



16 PF Newsletter



The 16PF - A trailblazer that has stood the test of time

*Barbara Tyler writes for
the new user*

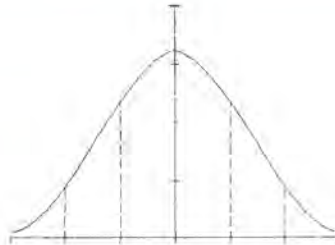
Cattell's Sixteen Personality Factor Questionnaire was first published in 1949. Translated and adapted for use in many countries, it has been widely applied in assessment and research in occupational/organisational, clinical, educational and counselling fields. Now, more than forty years on, as interest has increased in the use of psychometric assessment, especially in company selection, so has the choice and variety of personality questionnaires - including MBTI, CPI, OPQ and several based on the "Big Five" model (such as NED-PI and the Hogan Personality Inventory). However, far from being supplanted by later instruments, the 16PF continues to be held in high regard and was recently the subject of a Special Issue of the *European Review of Applied Psychology* (1996), with invited papers by authors from six countries.

The original development of the 16PF was the outcome of a programme of scientific research undertaken by Cattell and his colleagues, with the purpose of identifying and mapping the basic dimensions of personality. The research drew on two distinct types of data - observation (behaviour ratings) and self report (questionnaire responses).

Source and surface traits

The factor analytic strategies employed by Cattell were designed not simply to classify related clusters of behavioural tendencies (*surface traits*) but to explore underlying behaviour-generating components (*source traits*). Each *source trait* has a "core" meaning which makes it distinct from every other *source trait*; each correlates, to a varying extent with other *source traits*. In interpreting an individual profile, the way in which a trait (represented by a factor score) is actually expressed in that individual, can depend on its interaction with other traits in the profile.

Further interpretative implications can be derived from combined scores. Second-order factors have their



origin in a factor analysis of the factors, reflecting inter-correlation between primary factors. Criterion scores are based on group data from profiles of individuals defined as exhibiting certain types or patterns of behaviour (e.g. *creativity*) and provide a statistical basis for making comparisons or predictions from individual profiles.

Complexity

The power of the 16PF lies in the complexity of its structure because personality itself is complex and the

way factors interact can mirror individual differences in how people actually behave in the real world. This can be invaluable, e.g. for the interpreter preparing a comprehensive descriptive report in selection for a key senior post, or a clinician or counsellor exploring the personal resources of an individual presenting with symptoms.

But some practitioners may find the complexity confusing and be more confident with the information which can be derived from a simpler instrument. Nor do all personality instruments require a comprehensive, in-depth approach. In the revised 16PF Edition 5, the publishers have addressed these concerns, increasing the internal consistency of the instrument and reducing intercorrelation between factors, with the effect of reducing complexity.

Which personality questionnaire would be appropriate in the context of one's own work - either as a general rule or in a specific situation - depends on the purpose of the assessment, the expertise of the test user and how complex and comprehensive a report is required. A skilled interpreter may consider using the two editions of the 16PF for different types of assessment - or, on occasion, feel that another instrument (e.g. MBTI) could provide more relevant information in the circumstances.

Barbara Tyler is with Miller and Tyler Ltd.

FUTURE MEETINGS AT IARC

- ① 24th September - Cross-cultural selection
- ② 26th November - 16PF5 - latest developments
- ③ 21st Jan - Comparative review - 16PF and CPI

CRITERION-RELATED VALIDITY

Wendy Lord addressed this issue earlier in the year.
The following is a summary of the key points.

As part of the original development work on the fifth edition of the 16PF, data was collected on the relationship between 16PF5 scores and a number of external criteria. These were self-esteem, adjustment, social skills, creativity, leadership, and vocational activities. Regression equations were developed for each of these. (A regression equation is rather like a recipe for making particular predictions. The factor scores are the ingredients. The equation tells us which ingredients need to be combined, and in what quantities, in order to provide a given result.) A fictitious example would be: $4A + 2C - L = \text{Effectiveness at Customer Service}$. This would allow us to predict from scores on the 16PF5 the extent to which a person will be effective in providing customer service. The greater the final score, the higher the prediction of effectiveness. As can be seen, not all the 16PF factors are relevant; only A, C, and L. Factor A is twice as important in the prediction as Factor C, which is twice as important as Factor L. The equation is also telling us that while high scores on A and C contribute to effectiveness, high scores on L detract from it, so a low rather than a high score on Factor L is preferable. So: predictive equations tell us which factors are relevant to prediction of the criterion, and in what quantities the factors need to be combined in order to make the prediction. Equations like this have been produced for all the criteria mentioned in the first paragraph. ASE's Henley Narrative has incorporated the equations into its rule-base so it is able to provide scores for these constructs. For reasons of commercial confidentiality, the weightings cannot be disclosed.

Self-Esteem

Self-Esteem is defined as the feelings people have about themselves in regard to their self-worth. In order to establish the relationship between 16PF5 scores and level of self-esteem, the 16PF5 was correlated with the Coopersmith Self Esteem Inventory. This is predicted by C+, E+, H+, O-, M-, Q2-. Not surprisingly, higher scores on Factor C and lower scores on Factor O contribute to high Self-Esteem. The equation also suggests that people with high self-esteem tend to be group-orientated. They can be quite forward and socially bold in their dealings with others and they tend to stay focused on practical matters and the issues at hand. Data has also been collected on the relationship between 16PF5 scales and **Adjustment**. Adjustment alludes to a general sense of balance of which Self-Esteem is a part. We can distinguish between emotional and social adjustment and add something to our understanding of the individual's sense of balance by considering all three aspects: self-esteem, emotional adjustment and social adjustment.

The decision was made to measure the criterion using an objective measure of psychological adjustment. The instrument is one developed by Bell in 1961 called the Adjustment Inventory. This actually measures on five scales: Home Adjustment, Health Adjustment, Social Adjustment, Emotional Adjustment, and Occupational Adjustment. For this study, only three scales were administered - Emotional, Social, and Occupational. The Occupational Adjustment was not predicted well by

16PF5. It seemed to be measuring state-dependent aspects of job satisfaction rather than a stable trait so no equation was developed. In both the other two areas, high adjustment correlated with low anxiety. The Factors for Emotional Adjustment are O-, C+, Q2-, L-, M-. Social Adjustment Factors are H+, E+, L-, O-, Q2-, C+, I+. Social Adjustment is defined by Bell as an outgoing and audacious social orientation with high scorers tending to be bold and forceful in social situations.

Social Skills. The 16PF5 can be used to predict and distinguish between a number of aspects of style related to social skill. The data for these relationships is based on a study of both verbal and non-verbal communication. The measure used as the criterion was Riggio's Social Skills Inventory. (SSI; Riggio 1989). The sample consisted of 254 college students who completed 16PF5 and the SSI. The results suggested that the various aspects of social skill that are measured by the SSI can be predicted from 16PF scores. The constructs of the SSI are Emotional Expressivity (both transmitting and interpreting non-verbal communication), Social Expressivity, Emotional Control, Social Control, and Social Sensitivity. The two Sensitivity scales differ markedly from each other. Emotional Sensitivity is defined as "skill at interpreting non-verbal communication from others". It entails a readiness to form close relationships and an openness to new experiences. Social Sensitivity also entails a desire to form close relationships but this is combined with low openness to new experiences and high anxiety. High Social Sensitivity implies social insecurity and self-consciousness. Emotional Sensitivity consists of A+ and Q1+. Social Sensitivity is A+, O+, C-, Q1-, H-, and Q2+.

Wendy went on to talk about Empathy and Global Self Control giving definitions and the relevant factors for each.

A copy of the full text of Wendy Lord's talk is available from ASE.

Creativity was another area of exploration. This is a very broad concept and personality is only one of its elements. Motivation, environmental context and ability are also relevant. In the fourth edition the predictive equation for creativity was based on the typical personality profile of writers and artists who were actively producing work, and the sample consisted of people in one particular context or field of creativity means that it was a rather biased sample to use for a general measure of the construct. For the fifth edition profiles were compiled for four occupational groups: visual artists, musicians, research scientists and engineers. The criterion was the Artistic and Scientific Activities Survey which assess creative achievement in science and business as well as the arts. The contributing factors are: A-, F+, M+, N-, Q1+, Q2+, and Q3+.

For the fifth edition studies of creativity, a distinction was made between creative output and the *potential* to be creative. There is an instrument designed to measure creative potential called "Something About Myself" (SAM). The factors for creative potential are E+, H, M+, Q1+, and Q2+. The difference between having the potential and actually producing creative output depends on emotional orientation to people; creative achievement being associated with a lower readiness to

form close relationships with others and a higher level of self-reliance.

Leadership

Leadership. The new leadership specification equation was derived from the one used for the fourth edition. A sample of 462 people took Form A and 16PF5. Their leadership scores were calculated from Form A and multiple regression was used to predict what their Leadership score would be on the fifth edition data. Some differences have been found between managers in health care or welfare settings and those in profit-making organisations.

Vocational Activities. The relationship between 16PF5 and Vocational preferences has been explored using John Holland's Occupational Themes as the criteria. The Henley Narrative gives a score for each theme. ASE are producing a separate narrative for Guidance Professionals which provides a detailed description of the fit a person achieves with each of these themes.

Editor: The April 1999 meeting will be devoted to the use of the 16PF in career guidance incorporating an introduction to the 16PF Narrative for Career Guidance Professionals

Wendy Lord is with PA Consulting Group

PASAT 2000

Professor Steve Poppleton and Peter Jones described their revised sales effectiveness test to the April meeting

The Poppleton Allen Sales Aptitude Test (PASAT) has been available since the early 1980s and was designed specifically for the selection of sales staff. In 1995 it was decided to bring it up to date, and ensure that it reflected current human resource management issues. The result is PASAT 2000, a completely new instrument. The work began with a review of previous research into personality theory, its measurement in work settings, and the selection of sales staff. A number of companies were selected which represented the diversity of sales jobs and which encompassed financial services, retail, pharmaceutical, motor retail and direct sales. A total of 72 interviews were conducted with sales staff, their managers, directors and customers to identify the behaviours which were seen as effective, and those behaviours which distinguished between the very best staff and their colleagues. Additionally, each interview focused the behaviours that might be required in the future. Much work was done to reduce the 3565

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behaviours which were extracted down to 717 questionnaire items and then to 153 items included in the final questionnaire.

The Underlying Theory

The focus of the research into the effectiveness of sales personnel has resulted in a hierarchical theory of personality. The authors view personality as being essentially concerned with how an individual copes with or adjusts to life, in a similar way to Freud or Rogers, but whereas they were concerned with adjustment to life in general, the authors were concerned with adjustment to selling as defined by measures of effectiveness. Although their focus was specific, they believe that the theory of personality suggested by their work is likely to be of more general relevance in explaining adjustment to life in general.

Their model of personality comprises a general factor, three major group factors, and eight minor group factors. The "Big Five" personality model currently prevalent in personality theory can be related to the PASAT 2000 model in that five of the eight minor group factors appear to be closely related to the Big Five. However, their theory comprises three additional factors concerned with motivation, adjustment and self assurance, suggesting that the Big Five model is insufficiently comprehensive in explaining individual differences in effectiveness at work. Furthermore, whereas the Big Five factors are conceived as independent, Poppleton's eight minor group factors are intercorrelated, giving rise to the three higher order major factors and providing evidence of a second order general factor.

Adjustment and Control

The authors' model comprises three major group factors, but is not an exhaustive account of the factors explaining work effectiveness. Had they studied a wider range of occupations they are confident that a major group factor of intelligence/cognitive ability would have emerged.

The first major group is **Work Life Adjustment**. The sub scales are conscientiousness (planning, attention to detail, rule-following), adaptability (capacity to embrace change), emotional adjustment (showing resilience in the face of adversity), social adjustment (maintaining effective relationships with others), and motivational adjustment (goal directed behaviour and seeking challenges).

The next major group factor is **Control**. The sub-factors here are Social Control and Emotional Stability. Social Control is concerned with influencing others by a variety of means - including deception. Emotional Stability is concerned with mood control. Both of these can be related to the Big Five: agreeableness and emotionality respectively.

The next major factor is **Self-Assurance**. This is about having a positive view of oneself, having much in common with Cattell's (1964) self-sentiment scale on the Motivational Analysis Test (MAT).

Poppleton and Jones found that their research pointed to major group factors which were all correlated to some degree, strongly pointing to a general personality factor underlying effectiveness in sales roles.

The authors have used the term **Positive Attitude** to describe this factor. It is about having a positive approach to working life.

The **Work Life Adjustment** factor and its five sub-scales are to be seen as a positive approach in four ways: reacting positively to other people and trying to establish a relationship with them, and then trying to maintain that relationship; reacting positively to difficult tasks by seeing them as a challenge and being attracted by that challenge; reacting positively in the face of adversity; approaching tasks in a positive manner by giving them one's best effort (devoting time to planning and paying attention to detail).

The **Control** factor involves a positive approach in two ways, by having a positive approach to influencing others, and by having a positive approach to the control of one's emotions.

Finally, **Self-Assurance** is about viewing oneself in a positive manner and seeing oneself as being capable of handling social and other life-events.

Professor Steve Poppleton and Pete Jones are with The Management Research Centre at Wolverhampton Business School

Your September Meeting

The Use of Personality Assessment Tools for cross-cultural selection: issues and solutions

Speaker: Rob Feltham, PA Consulting Group and past Chairman of the BPS Occupational Psychology Division

It is now a truism to say that large and successful organisations world-wide either operate in, or aspire to move into, global markets. Global businesses compete for all key resources which will give competitive advantage; brands, intellectual property, distribution channels and more. There is a growing awareness that people are a key resource which will be sourced increasingly on an international basis. Companies are increasingly competing in a global marketplace for scarce talent; IT, managerial, and so on. In order to recruit and develop staff globally, successful benchmarking of interviewed candidates is imperative. Global companies need globally consistent standards of assessment. Test users and test developers alike need to understand the issues this raises for them. Rob Feltham will lead the group in raising these issues and exploring solutions to them. As an illustration to the possible issues raised, he will present the background to the development of the latest versions of Kostick's PAPI. In developing this instrument PA Consulting Group had the issues for global recruitment firmly in mind. Rob Feltham will present the approach taken to the development of the new PAPI and discuss the potential of this approach in terms of the future of psychometric testing.

SUBMISSION OF MATERIAL

The Editor welcomes contributions from members either as letters or as articles on the use of the 16PF.

Case histories, unusual assignments, as well as unusual profiles are welcome.

When submitting material, please enclose a 3 1/2" disk together with the printed copy. This saves re-typing and minimises the risk of mistakes.

OBITUARY

Dr Raymond B Cattell, co-founder of the Institute for Personality and Ability Testing (IPAT), died on 2nd February 1998 at his home in Hawaii. He was 92. Ray Cattell was born in England and went to the USA in 1937, teaching at Columbia University, Clark University and Harvard.

In more than 50 books and 500 articles and book chapters, Ray Cattell developed a theory of human behaviour rivalled in comprehensiveness only by the theory of Freud, and rivalled by no other theory in its adherence to evidence derived from empirical research.

His premier contribution to psychological theory was his book *Personality: a Systematic, Theoretical and Factual Study* published in 1950. The book was a comprehensive description of individual differences. This book, and 41 studies published between 1940 and 1950 provided guidance for some 43 additional empirical studies conducted by Cattell and his colleagues between 1950 and 1957. This culminated in a second major theoretical treatise *Personality and Motivation structure and Measurement* published in 1957. This volume was widely used throughout the world as a guide for the design of research on personality. It helped guide Cattell and his co-workers in hundreds of further studies the results of which were published over the next 25 years.

Within the science of personality, these writings are among the most influential publications of this century.

Although the main thrust of his work had been to build an understanding of an individual's personality, he developed theories that in themselves have become important, such as the theory of fluid and crystallised intelligence. He had a great ability to work with students and other colleagues, many of whom have become widely known as outstanding scientists in their own right. He was generous with his time and with his ideas, and took a personal interest in researchers and their projects.

*Keeping In Touch
Did you know...*

...that you can find details of forthcoming meetings of the 16PF User Group on the ASE web site which is <http://www.ase-solutions.co.uk>

The site contains news of relevant developments; example assessment questions; on-line ordering; frequently asked questions about assessments; information on training and consultancy services; the facility to e-mail ASE, and of course the 16PF User Group.

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