Industrial 16PF (16PFi)

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ASSESSMENT INSTRUMENT DETAILS

Publisher: The Test Agency Ltd.

Distributor: The Test Agency Ltd and Psytech International.

Authors: Raymond B. Cattell and Associates.

Date first published: 1954.

Date of review edition: 2000.

Type of assessment instrument: General multi-trait personality.

Number of scales	16
Trait measures	√
Construct based	√
Normative rating	√

Type of support product: Computer-based report/narrative generator.

Supply conditions: Intermediate Level B in any instrument.
The manual does not explicitly specify the supply conditions. The Instrument Agency's excellent web site (www.testagency.com) makes it clear that the Industrial 16PF is a Level B instrument. The Industrial 16PF is immediately available to users who are already trained in any version of the 16PF, the 15FQ or the API. Users who are already qualified to intermediate or full Level B with other instruments need to demonstrate their competence by submitting three completed assessment reports; the details of this procedure can be obtained from either the Instrument Agency or Psytech.

Training is generally available. Users with no training or with training to Level A can obtain specific training from the instrument's distributors.

Forms: Two forms are available – the long form consists of 200 questions (12 items for each major scale); the short form consists of 6 items for each major scale. The shorter version consists of items extracted from the longer version.

Format(s): Paper-and-pencil and computer administration scoring, analysis and interpretation.

Initial costs: Reference set:, £68.00. Question booklet (reusable), £8.50. 25 combined answer and profile sheets, £112.50 + VAT.
Recurrent costs per candidate: Question booklet (reusable), £8.50. Combined answer and profile sheet, £4.50 + VAT.

Bureau services: not applicable.

GENERAL INFORMATION

DESCRIPTION OF ASSESSMENT INSTRUMENT

Self-report questionnaires	√
Occupationally oriented	√
Individual	√
Group/team/organisation	√

This is a new, and much improved version of a very early version of the 16PF. It must not be confused with the present day 16PF5 instrument or earlier versions such as the fourth edition Form A or Form B. The Industrial 16PF provides 16 primary scores that can then be converted to five second-order scores that have considerable overlap with the Big Five personality factors, plus response style scales: Faking Good, Faking Bad, Central Tendency and Response Inconsistency. In addition, the instrument can generate a number of criterion-referenced scores such as Integrity and Emotional Intelligence.

The manual is not clear whether the instrument uses normalised or non-normahsed scales.

ADMINISTRATION AND SCORING

FACILITIES
Standard instrumenting conditions.

TIME
Preparation: None stated – estimate 5 minutes or less.

Administration (including introduction, etc.): Approximately 50 minutes for the long version; 20 minutes for the shorter version.

Scoring: 10 minutes.

Analysis: 10-15 minutes.

Feedback: 20-60 minutes

EVALUATION

EVALUATION OF THE TECHNICAL INFORMATION

RATIONALE

Little is given about the instrument's rationale other than it is an updated version of an old version of the 16PF. The reader is referred to the 16PF but not specifically to the Industrial 16PF. There is no evidence to support the job relatedness of the scales.

ACCEPTABILITY

The questions are not obviously related to occupational settings. There seems to be no reason why the Industrial 16PF is any more, or any less, acceptable for occupational use than most other personality instruments.

VALIDITY

Content validity: No information supplied.

Concurrent validity: No information supplied.

Predictive validity: No information supplied.

Construct validity: The data supporting validity is based on correlations for one sample of 183 students who also completed the other 16PF – the 16PF Form A for the fourth edition and the 16PF5. In some senses this is not an independent validity study since the item analysis used in the development of the present version consisted to a large degree of choosing the questions that would correlate with the scales of the main 16PF instrument. The manual for the Industrial 16PF does not make it clear whether the sample used in development is the same as the sample used in the validity study.

The second data table concerning validity reports a factor analysis of scores of the same sample for the Industrial 16PF and the 16PF (Form A); in the light of the method of item analysis used and the correlations reported in the previous paragraph of this review, it will be no surprise that the two instruments showed a very similar factor structure. Of the 23 loadings which would be expected to be similar, 18 (78 per cent) were so.

A third approach to the validity of the Industrial 16PF involved correlating its scales with the Bar-on (unreferenced) measure of Emotional Intelligence. The correlation between the Bar-on measure and the measure of Emotional Intelligence extracted from the Industrial 16PF is 0.80. Unfortunately, further details of this study are not given, save that the sample consisted of students – possibly the same 183 students who took part in the validity study. A table of correlations between the scale scores of the Industrial 16PF and the sub-scales of the Bar-on measure are given (it is a mystery why the obvious step of calculating multiple regressions was not undertaken or reported). The pattern of significant correlations seems very plausible. For example, the empathy component of Emotional Intelligence has significant correlations with Warmth and Discretion. Indeed, the table throws considerable light on the nature of Emotional Intelligence, which seems to consist of two factors, A (Warmth) and N (Discretion): 15 (42 per cent) of the 36 significant correlations were with these two factors.

Fairness can be regarded as an aspect of validity since the scores of an unfair

Quality of technical information overall:	[***]		
Validity	[**]	**Reliability**	[***]
Criterion-related		*Consistency*	
Amount of data		Amount of data	[**]
Median validity		Median consistency	[****]
Construct		*Stability*	
Amount of data	[*****]	Amount of data	[***]
Median validity	[*****]	Median stability	[***]
Norms	[***]		
Appropriateness	[****]		
Generality	[*]		
Sample sizes	[****]		
Clarity and coverage of content overall:	[***]		
		Administration	[***]
Rationale	[**]	Scoring	[***]
Development	[**]	Interpretation	[**]
Standardisation	[****]	Feedback	[**]
Norms	[**]	Bias	[*]
Reliability	[****]	Restrictions on use	
Validity	[**]	References, etc.	[*]
Packaging	[*****]	Readability	[****]

instrument are influenced by extraneous variance stemming from group membership. The manual of the l6PFi gives details of a laudable but curious study of gender fairness. The study calculates the internal consistency of the instrument for each gender and since very comparable alphas are obtained it is concluded that the instrument does not show bias. This is a false conclusion. A instrument that systematically underestimated, say, men's scores by 50 per cent would probably have alphas that are comparable to the alphas obtained for women. This technical comment should not be taken to imply that the 16PFi does have gender bias. An inspection of the questions reveals that considerable care has been taken to remove any terms or questions which might induce unfairness on the grounds of gender – or, for that matter, ethnic group.

General comments on validity: The validity information for the 16PFi is very limited. There is no concurrent or predictive validity information. There is an adequately sized study of the construct validity but more details need to be presented and the study has some unusual design characteristics that mean that further studies are essential before it would be possible to be confident of the 16PFi's construct validity.

RELIABILITY

Comments on reliability: The information on the reliability of the 16PFi is good for such a new instrument. There are studies of both consistency and stability on each of the scales for both the long (Form A) and the short (Form C) versions of the instrument.

Furthermore, consistency had been established with two, at least adequate, samples. The stability has been established on a single sample (n = 87). For the longer version of the 16PFi alpha coefficients of consistency range from 0.75 to 0.85 and the stability correlations range from 0.77 to 0.87. These values are comparable, if not slightly better, than the reliabilities of similar personality instruments. Naturally, the reliabilities of the shorter version are lower but still adequate, with the consistency alpha scores ranging from 0.60 to 0.72, and the stability correlation ranging from 0.68 to 0.78.

NORMS

The manual does not contain specific norm tables but the equivalent of norm tables are embedded in the 16PFi profile sheet. It is almost certain that norm tables are also embedded in the software that is available. The manual does give adequate details of the sample on which these norms are based. It can be deduced that the total sample size is 543. It is explicitly stated that the sample is a quite wide and generally representative sample of the working population but is based primarily on professional and managerial categories. The mean age of the normative sample is 37.5 years. The sample contains slightly more women (258) than men (257). These high sample sizes suggest that separate gender norms might be available and might be embedded in the computer software. Since this is a new instrument, the norms are very up to date.

EVALUATION OF CLARITY AND COVERAGE

Well printed and presented as a coherent single package.

DESIGN

The question books have a conventional, but pleasing, design. There are concise instructions and the questions are clearly laid out. Respondents answer on a separate sheet using a heart pointer pen.

The answer sheet can be opened subsequently to reveal marks on an answering grid which is reminiscent of the answering grid for the 16PF5 but is probably easier to mark and is probably less error prone. The scores for each factor are produced via accumulating the values in marked boxes that lie in various shading zones. The global factors are calculated using a series of algorithms at the bottom of the answer grid. The use of algorithms is tedious and probably error prone. The use of a spreadsheet would be a much better option.

The opened answer sheets also contain a profile, with integral norms, on to which the scores for the primary factors and the Big Five factors can be plotted.

The manual is a slender document that is spirally bound in a way which is not very robust.

OVERALL EVALUATION OF THE INSTRUMENT

The second edition of the 16PFi is a much, much improved version of the first edition. The instrument closely mimics the more widely used 16PF5. The commercial reasons for adopting a name so very similar to the more widely used 16PF5 are obvious. However, despite their close similarity, the instruments are not the same and considerable confusion will arise in practice.

The 16PFi is a very new, well designed and well presented instrument. Inevitably, however, there is not a substantial body of data concerning its psychometric properties.

The initial data on validity, reliability and norms augur well but they are in urgent

need of augmentation, especially in the areas of concurrent and predictive validity.

The practical implications for using the 16PFi arise from the absence of a parallel form for the more widely used 16PF5. Many users of the 16PF fourth edition valued the existence of both Form A and Form B so that they could test clients using parallel instruments on two occasions and thus have more confidence in the results. IPAT thus left a gap in the market, which the 16PFi neatly fills.

The weakness of the Industrial 16PF is its manual. It omits much of the technical data underpinning the instrument's psychometric properties such as norm tables and statistical procedures. These details may not be paramount for practitioners but they are essential information for researchers and the details could, quite easily, be included in an appendix or a supplement or an internet site. There is a dearth of essential references and, physically, the manual is not robust.

CONCLUSIONS

This is a new, much improved version of a very early version of the 16PF. It must not be confused with the present-day 16PF5 instrument or earlier versions such as the fourth edition Form A or Form B. The Industrial 16PF provides 16 primary scores that can then be converted five second-order scores that have considerable overlap with the Big Five personality factors, plus response style scales: Faking Good, Faking Bad, Central Tendency and Response Inconsistency. In addition, the instrument can generate a number of criterion-referenced scores such as Integrity and Emotional Intelligence. The construction of the instrument means that the scores it produces should mimic the scores on the 16PF5.

The manual, while logical and clearly written, should contain more technical details, especially statistical information that would underpin the psychometric data presented.