The 16PF Personality Questionnaire

A Synopsis
Introduction

The **Sixteen Personality Factor Questionnaire** (or 16PF), is a self-report, multiple-choice personality questionnaire which was developed over several decades of research by Raymond B. Cattell, Maurice Tatsuoka and Herbert Eber. Beginning in the 1940s, Cattell used the new techniques of factor analysis (based on the correlation coefficient) in an attempt to try to discover and measure the fundamental traits of human personality (Cattell, 1946).

Using client responses to the questionnaire, standardized scores (stens) are derived for each of the sixteen personality factors. In addition, scores for five Global Factors (the original Five-Factor Model) are computed. These scores enable clients to formulate personality models useful in industrial/organizational applications, clinical settings, counseling, and research for predicting human behavior.

Factor analysis is a statistical method used to describe variability among observed, correlated variables in terms of a potentially lower number of unobserved, uncorrelated variables called factors. In other words, it is possible, for example, that variations in three or four observed variables mainly reflect the variations in fewer such unobserved variables.

About the author

That the 16PF Questionnaire originated from scientific inquiry was no accident; its author, Raymond B. Cattell, was the product of a strong scientific and analytical background. His grandfather, father, and brother were inventors and engineers.

At that time, the field of scientific psychology was quite limited in scope. Cattell studied the work of physiological and experimental psychologists (e.g., Pavlov, Thorndike, and Wundt) who used the scientific method to examine very particular areas of human functioning such as sensation and learning.

Cattell was influenced by his studies and by the social and political ferment of post-World War I London. This experience led Cattell to believe that the biggest problems in the world were often the result of human temperament and motivation. He speculated that there must be some way to apply the powerful tools of science to understanding human personality.

Thus, Cattell's goal in creating the 16PF Questionnaire was to provide a thorough, research-based map of normal personality. Cattell believed in examining the broadest possible range of personality phenomena, including roles and states, thoughts and actions, verbal and nonverbal behavior, normal and abnormal personality, and ability and interest variables. He believed that for psychology to advance as a science, psychologists needed scientific measurement procedures for three distinct domains of human characteristics: personality, ability, and motivation (with the latter defined as dynamic drives such as a need for power, achievement, or security). By sampling each of these domains and applying factor-analytic methods, Cattell sought to discover the number and nature of the variables that comprised the meaning of each.
**History of the 16PF Questionnaire**

**1930s**

Cattell works with Charles Spearman in the development of factor-analytic methods to study the structure of human abilities.

**1940s**

Cattell begins comprehensive programme of research, applying factor analysis to identify the basic elements of personality structure.

1949 - The 16PF Questionnaire, 1st Edition is released in the United States.

**1950s**

1952 – The 16PF Questionnaire, 1st Edition is released in Great Britian

1953 – First publication of the High School Personality Questionnaire (HSPQ)

1956 - 16PF 2nd Edition is released.

1959 - First publication of the Children’s Personality Questionnaire (CPQ)

**1960s**

1962 - 16PF 3rd Edition is released.

1963 - Early School Personality Questionnaire (ESPQ) is released for use in educational, counseling, and developmental settings, completing the personality assessment series spanning the entire age range: Early School Personality Questionnaire (ESPQ) for ages 6-8, Children's Personality Questionnaire (CPQ) for ages 8 to 12, High School Personality Questionnaire (HSPQ) for ages 12 to 18, and 16PF Questionnaire for ages 16 and above.

1965 – Introduction of computer scoring by mail


**1970s**

1972 – Publication of the first computerized interpretive report
1980s

1980 – Test translation exceed 35 languages worldwide

1990s

1992 – Computer scoring by OnSite Software

1993 - 16PF 5th Edition is released, which includes a combination of the forms, streamlined administration, modernization of the content, and a major normative update.

1997 - American Psychological Association and the American Psychological Foundation nominate Cattell for the Gold Medal for Lifetime Achievement, an accolade awarded only 12 times before.

1998 - Raymond Cattell passes away at the age of 92 in Hawaii.

1999 – Online administration and scoring, and computerized interpretive reports (NetAssess) were introduced.

1999 – Publication of the 16PF Select Questionnaire

2000s

2000 – Re-standardization of the 16PF Fifth edition with over 10,000 people.

2001 – Online administration and scoring, and computerized interpretive reports became available in multiple international languages

2001 – Publication of the 16PF Adolescent Personality Questionnaire (APQ, a version of HSPQ)
Description of 16 PF

The 16PF Questionnaire measures these 16 normal adult personality dimensions discovered by Dr. Cattell in his landmark research -

- Warmth
- Reasoning
- Emotional Stability
- Dominance
- Liveliness
- Rule-Consciousness
- Social Boldness
- Sensitivity
- Vigilance
- Abstractedness
- Privateness
- Apprehensiveness
- Openness to Change
- Self-Reliance
- Perfectionism
- Tension

The 16PF model is hierarchical. When the 16 primary traits were factor-analyzed, they revealed five Global Factors, which describe personality at a broader level. These Global Factors, which help to show the degree of relationships among the 16 primary scales, are:

- Extraversion
- Anxiety
- Tough-Mindedness
- Independence
- Self-Control

* Type of Test: It is a non-verbal test of personality which can be administered individually or as a group test.

* Age range: 16 years upwards, however, it must be noted that this test has several variations, designed for younger age groups. These are :-

3) The Early School Personality Questionnaire [Coan and Cattell, 1966] – 6 to 7 years.
4) The Pre-school Personality Questionnaire [Cattell, 1957] – 4 to 6 years.

* Forms available are A, B, C and D. The primary difference between Forms A and B on one hand, and Forms C and D on the other, is in their length, (Forms C and D being shorter) and therefore, the time required for their administration. A separate Form E is designed for individuals with marked educational and/or reading deficits.

*In Forms A and B, ten to thirteen items are provided for each scale. In Forms C and D, there are eight items for Factor B, seven items for the motivational distortion scale, and six items each for the remaining factors.
Three alternative answers are provided for each of the questions, with the second one being a ‘middle-of-the-road’ compromise option. In Form E, a two-choice design is used.

Questionnaires are often, justifiably, considered susceptible to distortion and deliberate faking. Forms C and D contain a single motivational distortion (MD) scale to find out whether the test taker has given fake or socially desirable responses.

Administration of the test

Simple and clear instructions are printed for the examinee on the cover page of the test booklet. Although the test can be virtually self-administered, it is always important to establish good rapport with the examinees, whether tested individually or in groups.

Answers should always be made on a separate answer sheet, never in the reusable test booklet. Two types of answer sheets are available – machine or hand scorable.

Begin by having examinee provide name, age, sex, and address in the appropriate spaces provided in the answer sheet.

The examinee should then read the instructions on the cover of the test booklet and respond to the examples in the appropriate area on the answer sheet. It may be desirable to read the instructions aloud with the client or to discuss certain points. The examiner must be the judge of the best way to get across the instruction to the examinees. About five minutes should be allowed for reading the instructions and working the examples. Then say, “Turn the page and begin.”

The test is untimed, but it is good to remind examinees that they should not dally, but should give immediate answers and move along. Normal completion time is 35 – 45 minutes.


Scoring

The 16PF can be either computer scored or hand scored with a set of scoring stencils. Regardless of which method is used, each answer sheet should be checked to make sure that there are no odd, unscorable responses, eg, marking more than one alternative, making incomplete erasures, or entirely omitting a response to an item.

Each answer scores 0, 1, or 2 points, except Factor B (conceptual ability) answers, which score 0 (incorrect) or 1 (correct). Detailed instructions for obtaining raw scores are provided on the scoring keys. Scoring begins by fitting and aligning the first stencil key over the answer sheet and counting the marks visible through the holes for Factor A, allowing either 2 or 1, as indicated by the number adjacent to the hole.

Sum these scores and enter the total in the space indicated by the arrow on the stencil for Factor A (raw score). Factor B (intelligence) is peculiar in that each correct mark visible in a hole gives a score of 1 only. Continue scoring each factor on each scoring key until all raw scores have been entered in the column on the extreme right of the answer sheet.

The raw scores are now ready to be converted to standard scores (sten scores) and the results profiled for easier review and interpretation. Selection of the most appropriate norm group is based on age of the examinee or current membership in the specific norm group. Within each group, tables are available for men, women, and men and women together. To convert the raw scores to stens, one finds the raw score for Factor A in the ‘A’ line and reads the corresponding sten score above it. One then proceeds likewise for the other factors.

The sten score for Factor MD (Motivational Distortion) was obtained from the Norms booklet, using the MD scale.

The obtained sten scores are then plotted on the 16PF Test Profile sheet, for each factor:

- Sten scores of 1 – 4 come under the low score category
- Sten scores of 5 and 6 come under the average score category
- Sten scores of 7 – 10 come under the high score category
## Interpretation of Results

Plotting the sten scores for each factor tells us whether the subject is in the low score/average score/high score category for each factor. Based on this categorization, the corresponding descriptions for each factor are found by consulting the Administrator’s Manual.

<table>
<thead>
<tr>
<th>Descriptors of Low Range</th>
<th>Primary Factor</th>
<th>Descriptors of High Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impersonal, distant, cool, reserved, detached, formal, aloof</td>
<td>Warmth (A)</td>
<td>Warm, outgoing, attentive to others, kindly, easy-going, participating, likes people</td>
</tr>
<tr>
<td>Concrete thinking, lower general mental capacity, less intelligent, unable to handle abstract problems</td>
<td>Reasoning (B)</td>
<td>Abstract-thinking, more intelligent, bright, higher general mental capacity, fast learner</td>
</tr>
<tr>
<td>Reactive emotionally, changeable, affected by feelings, emotionally less stable, easily upset</td>
<td>Emotional Stability (C)</td>
<td>Emotionally stable, adaptive, mature, faces reality calmly</td>
</tr>
<tr>
<td>Deferential, cooperative, avoids conflict, submissive, humble, obedient, easily led, docile, accommodating</td>
<td>Dominance (E)</td>
<td>Dominant, forceful, assertive, aggressive, competitive, stubborn, bossy</td>
</tr>
<tr>
<td>Serious, restrained, prudent, taciturn, introspective, silent</td>
<td>Liveliness (F)</td>
<td>Lively, animated, spontaneous, enthusiastic, happy go lucky, cheerful, expressive, impulsive</td>
</tr>
<tr>
<td>Expedient, nonconforming, disregards rules, self indulgent</td>
<td>Rule-Consciousness (G)</td>
<td>Rule-conscious, dutiful, conscientious, conforming, moralistic, staid, rule bound</td>
</tr>
<tr>
<td>Shy, threat-sensitive, timid, hesitant, intimidated</td>
<td>Social Boldness (H)</td>
<td>Socially bold, venturesome, thick skinned, uninhibited</td>
</tr>
<tr>
<td>Utilitarian, objective, unsentimental, tough minded, self-reliant, no-nonsense, rough</td>
<td>Sensitivity (I)</td>
<td>Sensitive, aesthetic, sentimental, tender minded, intuitive, refined</td>
</tr>
<tr>
<td>Trusting, unsuspecting, accepting, unconditional, easy</td>
<td>Vigilance (L)</td>
<td>Vigilant, suspicious, skeptical, distrustful, oppositional</td>
</tr>
<tr>
<td>Grounded, practical, prosaic, solution oriented, steady, conventional</td>
<td>Abstractedness (M)</td>
<td>Abstract, imaginative, absent minded, impractical, absorbed in ideas</td>
</tr>
<tr>
<td>Forthright, genuine, artless, open, guileless, naive, unpretentious, involved</td>
<td>Privateness (N)</td>
<td>Private, discreet, non-disclosing, shrewd, polished, worldly, astute, diplomatic</td>
</tr>
<tr>
<td>Self-Assured, unworried, complacent, secure, free of guilt, confident, self satisfied</td>
<td>Apprehension (O)</td>
<td>Apprehensive, self doubting, worried, guilt prone, insecure, worrying, self blaming</td>
</tr>
<tr>
<td>Traditional, attached to familiar, conservative, respecting traditional ideas</td>
<td>Openness to Change (Q1)</td>
<td>Open to change, experimental, liberal, analytical, critical, free thinking, flexibility</td>
</tr>
<tr>
<td>Group-oriented, affiliative, a joiner and follower dependent</td>
<td>Self-Reliance (Q2)</td>
<td>Self-reliant, solitary, resourceful, individualistic, self-sufficient</td>
</tr>
<tr>
<td>Tolerates disorder, unexacting, flexible, undisciplined, lax, self-conflict, impulsive, careless of social rules, uncontrolled</td>
<td>Perfectionism (Q3)</td>
<td>Perfectionistic, organized, compulsive, self-disciplined, socially precise, exacting will power, control, self-sentimental</td>
</tr>
<tr>
<td>Relaxed, placid, tranquil, torpid, patient, composed low drive</td>
<td>Tension (Q4)</td>
<td>Tense, high energy, impatient, driven, frustrated, over wrought, time driven.</td>
</tr>
</tbody>
</table>
Psychometric Properties of 16 PF

Norms

The available selection of norm tables permits the conversion of any given raw score for any of the 16 personality factors, to sten scores.

The 16 PF test has separate norms for males and females. The American edition has general population norms for men and women of around 2000 subjects, and the British importers of the test have British norms.

The norm tables are provided in three groups –

1. High school students (juniors and seniors)
2. University and college undergraduate students
3. General adult population

Within each group, tables are available for men, women, and men and women together.

Reliability

The manual of the test includes a number of different studies of reliability. However, Cattell, alone among the leading psychometrics, does not believe that internal consistency reliability should be high and as a result he quotes no figures. The split-half reliabilities of the 16 PF factors are as low as .54 and test-retest coefficients are in the .70s and .80s, which are lower than the reliability of many other personality inventories.

Validity

The case for the validity of the 16 PF rests on the result of numerous research investigations, many of them cross-cultural in nature.

Two important classes of evidence that need to be considered are construct validity (the extent to which the test scores correctly measure the underlying traits they were developed to measure) and criterion validity (the extent to which test scores relate to external outcomes such as success in a job, performance in school, or response to treatment).

The verdict of dozens of studies involving many thousands of people sampled across many different demographic parameters and cultures is that the basic factorial structure of the test is correct.
USES OF THE 16PF QUESTIONNAIRE

Although the 16PF Questionnaire measures normal-range traits (not psychopathology), it has been used extensively in counseling and clinical settings because of its ability to give an in-depth, integrated picture of the whole person, including strengths and weaknesses.

In addition, it can facilitate dialogue between the clinician and client by promoting understanding, empathy, and rapport from the very first session. Furthermore, because 16PF scale meanings represent common areas of everyday experience, the professional can share test results openly with clients, thus facilitating discussion, increasing self-awareness, and enabling clients to feel a sense of partnership in the assessment and planning processes.

The test can provide information on issues relevant to the counseling process, such as the individual's capacity for insight, self-esteem, cognitive style, internalization of standards, openness to change, capacity for empathy, level of interpersonal trust, quality of attachments, interpersonal needs, attitude toward authority, power dynamics, frustration tolerance, and coping style.

Forms C and D of the test are frequently used in occupational selection work.
References


Secondary References

http://www.ipat.com/about/raymond_cattell/Pages/default.aspx

https://en.wikipedia.org/wiki/16PF_Questionnaire

http://www.scribd.com/doc/6481961/16-Personality-Factor-Test