Span (E)	UK/US
Warmth	A	0.5	0.3	0.2		−0.2	−0.2	−0.1		0.3	
Reasoning	B	0.1		0.2		−0.1		0.1			
Emotional Stability	C	−0.1		−0.3	−0.4	−0.1		0.1		−0.1	
Dominance	E			0.1		−0.1		0.7	0.6	0.1	
Liveliness	F	0.3	0.3	0.1		0.3		0.3		−0.3	−0.2
Rule-Conscious-ness	G	0.1		0.1				−0.1		0.5	0.4
Social Boldness	H	0.1	0.2	−0.2		−0.2		0.2	0.3	−0.1	
Sensitivity	I	0.2		0.1		−0.3	−0.5	−0.2		0.1	
Vigilance	L			0.3	0.3	0.2		0.3	0.2		
Abstract-edness	M					−0.3	−0.3			−0.1	−0.3
Private-ness	N	−0.3	−0.3	0.1		0.1		0.2			
Apprehen-sion	O	0.2		0.5	0.4	0.1				0.3	
Openness to Change	Q1	−0.2		−0.4		−0.8	−0.5	0.1	0.3		
Self-Reliance	Q2	−0.4	−0.3	−0.2		−0.3					
Perfection-ism	Q3	0.1		0.3		−0.1		0.1		0.7	0.4
Tension	Q4	0.1		0.4	0.4	0.3		0.2			
Constant value		1.6	4.40	−1.6	1.60	13.8	13.80	−5.0	−2.20	−2.2	3.80

*Note: even though many more Primary Factors are included in computing the Global Factors, only the Primary Factors used in the US version are referred to in the Spanish manual when describing the Global Factors conceptually.

Source: Spanish 16PF–5 Manual 2000, pp 17 and 27

Response Style Indices

Impression Management (IM)

Spanish (European) — raw score cut-off points for IM

Raw score	Cut-off point
0–5	Low range
6–21	Acceptable range
22–24	High range

Spanish (European) — raw score to percentile conversion for IM; based on Spanish (European) sample (N=3,448)

Raw score	Percentile	Raw score	Percentile
0	1	13	47
1	2	14	57
2	3	15	59
3	4	16	68
4	7	17	70
5	8	18	79
6	14	19	81
7	15	20	88
8	22	21	90
9	24	22	95
10	32	23	96
11	34	24	99
12	45		

Source: Spanish 16PF–5 Manual 2000, p 114

Spanish (European) − Impression Management (IM); items/scoring key

Item number	Direction of keyed response	Item number	Direction of keyed response
16	c	85	c
23	c	95	c
34	c	101	c
48	c	115	c
58	c	144	c
75	c	153	a

Infrequency (INF)

Spanish (European) − raw score cut-off points for INF

Raw score	Cut-off point
0–5	Acceptable range
6–38	High range

Spanish (European) − raw score to percentile conversion for IM; based on Spanish (European) sample (N= 3,448)

Raw score	Percentile	Raw score	Percentile
0	64	5	96
1	81	6	97
2	88	7	98
3	92	8–38	99
4	95		

Source: Spanish 16PF−5 Manual 2000, p 114

Spanish (European) – Infrequency (INF); items/scoring key

Item numbers												
5	8	10	14	16	22	24	26	27	28	35	36	51
56	63	75	80	85	90	91	92	98	101	102	111	116
121	123	125	128	130	131	140	144	151	154	158	160	

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Spanish (European) – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–62	Acceptable range
63–95	High range

Spanish (European) – raw score to percentile conversion for ACQ; based on Spanish (European) sample (N=3,448)

Raw score	Percentile	Raw score	Percentile
0–30	1	50	58
31–32	2	51	62
33	3	52	66
34	4	53	69
35	6	54	73
36	7	55	76
37	9	56	79
38	11	57	82
39	14	58	84
40	17	59	87
41	20	60	89
42	24	61	91
43	27	62	93
44	32	63	94
45	36	64	95
46	40	65	96
47	45	66	97
48	50	67	98
49	54	69–95	99

Source: Spanish 16PF–5 Manual 2000, p 114

Spanish (European) — Acquiescence (ACQ); items/scoring key

Item numbers												
2	4	5	6	9	10	12	13	14	23	27	28	29
33	34	35	36	39	40	41	43	44	47	48	49	50
54	57	58	59	61	62	63	64	65	66	68	69	71
76	77	79	83	85	87	89	90	91	92	93	96	97
99	100	103	105	106	107	108	110	111	113	114	116	117
118	124	125	126	128	130	132	133	134	135	137	138	141
142	145	146	148	149	150	151	152	155	156	157	159	161
165	166	167	169									

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Spanish (European)

The Spanish (European) version of the 16PF questionnaire was developed by TEA. Information on the development is provided in the Spanish manual on page 29ff.

Source: Spanish 16PF–5 Manual 2000, p 29ff

Swedish

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Swedish

Swedish

Norm sample description

Swedish – norm sample (N=554), data collected in 1996–1997

Gender	Number in sample	Percent in sample	
Male	232	42	
Female	322	58	
Norm group	**Number in sample**	**Age (mean)**	**Age (SD)**
Female	322	32.4	9.6
Male	232	33.3	9.7
Total	554	32.8	9.6

Swedish – demographics of subsamples (randomised sample, students of Psychology, students of Economy)

	Number in sample	Age (mean)	Age (SD)
Randomised sample			
Female	153	37.7	10.2
Male	134	36.7	10.6
Total	287	37.2	10.4
Students of Psychology			
Female	68	29.7	6.8
Male	38	31.3	7.0
Total	106	30.2	6.9
Students of Economy			
Female	101	26.2	4.2
Male	60	26.9	3.1
Total	161	26.4	3.8

Source: Swedish 16PF Manual (16PF–5 Manual) 2005, Appendix B, table B1–B2

Norm tables

Swedish – overall norm sample (N=554), data collected in 1996–1997

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–6	7–9	10–11	12–14	15–16	17–18	19–20	21	22	
Reasoning	B	0–2	3	4–5	6–7	8–9	10–11	12	13	14	15
Emotional Stability	C	0–4	5–7	8–10	11–12	13–14	15–16	17–18	19	20	
Dominance	E	0–3	4	5–7	8–10	11–13	14–15	16–17	18	19–20	
Liveliness	F	0–4	5–7	8	9–11	12–13	14–16	17–18	19	20	
Rule-Conscious-ness	G	0–2	3–4	5–7	8–9	10–12	13–14	15–16	17–18	19–20	21–22
Social Boldness	H	0–1	2	3–5	6–9	10–14	15–17	18–19	20		
Sensitivity	I	0–3	4–5	6–8	9–12	13–14	15–17	18–19	20	21–22	
Vigilance	L	0–2	3–4	5–6	7–8	9–10	11–12	13–14	15–17	18	19–20
Abstract-edness	M	0–1	2	3	4–5	6–7	8–10	11–13	14–16	17–18	19–22
Private-ness	N	0–1	2	3	4–5	6–9	10–12	13–16	17–18	19–20	
Apprehen-sion	O	0–2	3	4–6	7–8	9–10	11–14	15–16	17–18	19–20	
Openness to Change	Q1	0–6	7–8	9–13	14–16	17–19	20–22	23–25	26	27–28	
Self-Reliance	Q2	0–1	2	3	4–5	6–8	9–10	11–12	13–16	17	18–20
Perfection-ism	Q3	0–1	2	3–4	5–7	8–10	11–12	13–14	15–17	18	19–20
Tension	Q4	0–2	3	4–6	7–8	9–10	11–12	13–15	16–17	18–19	20

Swedish – randomised norm sample (N=287, subsample of overall norm sample), data collected in 1996–1997

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–4	5–8	9–10	11–12	13–14	15–17	18–19	20	21	22
Reasoning	B										
Emotional Stability	C	0–4	5–6	7–9	10–12	13–14	15–16	17–18	19	20	
Dominance	E	0–2	3	4–6	7–9	10–11	12–14	15–16	17–18	19	20
Liveliness	F	0–4	5–6	7–8	9–10	11–12	13–14	15–16	17–18	19	20
Rule-Conscious-ness	G	0–2	3–5	6–8	9–11	12–14	15–16	17–18	19	20–21	22
Social Boldness	H	0–1	2	3	4–7	8–12	13–16	17–18	19–20		
Sensitivity	I	0–2	3–4	5–7	8–10	11–14	15–16	17–18	19–20	21–22	
Vigilance	L	0–3	4–5	6	7–8	9–10	11–13	14–15	16–17	18	19–20
Abstract-edness	M	0–1	2	3	4	5–6	7–9	10–12	13–14	15–16	17–22
Private-ness	N	0–1	2	3–4	5–7	8–11	12–15	16–17	18	19–20	
Apprehen-sion	O	0–2	3	4–5	6–8	9–11	12–14	15–16	17–18	19–20	
Openness to Change	Q1	0–5	6–7	8–10	11–14	15–16	17–20	21–22	23–26	27–28	
Self-Reliance	Q2	0–2	3	4	5–6	7–8	9–10	11–13	14–16	17–18	19–20
Perfection-ism	Q3	0–1	2	3–5	6–7	8–10	11–12	13–14	15–18	19	20
Tension	Q4	0–2	3	4–6	7–8	9–10	11–12	13–15	16	17–18	19–20

Source: Swedish 16PF Manual (16PF–5 Manual) 2005, Appendix B, table B8b

Swedish − students of Psychology total (N=106, subsample of overall sample), data collected in 1996−1997

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–6	7–12	13	14	15–16	17–18	19–20	21	22	
Reasoning	B										
Emotional Stability	C	0–6	7	8	9–12	13	14–15	16–17	18	19–20	
Dominance	E	0–4	5–6	7–8	9–10	11–13	14–16	17	18	19	20
Liveliness	F	0–5	6	7–8	9–10	11–12	13–14	15–16	17–18	19	20
Rule-Conscious-ness	G	0–2	3	4–5	6–7	8–10	11–12	13–14	15–16	17–19	20–22
Social Boldness	H	0–2	3–4	5–6	7–10	11–13	14–17	18–19	20		
Sensitivity	I	0–10	11	12	13–15	16	17–19	20	21–22		
Vigilance	L	0–2	3	4	5–6	7–8	9	10–12	13–14	15–17	18–20
Abstract-edness	M	0–1	2–3	4	5–8	9–10	11–13	14–16	17–18	19–20	21–22
Private-ness	N	0–1	2	3	4–5	6–7	8–10	11–12	13–15	16–17	18–20
Apprehen-sion	O	0–4	5–6	7–8	9	10–12	13–14	15–17	18	19–20	
Openness to Change	Q1	0–8	9–15	16–18	19–21	22–23	24–25	26	27	28	
Self-Reliance	Q2	0–1	2	3–4	5–6	7–8	9–10	11–12	13–15	16	17–20
Perfection-ism	Q3	0–2	3	4	5–6	7–8	9–11	12–13	14	15–18	19–20
Tension	Q4	0–4	5	6	7–10	11–12	13–14	15–16	17–18	19–20	

Source: Swedish 16PF Manual (16PF–5 Manual) 2005, Appendix B, table B8c

Swedish – students of Economy total (N=161, subsample of overall sample), data collected in 1996–1997

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–9	10–11	12–13	14–15	16–17	18	19–20	21	22	-
Reasoning	B	-	-	-	-	-	-	-	-	-	-
Emotional Stability	C	0–7	8	9–10	11–13	14–15	16–17	18	19–20	-	-
Dominance	E	0–5	6–8	9–10	11–13	14–15	16	17–18	19	20	-
Liveliness	F	0–8	9–10	11–12	13–14	15–16	17–18	19	20	-	-
Rule-Conscious-ness	G	0–3	4	5–6	7–8	9–11	12–14	15	16–17	18–19	20–22
Social Boldness	H	0–3	4–6	7–10	11–12	13–16	17–19	20	-	-	-
Sensitivity	I	0–4	5–6	7–8	9–11	12–14	15–16	17–18	19–20	21	22
Vigilance	L	0–3	4–5	6	7–8	9–10	11–12	13–15	16–17	18	19–20
Abstract-edness	M	0–1	2	3	4–5	6	7–10	11–14	15–16	17–20	21–22
Private-ness	N	0–1	2	3	4	5–7	8–10	11–12	13–16	17–18	19–20
Apprehen-sion	O	0–1	2	3–4	5–7	8–10	11–12	13–16	17–18	19–20	-
Openness to Change	Q1	0–10	11–13	14–16	17–18	19–21	22–23	24–25	26	27–28	-
Self-Reliance	Q2	0–1	2	3	4	5	6–8	9–10	11–13	14–16	17–20
Perfection-ism	Q3	0–1	2	3–5	6–8	9–10	11–14	15–16	17–18	19	20
Tension	Q4	0–2	3	4	5–7	8–10	11–12	13–14	15–16	17–19	20

Source: Swedish 16PF Manual (16PF–5 Manual) 2005, Appendix B, table B8d

Descriptive statistics

Swedish – split into overall sample

Primary Factor		Number of items	Combined (N=554)	
			Mean	SD
Warmth	A	11	5.10	1.90
Reasoning	B	15	-	-
Emotional Stability	C	10	5.13	1.94
Dominance	E	10	5.15	1.91
Liveliness	F	10	5.16	1.94
Rule-Consciousness	G	11	5.22	1.98
Social Boldness	H	10	5.10	1.91
Sensitivity	I	11	5.15	1.98
Vigilance	L	10	5.19	2.05
Abstractedness	M	11	5.04	2.15
Privateness	N	10	5.18	2.19
Apprehension	O	10	5.20	1.95
Openness to Change	Q1	14	5.22	1.95
Self-Reliance	Q2	10	5.03	2.19
Perfectionism	Q3	10	5.15	2.05
Tension	Q4	10	5.18	2.01
Global Factor				
Extraversion	EX		5.43	1.97
Anxiety	AN		5.24	2.09
Tough-Mindedness	TM		5.40	1.77
Independence	IN		5.02	1.87
Self-Control	SC		6.09	1.95

Source: Swedish 16PF Manual (16PF–5 Manual) 2005, Appendix B, table B4a

Reliability and Standard Error of Measurement

Swedish

Primary Factor		Number of items	Cronbach's alpha coefficients (N=554)	SEM (Sten scores)*	Test-retest reliability [8 months] (N=39)
Warmth	A	11	0.63	1.16	0.76
Reasoning	B	15	-	-	0.68
Emotional Stability	C	10	0.62	1.20	0.77
Dominance	E	10	0.70	1.05	0.76
Liveliness	F	10	0.64	1.16	0.85
Rule-Consciousness	G	10	0.68	1.12	0.37
Social Boldness	H	10	0.87	0.69	0.81
Sensitivity	I	12	0.72	1.05	0.81
Vigilance	L	10	0.69	1.14	0.44
Abstractedness	M	11	0.71	1.16	0.70
Privateness	N	10	0.82	0.93	0.66
Apprehension	O	10	0.73	1.01	0.64
Openness to Change	Q1	14	0.74	0.99	0.68
Self-Reliance	Q2	10	0.70	1.20	0.59
Perfectionism	Q3	10	0.71	1.10	0.58
Tension	Q4	10	0.65	1.19	0.69
Impression Management	IM	12	0.65	-	-

Note: SEM was converted from raw scores for SEM (Table B5 in the Swedish manual).

*Note: *SEM was computed based on information on SD of the sten scores and reliability provided in the Swedish manual.*

Source: Swedish 16PF Manual (16PF–5 Manual) 2005, Appendix B, table B9 and p 60

Global weights/factor equations

Swedish – comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		SW	UK/US	SW	UK/US	SW	UK/US	SW	UK/US	SW	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Conscious-ness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstract-edness	M					−0.3	−0.3			−0.3	−0.3
Private-ness	N	−0.3	−0.3								
Apprehen-sion	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfection-ism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.4	4.40	1.65	1.60	13.75	13.80	−2.20	−2.20	3.85	3.80

US factor weights are applied.

Response Style Indices

Impression Management (IM)

Swedish – raw score cut-off points for IM

Raw score	Cut-off point
0–4	Low range
5–19	Acceptable range
20–24	High range

Swedish – raw score to percentile conversion for IM

Raw score	Percentile	Raw score	Percentile
0–2	1	13	60
3	2	14	69
4	5	15	75
5	6	16	80
6	12	17	85
7	10	18	90
8	15	19	93
9	22	20	95
10	30	21	96
11	40	22	97
12	50	23–24	99

Note: data based on a normal distribution and percentiles calculated according to this.

Swedish – Impression Management (IM); items/scoring key

Item number	Direction of keyed response	Item number	Direction of keyed response
17	c	125	c
35	c	141	c
53	c	143	a
71	c	159	c
89	c	161	c
107	c	162	c

Infrequency (INF)

Swedish – raw score cut-off points for INF; based on Swedish sample (N=554)

Raw score	Cut-off point
0–7	Acceptable range
8–32	High range

Swedish – raw score to percentile conversion for INF

Raw score	Percentile
0–1	55
2	71
3	80
4	86
5	90
6	93
7	95
8	97
9–10	98
11–32	99

Note: data based on a normal distribution and percentiles calculated according to this.

Swedish – Infrequency (INF); items/scoring key

Item numbers

4	14	15	21	28	34	37	56	61	65	67	69	72
75	87	88	96	107	108	122	125	132	136	139	141	142
143	147	154	159	166	170							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Swedish – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–72	Acceptable range
73–103	High range

Swedish – raw score to percentile conversion for ACQ

Raw score	Percentile	Raw score	Percentile
0–24	0.1	52	28.4
25–26	0.2	53	32.3
27–28	0.3	54	36.4
29–30	0.4	55	40.8
31	0.5	56	45.5
32	0.7	57	50.5
33	0.9	58	54.9
34	1.2	59	59.6
35	1.4	60	64.2
36	1.8	61	68.6
37	2.2	62	72.7
38	2.7	63	76.5
39	3.4	64	80.5
40	3.9	65	83.7
41	4.8	66	86.6
42	5.7	67	89.0
43	6.7	68	91.2
44	8.0	69	93.2
45	9.7	70	94.7
46	11.5	71	96.1
47	13.6	72	97.2
48	15.8	73	97.9
49	18.6	74	98.5
50	21.6	75–103	99.0
51	25.0		

Note: data based on a normal distribution and percentiles calculated according to this.

Swedish – Acquiescence (ACQ); items/scoring key

Item numbers												
1	2	3	4	6	8	9	10	11	16	19	20	21
22	23	24	25	27	28	29	30	31	34	35	36	38
39	40	42	43	44	48	49	52	54	55	56	58	59
60	61	62	63	65	69	71	72	73	75	76	77	78
80	82	83	86	88	89	90	92	94	95	96	98	99
100	101	102	105	106	107	108	109	110	113	114	115	117
118	122	123	126	129	132	133	137	138	139	140	141	144
147	149	150	153	155	157	158	160	165	166	169	170	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Swedish

No information is provided about who developed the Swedish version but it seems likely that this was done by Psykologiforlaget AB, who published the 16PF manual and was the distributor of the 16PF in Sweden.

The data collection and data analysis for the Swedish 16PF version were carried out in 1996–1997. The norms are based on a total norm sample of 554 respondents. In addition, this sample was split into three subsamples for which norms and demographic data are reported: students of Psychology (N=106) of Stockholm University, students of Economy (N=161) of Stockholm University, and a randomised sample (N=287) from the Swedish Index of Population (SPAR-index, Sema group infodata). This norm group is larger than the other two norm groups together.

As can be seen in the norm table description, women are overrepresented in the two norm groups of university students. However, this reflects the gender distribution of the two education programmes. The randomised norm sample is also a representative gender distribution of the Swedish total population.

The age distribution between the norm groups differ from each other. The norm group of students of Economy, which has the lowest mean age, are mainly students who just started their education, whereas the norm group of students of Psychology are recruited in the later part of their education and have therefore a higher mean age. The randomised norm sample has both the highest mean age and the most spread age range of all the norm groups.

Factor B, the Reasoning scale, was not a part of the Swedish standardisation of 16PF due to the randomised sample which completed the questionnaire unsupervised at home.

Source: Swedish 16PF Manual (16PF–5 Manual) 2005, pp 55–6

Turkish

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in Turkish

Turkish

Norm tables

Turkish – general population (N=2,230)*, year of data collection unknown

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–6	7–8	9–10	11–13	14–15	16–17	18–19	20	21	22
Reasoning	B	0–3	4	5–6	7–8	9–10	11–12	13	14	15	-
Emotional Stability	C	0–6	7–9	10–11	12–14	15–16	17	18	19	20	-
Dominance	E	0–7	8–10	11–12	13–14	15–16	17	18	19	20	-
Liveliness	F	0–3	4–6	7–9	10–11	12–14	15–16	17–18	19	20	-
Rule-Conscious-ness	G	0–4	5–7	8–10	11–13	14–16	17–18	19–20	21	22	-
Social Boldness	H	0–2	3–6	7–10	11–14	15–16	17	18	19	20	-
Sensitivity	I	0–4	5–6	7–8	9–10	11–13	14–15	16–17	18–19	20	21–22
Vigilance	L	0–2	3	4–5	6–7	8	9–10	11–12	13–14	15–16	17–20
Abstract-edness	M	0	1	2	3	4–5	6–7	8–9	10–12	13–15	16–22
Private-ness	N	0–2	3–4	5	6–7	8–9	10–11	12–13	14–15	16–17	18–20
Apprehen-sion	O	0	1	2	3	4–5	6–7	8–10	11–12	13–15	16–20
Openness to Change	Q1	0–8	9–11	12–13	14–16	17–19	20–21	22–23	24	25	26–28
Self-Reliance	Q2	-	0	1	2	3–4	5–6	7–8	9–10	11–13	14–20
Perfection-ism	Q3	0–6	7–9	10–13	14–15	16	17	18	19	20	-
Tension	Q4	-	0	1	2	3–4	5–7	8–10	11–14	15–17	18–20

Descriptive statistics

Turkish

Primary Factor		Number of items	Combined (N=2,230)	
			Mean	SD
Warmth	A	11	15.03	4.21
Reasoning	B	15	10.36	3.29
Emotional Stability	C	10	15.74	3.74
Dominance	E	10	16.09	3.36
Liveliness	F	10	13.64	4.30
Rule-Consciousness	G	11	15.45	4.67
Social Boldness	H	10	15.23	4.64
Sensitivity	I	11	13.16	4.30
Vigilance	L	10	9.02	3.54
Abstractedness	M	11	5.90	3.91
Privateness	N	10	9.99	3.90
Apprehension	O	10	6.07	4.04
Openness to Change	Q1	14	18.63	4.68
Self-Reliance	Q2	10	4.43	3.57
Perfectionism	Q3	10	16.41	3.64
Tension	Q4	10	5.84	4.88
Impression Management	IM	12		

Reliability and Standard Error of Measurement

Turkish

Primary Factor		Number of items	Cronbach's alpha coefficients	SEM (Sten scores)
Warmth	A	11	0.59	1.3
Reasoning	B	15	0.78	0.9
Emotional Stability	C	10	0.65	1.2
Dominance	E	10	0.58	1.3
Liveliness	F	10	0.58	1.3
Rule-Consciousness	G	11	0.54	1.4
Social Boldness	H	10	0.78	0.9
Sensitivity	I	11	0.56	1.3
Vigilance	L	10	0.48	1.4
Abstractedness	M	11	0.61	1.2
Privateness	N	10	0.57	1.3
Apprehension	O	10	0.62	1.2
Openness to Change	Q1	14	0.57	1.3
Self-Reliance	Q2	10	0.61	1.2
Perfectionism	Q3	10	0.66	1.2
Tension	Q4	10	0.76	1.0

Global weights/factor equations

Turkish – comparison against UK/US factor weights*

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Indepen-dence		Self-Control	
		Turk	UK/US	Turk	UK/US	Turk	UK/US	Turk	UK/US	Turk	UK/US
Warmth	A	0.28	0.3			−0.72	−0.2				
Reasoning	B										
Emotional Stability	C			−0.36	−0.4						
Dominance	E							0.51	0.6		
Liveliness	F	0.28	0.3					0.18			−0.2
Rule-Conscious-ness	G									0.70	0.4
Social Boldness	H	0.22	0.2					0.25	0.3		
Sensitivity	I					−0.53	−0.5				
Vigilance	L	−0.15		0.16	0.3			0.17	0.2		
Abstract-edness	M			0.13			−0.3			−0.15	−0.3
Private-ness	N	−0.21	−0.3								
Apprehen-sion	O			0.26	0.4						
Openness to Change	Q1						−0.5	0.33	0.3	−0.17	
Self-Reliance	Q2	−0.33	−0.3								
Perfection-ism	Q3									0.28	0.4
Tension	Q4			0.35	0.4						
Constant value		4.96	4.40	2.62	1.60	12.37	13.80	−2.67	−2.20	1.83	3.80

* Note: no information available about the generation of the factor equations.

Response Style Indices

Impression Management (IM)

Turkish – raw score cut-off points for IM

Raw score	Cut-off point
0–8	Low range
9–22	Acceptable range
23–24	High range

Turkish – raw score to percentile conversion for IM

Raw score	Percentile	Raw score	Percentile
0–7	1	16	59
8	5	17	69
9	7	18	77
10	11	19	84
11	15	20	93
12	23	21	94
13	31	22	95
14	40	23–24	99
15	50		

Note: data based on a normal distribution and percentiles calculated according to this.

Turkish – Impression Management (IM); items/scoring key

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Infrequency (INF)

Turkish – raw score cut-off points for INF

Raw score	Cut-off point
0–7	Acceptable range
8–45	High range

Turkish – raw score to percentile conversion for INF

Raw score	Percentile	Raw score	Percentile
0–1	58	7	95
2	68	8	96
3	75	9	97
4	81	10	98
5	88	11–45	99
6	91		

Note: data based on a normal distribution and percentiles calculated according to this.

Turkish – Infrequency (INF); items/scoring key

Item numbers												
1	2	4	5	12	14	16	20	21	22	26	31	33
34	36	42	43	47	49	51	55	56	62	63	66	73
75	80	82	90	91	92	93	95	96	98	105	111	116
122	123	125	129	137	139							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Acquiescence (ACQ)

Turkish – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–67	Acceptable range
68–98	High range

Turkish – raw score to percentile conversion for ACQ

Raw score	Percentile	Raw score	Percentile
0–33	1	53	54
34–35	2	54	59
36–37	3	55	63
38	4	56	67
39	5	57	71
40	6	58	76
41	8	59	80
42	10	60	84
43	11	61	87
44	14	62	89
45	18	63	91
46	23	64	92
47	26	65	93
48	31	66	94
49	35	67	95
50	39	68–69	98
51	44	70–98	99
52	49		

Note: data based on a normal distribution and percentiles calculated according to this.

Turkish – Acquiescence (ACQ); items/scoring key

Item numbers												
1	2	4	5	6	9	11	12	13	14	15	22	23
25	28	29	30	34	35	36	38	39	40	43	44	47
48	49	50	57	58	59	60	61	62	64	65	66	68
69	71	74	76	77	79	85	87	89	93	94	96	97
100	102	103	104	105	106	107	108	110	111	113	114	115
116	118	119	120	124	125	126	128	130	132	133	134	135
137	140	141	142	145	146	147	148	150	151	152	155	157
158	159	164	165	166	168	169						

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Development of the 16PF questionnaire in Turkish

The first version of Turkish 16PF was developed by Emre Konuk as his postgraduate thesis in 1989 and the translation process was developed in this context. The questionnaire was translated by five native Turkish speakers fluent in English, who were unfamiliar with the 16PF but experts in Psychology. Emre Konuk, together with his consultant, Professor Diane Sunar, reviewed these five translations and put together the Turkish form. The DBE–Institute for Behavioural Studies completed the adaptation for the Turkish standardisation of 16PF Fifth Edition items in 2001, which was continuously updated in line with the original revisions. Still using the Fifth Edition, the validity and reliability studies were repeated in 2007 on a representative sample of 5,279 respondents. Cronbach's alpha, Spearman-Brown and Gutmann internal consistency coefficients were computed for all items. The test-retest reliability method for 16PF was used, with an interval of 15 days. The item analyses were conducted for every single question, with item-total correlations, item-partial correlations and the item discrimination index analysed. In terms of validity, 16PF results were compared with the ACL, DAS and General Ability tests and also criterion and construct validity were examined.

The Institute for Behavioural Studies receives consultancy from Assistant Professor Canan Savran (Lecturer in Marmara University, Turkey), specialised in psychometrics. Mrs Savran works closely with Professor Deniz Öneş, a well-known psychometrician at Minnesota University, US.

UK English

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in UK English

UK English

Norm sample description

UK English – norm sample (N=1,212), data collected in 2011

Gender	Number in sample	Percent in sample
Male	606	50
Female	606	50
Total	1,212	100

Age (years)	Number in sample	Percent in sample
16–19	51	4.2%
20–24	99	8.2%
25–34	331	27.3%
35–49	449	37.0%
50–65	282	23.3%

UK educational level	Number in sample	Percent in sample
School – pre GCSE (or equivalent)	47	5.1%
School – GCSE (or equivalent)	219	23.6%
School – 'A' Level (or equivalent)	194	20.9%
University/college (1st year)	55	5.9%
University/college (2nd year)	100	10.8%
Bachelor's degree	225	24.3%
Master's degree	73	7.9%
Doctorate	9	1.0%
Post Doctorate	5	0.5%

Republic of Ireland educational level	Number in sample	Percent in sample
School – junior certificate	35	12.3%
School – leaving certificate	94	33.0%
University/college (1st year)	29	10.2%
University/college (2nd year)	40	14.0%
Bachelor's Degree	58	20.4%
Master's Degree	22	7.7%
Doctorate	5	1.8%
Post Doctorate	2	0.7%

UK region	Number in sample	Percent in sample
North East	37	4.0%
North West	85	9.2%
Yorkshire & the Humber	63	6.8%
West Midlands	63	6.8%
East Midlands	40	4.3%
South West	60	6.5%
South East	93	10.0%
East	54	5.8%
London	85	9.2%
Northern Ireland	125	13.5%
Scotland	140	15.1%
Wales	82	8.8%

Source: European English 16PF data supplement 2011, pp 13–14

Republic of Ireland region	Number in sample	Percent in sample
Border region	22	7.7%
West region	32	11.2%
Midlands region	26	9.1%
Mid-East region	18	6.3%
Dublin region	120	42.1%
South East region	31	10.9%
South West region	26	9.1%
Mid West region	10	3.5%

Employment status	Number in sample	Percent in sample
Full-time (for an employer)	660	54.5%
Full-time (self-employed)	87	7.2%
Part-time (for an employer)	188	15.5%
Part-time (self-employed)	50	4.1%
Unemployed	68	5.6%
Working not for income	5	0.4%
Student	77	6.4%
Homemaker	43	3.5%
Retired	34	2.8%

Occupational level	Number in sample	Percent in sample
Executive level management/owner	37	3.8%
Senior management	53	5.4%
Middle management	200	20.3%
First level management/supervisor	179	18.2%
Employee	461	46.8%
Other	55	5.6%

Work area	Number in sample	Percent in sample
Agriculture, forestry and fishing	16	1.3%
Mining and quarrying	6	0.5%
Manufacturing	81	6.7%
Electricity, gas, steam and air conditioning supply	11	0.9%
Water supply, sewerage, waste management and remediation activities	2	0.2%
Construction	59	4.9%
Wholesale and retail trade; repair of motor vehicles and motor cycles	66	5.4%
Accommodation and food service activities	54	4.5%
Transport and storage	53	4.4%
Information and communication	75	6.2%
Financial and insurance activities	73	6.0%
Real estate activities	8	0.7%
Professional, scientific and technical activities	90	7.4%
Administrative and support service activities	113	9.3%
Public administration and defence; compulsory social security	53	4.4%
Education	102	8.4%
Human health and social work activities	99	8.2%
Arts, entertainment and recreation	42	3.5%
Other service activities	194	16%
Activities of households as employers; undifferentiated goods and services producing activities of households for own use	11	0.9%
Activities of extraterritorial organisations and bodies	4	0.3%

Source: European English 16PF data supplement 2011, pp 14–15

Norm tables

UK English – general population (N=1,212), data collected in 2011

Primary Factor		Stens									
		1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Warmth	A	0–2	3–4	5–7	8–9	10–12	13–15	16–17	18–19	20	21–22
Reasoning (US Data)*	B	0–3	4	5	6–7	8–9	10–11	12	13	14	15
Emotional Stability	C	0	1–2	3–4	5–7	8–11	12–14	15–16	17–18	19–20	-
Dominance	E	0–2	3–4	5–7	8–9	10–12	13–15	16–17	18	19–20	-
Liveliness	F	0–1	2–3	4–6	7–8	9–11	12–14	15–16	17–18	19–20	-
Rule-Conscious-ness	G	0–3	4–5	6–7	8–9	10–12	13–14	15–16	17–18	19–20	21–22
Social Boldness	H	-	-	0–1	2–4	5–9	10–13	14–16	17–18	19–20	-
Sensitivity	I	0–2	3–4	5–6	7–9	10–12	13–15	16–17	18–19	20–21	22
Vigilance	L	0–5	6–7	8–10	11–12	13–14	15–16	17	18	19–20	-
Abstract-edness	M	-	0–1	2–3	4–5	6–8	9–11	12–14	15–17	18–19	20–22
Private-ness	N	0–2	3–4	5–7	8–9	10–13	14–16	17–18	19	20	-
Apprehen-sion	O	0–1	2–3	4–5	6–8	9–12	13–16	17–18	19	20	-
Openness to Change	Q1	0–5	6–7	8–10	11–12	13–15	16–18	19–21	22–23	24–25	26–28
Self-Reliance	Q2	0	1–2	3–5	6–7	8–11	12–14	15–16	17–18	19–20	-
Perfection-ism	Q3	0–1	2–3	4–5	6–8	9–11	12–14	15–16	17–18	19–20	-
Tension	Q4	0–2	3–4	5–6	7–8	9–11	12–14	15–16	17–18	19–20	-

Source: European English 16PF data supplement 2011, p 5

Descriptive statistics

UK English

Primary Factor		Number of items	Mean	SD
Warmth	A	11	12.37	4.82
Reasoning	B	15	9.11	3.08
Emotional Stability	C	10	11.02	5.13
Dominance	E	10	12.43	4.36
Liveliness	F	10	11.76	4.71
Rule-Consciousness	G	11	11.87	4.15
Social Boldness	H	10	9.01	6.15
Sensitivity	I	11	12.16	5.02
Vigilance	L	10	13.87	3.65
Abstractedness	M	11	9.06	4.92
Privateness	N	10	12.60	4.86
Apprehension	O	10	12.17	5.33
Openness to Change	Q1	14	15.96	5.15
Self-Reliance	Q2	10	11.02	5.30
Perfectionism	Q3	10	11.60	4.76
Tension	Q4	10	11.61	4.68
Impression Management	IM	12	14.28	4.49

Source: European English 16PF data supplement 2011, p 4

Reliability and Standard Error of Measurement

UK English

Primary Factor		Number of items	Cronbach's alpha coefficients (N=1,212)	SEM (Sten scores)*
Warmth	A	11	0.70	1.1
Reasoning (US data)	B	15	0.71	1.1
Emotional Stability	C	10	0.77	1.0
Dominance	E	10	0.68	1.1
Liveliness	F	10	0.74	1.0
Rule-Consciousness	G	11	0.62	1.2
Social Boldness	H	10	0.87	0.7
Sensitivity	I	11	0.71	1.1
Vigilance	L	10	0.64	1.2
Abstractedness	M	11	0.71	1.1
Privateness	N	10	0.76	1.0
Apprehension	O	10	0.79	0.9
Openness to Change	Q1	14	0.63	1.2
Self-Reliance	Q2	10	0.80	0.9
Perfectionism	Q3	10	0.73	1.0
Tension	Q4	10	0.73	1.0

Source: European English 16PF data supplement 2011, p 8

Global weights/factor equations

UK English – comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Indepen-dence		Self-Control	
		UK	UK/US	UK	UK/US	UK	UK/US	UK	UK/US	UK	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Conscious-ness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstract-edness	M					−0.3	−0.3			−0.3	−0.3
Private-ness	N	−0.3	−0.3								
Apprehen-sion	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfection-ism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

Note: the US weightings and constants are applied to the Global Factor equations of the UK questionnaire. No first-order or second-order factor analysis of the UK data is reported in the 'Supplement of Norms and Technical Data'.

Response Style Indices

Impression Management (IM)

UK English – raw score to percentile conversion IM

Raw score	Cut-off point
0–3	Low range
4–20	Acceptable range
21–24	High range

UK English – raw score to percentile conversion for IM

Raw score	Percentile	Raw score	Percentile
0–2	1	13	60
3	5	14	64
4	6	15	73
5	10	16	76
6	12	17	84
7	19	18	86
8	22	19	91
9	32	20	95
10	35	21	96
11	46	22	97
12	50	23–24	99

Note: data based on a normal distribution and percentiles calculated according to this.

UK English – Impression Management (IM); items/scoring key

Item number	Direction of keyed response
17	c
35	c
53	c
71	c
89	c
107	c
125	c
141	c
143	a
159	c
161	c
162	c

Source: UK 16PF–5 Administrator's Manual 1994, p 109

Infrequency (INF)

UK English – raw score cut-off points for INF

Raw score	Cut-off point
0–7	Acceptable range
8–32	High range

UK English – raw score to percentile conversion for INF

Raw score	Percentile
0–1	55
2	71
3	80
4	86
5	90
6	93
7	95
8	97
9–10	98
11–32	99

Note: data based on a normal distribution and percentiles calculated according to this.

UK English – Infrequency (INF); items/scoring key

Item numbers												
4	14	15	21	28	34	37	56	61	65	67	69	72
75	87	88	96	107	108	122	125	132	136	139	141	142
143	147	154	159	166	170							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: UK 16PF–5 Administrator's Manual 1994, p 110

Acquiescence (ACQ)

UK English – raw score to percentile conversion for ACQ; based on English sample (N=1,212)

Raw score	Cut-off point
0–70	Acceptable range
71–103	High range

UK English – raw score to percentile conversion for ACQ

Raw score	Percentile	Raw score	Percentile
0–24	0.1	52	28.4
25–26	0.2	53	32.3
27–28	0.3	54	36.4
29–30	0.4	55	40.8
31	0.5	56	45.5
32	0.7	57	50.5
33	0.9	58	54.9
34	1.2	59	59.6
35	1.4	60	64.2
36	1.8	61	68.6
37	2.2	62	72.7
38	2.7	63	76.5
39	3.4	64	80.5
40	3.9	65	83.7
41	4.8	66	86.6
42	5.7	67	89.0
43	6.7	68	91.2
44	8.0	69	93.2
45	9.7	70	94.7
46	11.5	71	96.1
47	13.6	72	97.2
48	15.8	73	97.9
49	18.6	74	98.5
50	21.6	75–103	99.0
51	25.0		

Note: data based on a normal distribution and percentiles calculated according to this.

UK English — Acquiescence (ACQ): Items/scoring key

Item numbers												
1	2	3	4	6	8	9	10	11	16	19	20	21
22	23	24	25	27	28	29	30	31	34	35	36	38
39	40	42	43	44	48	49	52	54	55	56	58	59
60	61	62	63	65	69	71	72	73	75	76	77	78
80	82	83	86	88	89	90	92	94	95	96	98	99
100	101	102	105	106	107	108	109	110	113	114	115	117
118	122	123	126	129	132	133	137	138	139	140	141	144
147	149	150	153	155	157	158	160	165	166	169	170	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Source: UK 16PF–5 Administrator's Manual 1994, p 113

Development of the 16PF questionnaire in UK English

The UK English version of the 16PF questionnaire was developed by ASE in 1993 while ASE was the 16PF distributor in the UK.

A team including Chartered Psychologists, trainers in the 16PF and publishing specialists worked on the anglicisation process. The agenda for the anglicisation was to change as few items as possible, while ensuring that all necessary changes were made to the content, punctuation, spelling and word order of items in order to ensure that UK respondents grasped the intended meaning of the items. All in all, 36 items of the initial item set were changed. The changes involved the replacement of the obviously American–English words or phrases with British–English equivalents, the substitution of speech marks ("") with single quotation marks (''), changes from US to British spellings, changes in word order, the deletion of superfluous commas, etc.

Standardisation of the 16PF

For the standardisation of the 16PF, it proved possible to engage the Office of Population Censuses and Surveys (OPCS). An arrangement was made so that distribution of the 16PF was added as a trailer to the January 1993 Omnibus survey. For the 16PF standardisation, the OPCS interviewers had to gain cooperation a second time, since the questionnaire was too long to be completed while they waited. It was therefore decided that, at the end of the main Omnibus interview, the interviewer would introduce the questionnaire and then, if the person agreed to participate, leave it behind with a covering letter and a stamped addressed envelope for its return to OPCS. Only one restriction was placed upon eligibility to take the 16PF; namely, that the person should be in the 16 to 64 age range. As the procedure resulted in a risk of cheating on the ability scale, it was decided to remove this scale entirely for the British standardisation. In total, 1,322 completed questionnaires were returned for analysis within the time period allowed.

The sample

Consideration was given to re-weighting the data set so as to counteract the various minor deviations from representativeness in the Omnibus sample. All analyses and normative information were therefore calculated using the final weighted data; that is, after the household size, scaling down and gender equalisation weights had been applied to each person's raw data. For the purpose of the analyses, the data set is treated as a simple random sample.

The final version of the 16PF

The British standardisation version of the questionnaire comprised 231 items: 15 primary scales each of 14 items, a 14-item Impression Management scale and seven new research items. The content of the questionnaire differed from that of the US standardisation edition in terms of the changes described earlier. The Factor B items were omitted in the standardisation version. Following analysis of the US standardisation data, IPAT prepared a final item set to be included in the published questionnaire, using the most psychometrically satisfactory items for each scale. This set consists of a 15-item Reasoning (B) scale, preceded by a mixed arrangement of the remaining 15 primary scales and a 12-item Impression Management (IM) scale – resulting in 185 items. Initial analysis of the British standardisation data suggested that the final US item selection was largely appropriate for British use, judging from the corrected item-scale correlations and the resulting alpha coefficients for each scale. Based on these analyses, it was decided to retain the US item selection for the British norms. Twenty-four of the anglicized items (see discussion above) are in the final item set. No new changes to the items were introduced after standardisation.

Source: 16PF–5 UK. A Supplement of Norms and Technical Data. 1994, p 1–9

US English

Norm sample description

Norm tables

Descriptive statistics

Reliability and Standard Error of Measurement

Global weights/factor equations

Response Style Indices

Development of the 16PF questionnaire in US English

US English

Norm sample description

US English – norm sample (N=10,261), data collected in 2002

Gender	Number in sample	Percent in sample
Male	5,124	49.9
Female	5,137	50.1
Age (years)	**Number in sample**	**Percent in sample**
15–24	3,714	36.2
25–44	4,282	41.7
45–54	1,614	15.7
55–64	577	5.6
65 and over	74	0.7
Education level	**Number in sample**	**Percent in sample**
HS graduate, or less	2,541	24.7
Some college	2,901	28.3
College graduate	4,819	47.0
Region	**Number in sample**	**Percent in sample**
North-eastern	2,015	19.6
South-eastern	1,264	12.3
North Central	2,859	27.9
South Central	2,506	24.4
Western	1,617	15.8
Race	**Number in sample**	**Percent in sample**
White	7,994	77.9
Black/African American	1,113	10.8
American Indian	79	0.8
Asian American	368	3.6
Multiracial	149	1.5
Other	558	5.4
Hispanic origin	887	8.6

Note: totals add up to over 100% because Hispanics also endorsed one of the six race categories.

Source: US 16PF–5 Administrator's Manual 2009, p 107

Norm tables

US English – general population (N=10,261), data collected in 2002

Primary Factor		Stens									
		1	2	3	4	5	6	7	8	9	10
Warmth	A	0–3	4–5	6–8	9–11	12–14	15–17	18–19	20	21–22	-
Reasoning	B	0–3	4	5–6	7–8	9–10	11–12	13	14	15	-
Emotional Stability	C	0–2	3–5	6–8	9–12	13–16	17–18	19	20	-	-
Dominance	E	0–2	3–5	6–8	9–11	12–14	15–17	18	19	20	-
Liveliness	F	-	0–3	4–6	7–9	10–12	13–15	16–17	18	19–20	-
Rule-Conscious-ness	G	0–2	3–5	6–8	9–11	12–15	16–18	19–20	21	22	-
Social Boldness	H	-	0–1	2–3	4–7	8–12	13–16	17–18	19	20	-
Sensitivity	I	0	1–2	3–5	6–8	9–12	13–16	17–19	20–21	22	-
Vigilance	L	0–1	2–3	4–5	6–7	8–10	11–13	14–15	16–17	18–19	20
Abstract-edness	M	-	0	1	2–3	4–6	7–10	11–14	15–18	19–20	21–22
Private-ness	N	0	1–2	3–4	5–7	8–10	11–14	15–17	18–19	20	-
Apprehen-sion	O	-	0–1	2–3	4–6	7–10	11–14	15–17	18–19	20	-
Openness to Change	Q1	0–4	5–7	8–9	10–13	14–17	18–20	21–23	24–25	26–27	28
Self-Reliance	Q2	-	0	1	2–3	4–6	7–10	11–14	15–16	17–18	19–20
Perfection-ism	Q3	0–1	2–3	4–5	6–8	9–12	13–15	16–17	18	19–20	-
Tension	Q4	-	0–1	2–3	4–6	7–10	11–14	15–17	18–19	20	-

Source: US 16PF–5 Administrator's Manual 2009, p 110

Descriptive statistics

US English – overall norm sample

Primary Factor		Number of items	Combined (N=10,261)	
			Mean	**SD**
Warmth	A	11	14.90	4.60
Reasoning	B	15	10.32	3.18
Emotional Stability	C	10	14.61	4.94
Dominance	E	10	13.29	4.28
Liveliness	F	10	12.38	4.82
Rule-Consciousness	G	11	14.80	5.09
Social Boldness	H	10	11.83	6.38
Sensitivity	I	11	12.02	5.86
Vigilance	L	10	10.79	4.54
Abstractedness	M	11	7.59	5.46
Privateness	N	10	10.60	5.21
Apprehension	O	10	10.97	5.65
Openness to Change	Q1	14	17.28	5.51
Self-Reliance	Q2	10	7.55	5.26
Perfectionism	Q3	10	11.63	5.02
Tension	Q4	10	9.85	5.39

Source: US 16PF–5 Administrator's Manual 2009, p 111

US English – split into ethnic groups, data collected in 2002 (subsample of overall norm sample)

Primary Factor		Number of items	White (N=7,994)		Black (N=1,113)	
			Mean	SD	Mean	SD
Warmth	A	11	14.80	4.68	15.56	4.23
Reasoning	B	15	10.84	2.95	7.65	3.15
Emotional Stability	C	10	14.68	4.96	14.28	4.79
Dominance	E	10	13.13	4.33	14.28	3.84
Liveliness	F	10	12.35	4.88	12.19	4.53
Rule-Consciousness	G	11	14.72	5.19	15.77	4.45
Social Boldness	H	10	11.77	6.46	12.34	5.73
Sensitivity	I	11	11.90	5.99	13.18	5.13
Vigilance	L	10	10.40	4.55	12.63	4.01
Abstractedness	M	11	7.65	5.53	6.95	4.76
Privateness	N	10	10.33	5.31	12.20	4.47
Apprehension	O	10	11.27	5.71	9.30	5.12
Openness to Change	Q1	14	17.27	5.67	17.40	4.60
Self-Reliance	Q2	10	7.55	5.33	8.04	4.85
Perfectionism	Q3	10	11.36	5.08	12.67	4.63
Tension	Q4	10	10.10	5.35	8.87	5.26
Impression Management	IM	12	11.29	5.03	12.60	4.98

Source: US 16PF–5 Administrator's Manual 2009, p 118

US English – split into ethnic groups, data collected in 2002 (subsample of overall norm sample)

Primary Factor		Number of items	White (N= 7,732)		Hispanic (N=887)	
			Mean	SD	Mean	SD
Warmth	A	11	14.81	4.69	14.85	4.31
Reasoning	B	15	10.86	2.95	9.02	3.20
Emotional Stability	C	10	14.65	4.97	15.26	4.85
Dominance	E	10	13.09	4.35	13.99	3.96
Liveliness	F	10	12.34	4.90	13.02	4.45
Rule-Consciousness	G	11	14.70	5.20	15.13	4.96
Social Boldness	H	10	11.73	6.47	12.58	6.19
Sensitivity	I	11	11.92	5.99	11.18	5.57
Vigilance	L	10	10.38	4.55	11.59	4.43
Abstractedness	M	11	7.68	5.53	6.99	5.58
Privateness	N	10	10.32	5.33	10.96	4.81
Apprehension	O	10	11.34	5.70	9.49	5.58
Openness to Change	Q1	14	17.29	5.67	16.81	5.25
Self-Reliance	Q2	10	7.58	5.33	6.49	5.13
Perfectionism	Q3	10	11.32	5.08	12.82	4.88
Tension	Q4	10	10.16	5.33	8.43	5.67
Impression Management	IM	12	11.25	5.01	12.38	5.58

Source: US 16PF–5 Administrator's Manual 2009, p 119

US English – split into ethnic groups: Asian American and white standardised mean differences; data collected in 2002 (subsample of overall norm sample)

Primary Factor		Number of items	White (N= 7,994)		Asian (N=368)	
			Mean	SD	Mean	SD
Warmth	A	11	14.80	4.68	15.00	4.43
Reasoning	B	15	10.84	2.95	10.34	3.06
Emotional Stability	C	10	14.68	4.96	13.17	4.97
Dominance	E	10	13.13	4.33	12.51	4.15
Liveliness	F	10	12.35	4.88	12.18	4.84
Rule-Consciousness	G	11	14.72	5.19	13.09	4.46
Social Boldness	H	10	11.77	6.46	10.58	6.35
Sensitivity	I	11	11.90	5.99	12.71	5.26
Vigilance	L	10	10.40	4.55	11.83	4.38
Abstractedness	M	11	7.65	5.53	8.30	5.19
Privateness	N	10	10.33	5.31	10.67	4.89
Apprehension	O	10	11.27	5.71	12.21	4.93
Openness to Change	Q1	14	17.27	5.67	17.56	5.14
Self-Reliance	Q2	10	7.55	5.33	7.58	4.96
Perfectionism	Q3	10	11.36	5.08	12.15	4.65
Tension	Q4	10	10.10	5.35	10.00	5.34
Impression Management	IM	12	11.29	5.03	10.85	5.24

Source: US 16PF–5 Administrator's Manual 2009, p 120

US English – split into age, data collected in 2002 (subsample of overall norm sample)

Primary Factor		Number of items	Under 40 (N=7,032)		40+ (N=3,229)	
			Mean	SD	Mean	SD
Warmth	A	11	15.13	4.57	14.39	4.64
Reasoning	B	15	10.11	3.14	10.77	3.23
Emotional Stability	C	10	14.45	5.02	14.95	4.77
Dominance	E	10	13.44	4.23	12.95	4.36
Liveliness	F	10	13.37	4.55	10.21	4.69
Rule-Consciousness	G	11	14.50	5.23	15.45	4.73
Social Boldness	H	10	11.99	6.45	11.47	6.20
Sensitivity	I	11	11.85	5.88	12.38	5.78
Vigilance	L	10	11.50	4.37	9.26	4.53
Abstractedness	M	11	7.79	5.56	7.14	5.20
Privateness	N	10	10.49	5.20	10.82	5.23
Apprehension	O	10	11.11	5.68	10.67	5.58
Openness to Change	Q1	14	17.05	5.42	17.77	5.67
Self-Reliance	Q2	10	7.00	5.08	8.75	5.45
Perfectionism	Q3	10	11.59	5.07	11.73	4.90
Tension	Q4	10	9.96	5.46	9.62	5.23
Impression Management	IM	12	11.24	5.10	12.01	5.06

Source: US 16PF–5 Administrator's Manual 2009, p 122

Reliability and Standard Error of Measurement

US English

Primary Factor		Number of items	Cronbach's alpha coefficients (N=10,261)	SEM (Sten scores)	Test-retest reliability [2 weeks] (N=204)	Test-retest reliability [2 months] (N=159)
Warmth	A	11	0.69	1.00	0.83	0.77
Reasoning	B	15	0.75	0.95	0.69	0.65
Emotional Stability	C	10	0.79	0.82	0.75	0.67
Dominance	E	10	0.68	0.96	0.77	0.69
Liveliness	F	10	0.73	0.96	0.82	0.69
Rule-Consciousness	G	11	0.77	0.86	0.80	0.76
Social Boldness	H	10	0.87	0.71	0.87	0.79
Sensitivity	I	11	0.79	0.83	0.82	0.76
Vigilance	L	10	0.73	0.99	0.76	0.56
Abstractedness	M	11	0.78	0.83	0.84	0.67
Privateness	N	10	0.77	0.87	0.77	0.70
Apprehension	O	10	0.80	0.79	0.79	0.64
Openness to Change	Q1	14	0.68	1.01	0.83	0.70
Self-Reliance	Q2	10	0.79	0.84	0.86	0.69
Perfectionism	Q3	10	0.74	0.94	0.80	0.77
Tension	Q4	10	0.79	0.76	0.78	0.68

Source: US 16PF–5 Administrator's Manual 2009, pp 113 and 130

Global weights/factor equations

US English – comparison against UK/US factor weights

Primary Factor		Extraversion		Anxiety		Tough-Mindedness		Independence		Self-Control	
		US	UK/US	US	UK/US	US	UK/US	US	UK/US	US	UK/US
Warmth	A	0.3	0.3			−0.2	−0.2				
Emotional Stability	C			−0.4	−0.4						
Dominance	E							0.6	0.6		
Liveliness	F	0.3	0.3							−0.2	−0.2
Rule-Consciousness	G									0.4	0.4
Social Boldness	H	0.2	0.2					0.3	0.3		
Sensitivity	I					−0.5	−0.5				
Vigilance	L			0.3	0.3			0.2	0.2		
Abstractedness	M					−0.3	−0.3			−0.3	−0.3
Privateness	N	−0.3	−0.3								
Apprehension	O			0.4	0.4						
Openness to Change	Q1					−0.5	−0.5	0.3	0.3		
Self-Reliance	Q2	−0.3	−0.3								
Perfectionism	Q3									0.4	0.4
Tension	Q4			0.4	0.4						
Constant value		4.40	4.40	1.60	1.60	13.80	13.80	−2.20	−2.20	3.80	3.80

Source: US 16PF–5 Administrator's Manual 2009, p 37

Response Style Indices

Impression Management (IM)

US English – raw score cut-off points for IM

Raw score	Cut-off point
0–4	Low range
5–20	Acceptable range
21–24	High range

US English – Impression Management (IM); raw score to percentile conversion; based on US sample (N=10,261)

Raw score	Percentile	Raw score	Percentile
0–2	1	13	60
3	4	14	64
4	5	15	73
5	10	16	76
6	12	17	84
7	19	18	86
8	22	19	91
9	32	20	93
10	35	21	96
11	46	22	97
12	50	23–24	99

Source: US 16PF–5 Administrator's Manual 2009, p 96

US English – Impression Management (IM) items/scoring key

Item number	Direction of keyed response
16	a
23	c
34	c
48	c
58	c
75	c
85	c
95	c
101	c
115	c
144	c
153	c

Source: US 16PF–5 Administrator's Manual 2009, p 41

Infrequency (INF)

US English – raw score cut-off points for INF

Raw score	Cut-off point
0–7	Acceptable range
8–32	High range

US English – raw score to percentile conversion for INF; based on US sample (N=10,261)

Raw score	Percentile
0–1	55
2	71
3	80
4	86
5	90
6	93
7	95
8	97
9–10	98
11–32	99

Source: US 16PF–5 Administrator's Manual 2009, p 100

US English – Infrequency (INF); items/scoring key

Item numbers												
6	16	18	23	24	26	34	35	36	41	51	62	75
76	80	90	92	94	99	100	101	105	111	116	125	140
148	152	155	156	161	165							

Note: for each item listed above, a 'b' response receives 1 point; otherwise, no points are assigned.

Source: US 16PF–5 Administrator's Manual 2009, p 42

Acquiescence (ACQ)

US English – raw score to percentile conversion for ACQ

Raw score	Cut-off point
0–70	Acceptable range
71–103	High range

US English – raw score to percentile conversion for ACQ; based on US sample (N=10,261)

Raw score	Percentile	Raw score	Percentile
0–24	0.1	52	28.4
25–26	0.2	53	32.3
27–28	0.3	54	36.4
29–30	0.4	55	40.8
31	0.5	56	45.5
32	0.7	57	50.5
33	0.9	58	54.9
34	1.2	59	59.6
35	1.4	60	64.2
36	1.8	61	68.6
37	2.2	62	72.7
38	2.7	63	76.5
39	3.4	64	80.5
40	3.9	65	83.7
41	4.8	66	86.6
42	5.7	67	89.0
43	6.7	68	91.2
44	8.0	69	93.2
45	9.7	70	94.7
46	11.5	71	96.1
47	13.6	72	97.2
48	15.8	73	97.9
49	18.6	74	98.5
50	21.6	75–103	99.0
51	25.0		

Source: US 16PF–5 Administrator's Manual 2009, p 98.

US English – Acquiescence (ACQ); items/scoring key

Item numbers												
1	2	6	9	10	11	12	13	14	15	22	23	25
27	28	29	33	34	35	36	39	40	41	43	44	47
48	49	50	52	54	57	58	59	60	61	62	63	64
65	66	68	69	71	72	76	77	79	83	85	87	89
90	91	93	94	96	97	99	100	103	105	106	107	108
110	111	112	113	114	116	118	124	125	126	128	130	132
133	134	135	137	138	140	141	142	145	146	148	150	151
152	155	157	158	159	162	164	165	166	167	168	169	

Note: for each item listed above, an 'a' response (TRUE response) receives 1 point; otherwise, no points are assigned.

Source: US 16PF–5 Administrator's Manual 2009, p 42

Development of the 16PF questionnaire in US English

The Fifth Edition of the 16PF questionnaire was developed by IPAT and was first published in 1994. The plan for the revision was to select and update the 'best items' from five forms of the 16PF Questionnaire (Forms A, B, C and D from the Fourth Edition and the short form of the Clinical Analysis Questionnaire [CAQ], Part 1) and then to combine these with new items to create one new form. To be considered for inclusion in the Fifth Edition, existing items as well as newly written items had to meet these eight criteria:

- Items should correlate and load more highly with their own scale than with any other scales.
- Items should be short, simple, and unambiguous.
- Dated or datable content should be removed and avoided.
- Content that might suggest gender, race or disability bias should be avoided.
- Items that are not easily translatable into other languages or cultures should be avoided.
- Material that might be considered intrusive, offensive or otherwise unacceptable in an industrial or organisational setting should be avoided.
- Content that is socially desirable or undesirable should be avoided to reduce motivational distortion.
- Items with extreme frequency endorsements should be avoided.

Item writing and rewriting efforts resulted in 50–100 items per Primary Factor scale. The number of items per scale was then reduced over four successive testings of diverse national samples of 1,204, 646, 872, and 3,498 subjects, respectively. At each of the four stages of item evaluation, all eight criteria listed previously were applied. The factor loadings used at each stage were from factor analyses conducted to ensure that the personality trait domains were accurately covered.

The goal of the fourth and final item selection process was to maintain high internal consistencies for the Primary Factor scales while retaining as few items as possible. Each scale was reduced to the best 14 items for use in testing the general population collected for the norm sample of the Fifth Edition (N=3,498; 1,749 males, 1,749 females). Here, as at each stage of the revision, a common factor analysis was performed on homogeneous item parcels using the maximum correlation as the initial estimate of communality. Final item selection was based on the eight criteria previously described. The selection process also involved trying to reduce the number of items per scale from the 14 present in the standardisation testing to 10 or 11 without lowering internal consistency reliabilities below 0.70. All but one of the personality scales were reduced to 10 or 11 items on this basis; Openness to Change (Q1) remains at 14 items. In addition, Reasoning (B) contains 15 items. The Reasoning scale was developed separately from the 15 non–cognitive scales on the 16PF instrument.

In 2002, updated norms were released based on 10,261 respondents. This was based on an initial sample of 31,244 respondents who completed the questionnaire between January 1999 and May 2001. All cases without information on biodata were removed and the remaining sample was stratified based on the 2000 US Census, resulting in a norm sample of 10,261 respondents.

Source: US 16PF–5 Administrator's Manual 2009, pp 7–11; US 16PF–5 Norm Supplement – Release 2002, p 1

References

References

Afrikaans

16PF *Vraelys Afrikaanse weergawe: Gebruikershandleiding*, IPAT, Inc. and JvR Psychometrics (Pty) Ltd, Pinegowrie, 2012

Hambleton, R.K. and Patsula, L. 'Increasing the validity of adapted tests: myths to be avoided and guidelines for improving test adaptation practices'. *Journal of Applied Testing Technology*, 1, 1–30, 1999

Australia

Mead, A.D. and Didsbury, G., *16PF Fifth Edition Technical Manual Supplement: Development of the Australian Version*, IPAT, Inc. and Psych Press, Melbourne, 2002

Chinese (Traditional)

Hambleton, R.K. and Patsula, L. 'Increasing the validity of adapted tests: myths to be avoided and guidelines for improving test adaptation practices'. *Journal of Applied Testing Technology*, 1, 1–30, 1999

Czech and Slovak

Conn, S.R., Rieke, M.L. and Koplíková, I. (trans), *16PF Páte vydání Technická Příručka*, IPAT, Inc. and Pschodiagnostika, Bratislava/Brno, 1997

Danish

Russell, M.T. and Karol, D.L., *16PF5 Manual: Dansk Version*, IPAT, Inc. and Assessio Danmark ApS, 1993

Dutch

Dutch 16PF Data Supplement, IPAT, Inc., 2011

Nederlandse 16PF Testhandleiding, IPAT, Inc., 2007

Filipino

16PF Administrator's Manual, Philippines Psychological Corporation, 2006

French (European)

French 16PF Data Supplement, IPAT Inc., 2011

Rolland, J.P. and Mogenet, J.L. 'Éléments de validité des dimensions primaires de l'adaptation française de l'inventaire 16PF5 [Evidence on the primary dimensions of the 16PF5 French form.]'. *European Review of Applied Psychology/Revue Européenne de Psychologie Appliquée*, 46, 25–31, 1996

Russell, M.T. and Karol, D.L., *Manuel 16PF5: Version Française*, IPAT, Inc., 1995

German

Schneewind, K.A. and Graf, J., *16PF–R Testmanual*, Verlag Hans Huber, Bern, 1998

Greek

16PF Πέμπτη Έκδοση Τεχνικό Εγχειρίδιο (16PF Fifth Edition Technical Manual), Εταιρεία Προηγμένων Εφαρμογών Συστημάτων Διοίκησης (ISON Psychometrica) and IPAT, Inc, 2005

Italian

Sirigatti, S. and Stefanile, C., *16PF–5 Manuale*, Organizzazioni Speciali, 2001

Japanese

Watanabe, N. and Nishida, T., *16PF–5 Japanese Technical Manual*, Institute for Applied Psychometrics, 2003

Norwegian

Russell, M.T. and Karol, D.L., *16PF5 Manual: Norsk Versjon*, IPAT, Inc. and Assessio, 2004

Portuguese (Brazilian)

Russell, M.T. and Karol, D.L., *16PF Quinta Edição Manual*, Centro Editor de Psicologia Aplicada Ltda, Rio de Janeiro, 2002

Portuguese (European)

Russell, M.T. and Karol, D.L. (Portuguese adaptation Figueiredo de Baros, A. and Menezes Rocha, A.), *16PF–5 Manual*, TEA Ediciones, 1998

Spanish (American)

Cattell, H.E.P., Spanish-American *16PF5 Technical Manual Supplement: A Pan-Spanish Psychological Assessment*, IPAT, Inc., 2005

Ellis, B.B. 'A partial test of Hulin's psychometric theory of measurement equivalence in translated tests.' *European Journal of Psychological Assessment*, 11, 184–193, 1995

Ellis, B.B. and Mead, A.D. 'Assessment of the Measurement Equivalence of a Spanish Translation of the 16PF Questionnaire'. *Educational and Psychological Measurement*, 60, 787–807, 2000

Mead, A.D., *Validation of an interim reasoning scale for the American-Spanish 16PF Questionnaire*, IPAT, Inc., 1998

Ponton, M.O. and Leon-Carrion, J. *Neuropsychology and the Hispanic Patient: A Clinical Handbook*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc., 2001

Spanish (European)

Russell, M.T. and Karol, D.L., *16PF–5 Manual*, TEA Ediciones, 1994, 1995

Swedish

Russell, M.T. and Karol, D.L., *16PF Manual: Svensk Version*, IPAT, Inc. and Psykologiförlaget AB, 1993, 2005

UK English

European English *16PF Data Supplement*, IPAT, Inc., 2011

Russell, M.T. and Karol, D.L., *16PF5 Manual: UK Edition*, IPAT, Inc., 1994

Smith, P., *The UK Standardization of the 16PF: A Supplement of Norms and Technical Data*, IPAT, Inc., 1994

US English

Russell, M.T. and Karol, D.L., *16PF–5 Administrator's Manual*, IPAT, Inc., 2009