

# 16PF Questionnaire: Decoding Your Unique Personality

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16 primary traits, Big Five, which have become popularized by other authors in recent years. From early in his research, Cattell found that the structure of personality was multi-level and hierarchical, with a structure of interdependent primary and secondary level traits (Cattell, 1946, 1957). The sixteen primary factors were a result of factor-analyzing hundreds of measures of everyday behaviors to find the fundamental traits behind them. Then, they discovered the five global (or second-order) factors by factor-analyzing the sixteen primary traits themselves, to find the basic, organizing forces among the sixteen basic traits. Thus, the 16PF test gives scores on both the five second-order global traits which provide an overview of personality at a broader, conceptual level, as well as on the more-numerous and precise primary traits, which give a picture of the richness and complexity of each unique personality. A listing of these traits can be found in the article on the 16 Personality Factor Model. Cattell also found that there was a third-order level of personality organization that contained just two over-arching, top-level factors (Cattell, 1957), but little time has been spent on defining this most abstract level of personality organization.

The test is an integral part of Cattell's comprehensive theory of individual differences. The tests 70 years of research have shown it to be useful in predicting behavior in a range of settings, and to provide an in-depth, integrated picture of the individual's whole personality. For example, it is commonly used in schools and colleges, clinical and counseling settings, in career counseling and employee selection and development, as well as in basic personality research. Research has indicated that the test is useful in predicting a wide variety of behaviors, such as creativity, academic success, cognitive style, empathy and interpersonal skills, leadership potential, conscientiousness, self-esteem, frustration tolerance, coping patterns, marital compatibility, and job performance. The test has also been translated into over 35 languages and dialects, and is widely used internationally. However, Cattell's findings have never been repeated by an independent research team. Reports of widespread use should be balanced with a concern for avoiding over-interpretation of personality questionnaire results, particularly in making major judgments of a tested person such as hiring.

Cattell and his co-workers also developed parallel personality questionnaires to measure traits in other age-ranges, such as the Adolescent Personality Questionnaire for ages 12 to 18 years. A shorter version, the 16PF Select Questionnaire, was developed for personnel settings. Cattell also developed non-verbal measures of ability, such as the three scales of the Culture-Fair Intelligence Test as well as tests of motivation.

## **Outline of Test**

The most recent edition of the Sixteen Personality Factor Questionnaire (16PF), released in 1993, is the fifth edition of the original test. The test was first published in 1949; the second and third editions were published in 1956 and 1962, respectively; and the five alternative forms of the fourth edition were released between 1967 and 1969. The goal of the fifth edition revision was to update,

improve, and simplify the language used in the test items; simplify the answer format; develop new validity scales; improve the psychometric properties of the test, including new reliability and validity data; and to develop a new standardization sample (of 10,000 people) to reflect the current U.S. Census population.

The 16PF Fifth Edition contains 185 multiple-choice items which are written at a fifth-grade reading level. Of these items, 76% were from the four previous 16PF editions, although many of them were re-written to simplify or update the language. The item content typically sounds non-threatening and asks simple questions about daily behavior, interests, and opinions. One particular characteristic of the 16PF Questionnaire is that its items tend to sample a broad range of actual behavior by asking questions about daily, concrete situations, rather than asking the test-taker to simply make a self-assessment of their own personality traits as some tests do (e.g. current popular tests include "I am a warm and friendly person; I am not a worrier; I am an even tempered person."). That type of simple, self-rating type question tends to be substantially related to the person's own self-image, and dependent on the individual's view of themselves, their level of self-awareness, and their defensiveness about their actual traits. Instead, most 16PF questions tend to ask about actual behavioral situations:

When I find myself in a boring situation, I usually "tune out" and daydream about other things.  
True/False.

When a bit of tact and convincing is needed to get people moving, I'm usually the one who does it.  
True/False.

The test provides scores on 16 primary personality scales and 5 global personality scales, all of which are bi-polar (both ends of each scale have a distinct, meaningful definition). The test also includes three validity scales: a bi-polar Impression Management (IM) scale, an Acquiescence (ACQ) scale, and an Infrequency (INF) scale. The reasoning ability (Factor B) items appear at the end of the test booklet with separate instructions, because they are the only items that have right and wrong answers

Administration of the test takes about 35-50 minutes for the paper-and-pencil version and about 30 minutes by computer. The test instructions are simple and straightforward, and the test is un-timed, and thus it is generally self-administrable and can be used in either an individual or a group setting. The 16PF test was designed for adults at least age 16 and older, but there are also parallel tests for various younger age ranges (e.g., the 16PF Adolescent Personality Questionnaire).

The 16PF Questionnaire has been translated into more than 35 languages and dialects. Thus the test can be administered in different languages, scored based on either local, national, or international normative samples, and computerized interpretive reports provided in about 15 different languages. The test has generally been culturally adapted (rather than just translated) in these countries, with local standardization samples plus reliability and validity information collected

locally and presented in individual manuals.

The test can be hand-scored using a set of scoring keys, or computer-scored by mailing-in or faxing-in the answer sheet to the Publisher IPAT". There is also a software system that can be used to administer, score, and provide reports on the test results directly in the professional's office; and an Internet-based system which can also provide administration, scoring, and reports at any Internet-enabled computer in a range of different languages. There are about a dozen computer-generated interpretive reports which can be used to help interpret the test for different purposes, for example, the Personal Career Development Profile, the Karson Clinical Report, The Couples Counseling Report, the Human Resource Development Report, the Teamwork Development Report, and the Leadership Coaching Report. There are also many books that help with test interpretation, for example, *16PF Interpretation in Clinical Practice* (Karson, Karson, & O'Dell, 1997), *The 16PF: Personality in Depth* (Cattell, H.B., 1989), or *Essentials of the 16PF* (Cattell, H.E. & Schuerger, J.M, 2003)

A shorter version of the test, the 16PF Select (Cattell, Cattell, Cattell & Kelly, 1999), was developed for use in time-sensitive, employee selection settings, and includes fewer items per scale than the regular test. The 16PF Express (Gorsuch, 2007) is a very short, 15-minute, version of the test which has about four items per factor and a wider answer format (items have a four-point or five-point answer format), which is used mainly for research. The 16PF traits are also included in the PsychEval Personality Questionnaire (PEPQ), which combines measures of both normal and abnormal personality traits into one test (Cattell, Cattell, Cattell, Russell, & Bedwell, 2003)

### **History and development**

The 16PF Questionnaire was created from a fairly unique perspective among personality tests. Most personality tests are developed to measure just the pre-conceived traits that are of interest to a particular theorist or researcher. The main author of the 16PF, Raymond B. Cattell, had a strong background in the physical sciences, especially chemistry and physics, at a time when the basic elements of the physical world were being discovered, placed in the periodic table, and used as the basis for understanding the fundamental nature of the physical world and for further inquiry. From this background in the physical sciences, Cattell developed the belief that all fields are best understood by first seeking to find the fundamental underlying elements in that domain, and then developing a valid way to measure and research these elements (Cattell, 1965)

When Cattell moved from the physical sciences into the field of psychology in the 1920s, he described his disappointment about finding that it consisted largely of a wide array of abstract, unrelated theories and concepts that had little or no scientific bases. He found that most personality theories were based on philosophy and on personal conjecture, or were developed by

medical professionals, such as Jean Charcot and Sigmund Freud, who relied on their personal intuition to reconstruct what they felt was going on inside people, based on observing individuals with serious psycho-pathological problems. Cattell (1957) described the concerns he felt as a scientist:

"In psychology there is an ocean of spawning intuitions and comfortable assumptions which we share with the layman, and out of which we climb with difficulty to the plateaus of scientific objectivity....Scientific advance hinges on the introduction of measurement to the field under investigation....Psychology has bypassed the necessary descriptive, taxonomic, and metric stages through which all healthy sciences first must pass....If Aristotle and other philosophers could get no further by sheer power of reasoning in two thousand years of observation, it is unlikely that we shall do so now.... For psychology to take its place as an effective science, we must become less concerned with grandiose theory than with establishing, through research, certain basic laws of relationship." (p.3-5)

Thus, Cattell's goal in creating the "16PF Questionnaire" was to discover the number and nature of the fundamental traits of human personality and to develop a way to measure these dimensions. At the University of London, Cattell worked with Charles Spearman who was developing factor analysis to aid in his quest to discover the basic factors of human ability. Cattell thought that could also be applied to the area of personality. He reasoned that human personality must have basic, underlying, universal dimensions just as the physical world had basic building blocks (like oxygen and hydrogen). He felt that if the basic building blocks of personality were discovered and measured, then human behavior (e.g., creativity, leadership, altruism, or aggression) could become increasingly understandable and predictable.

Cattell and his colleagues began a comprehensive program of international research aimed at identifying and mapping out the basic underlying dimensions of personality. Their goal was to systematically measure the widest possible range of personality concepts, in a belief that "all aspects of human personality which are or have been of importance, interest, or utility have already become recorded in the substance of language" (Cattell, R. B., 1943, p. 483). They wanted to include every known personality dimension in their investigation, and thus began with the largest existing compilation of personality traits (Allport and Odbert, 1936). Over time, they used factor analysis to reduce the massive list of traits by analyzing the underlying patterns among them. They studied personality data from different sources (e.g. objective measures of daily behavior, interpersonal ratings, and questionnaire results), and measured these traits in diverse populations, including working adults, university students, and military personnel. (Cattell, 1957, 1973).

Over several decades of factor-analytic study, Cattell and his colleagues gradually refined and validated their list of underlying source traits. The search resulted in the sixteen unitary traits of the 16PF Questionnaire. These traits have remained the same over the last 50 years of research. In

addition, the 16PF Questionnaire traits are part of a multi-variate personality model that provides a broader framework including developmental, environmental, and hereditary patterns of the traits and how they change across the life span (Cattell, 1973, 1979, 1980).

The validity of the factor structure of the 16PF Questionnaire (the 16 primary factors and 5 global factors) has been supported by more than 60 published studies (Cattell & Krug, 1986; Conn & Rieke, 1994; Hofer and Eber, 2002). Research has also supported the comprehensiveness of the 16PF traits: all dimensions on other major personality tests (e.g., the NEO Personality Inventory, the California Psychological Inventory, the Personality Research Form, and the Myers-Briggs Type Indicator) have been found to be contained within the 16PF scales in regression and factor-analytic studies (Conn & Rieke, 1994; Cattell, 1996).

### The Original Big Five Traits

From the beginning of his research, Cattell found personality traits to have a multi-level, hierarchical structure (Cattell, 1946). The first goal of these researchers was to find the most fundamental primary traits of personality. Next they factor-analyzed these numerous primary traits to see if these traits had a structure of their own--i.e. if some of them naturally went together in self-defining, meaningful groupings.

They consistently found that the primary traits themselves came together in particular, meaningful groupings to form broader secondary or global traits, each with its own particular focus and function within personality (Cattell & Schuerger, 2003). For example, the first global trait they found was Extraversion-Introversion. It resulted from the natural affinity of five primary traits that defined different reasons for an individual to move toward versus away from other people (see below). They found that there was a natural tendency for these traits to go together in the real world, and to define an important domain of human behavior--social behavior. This global factor Global Extraversion/Introversion (the tendency to move toward versus away from interaction with others) is composed from the following primary traits:

**Warmth (Factor A):** the tendency to move toward others seeking closeness and connection because of genuine feelings of caring, sympathy, and concern (versus the tendency to be reserved and detached, and thus be independent and unemotional).

**Liveliness (Factor F):** the tendency to be high-energy, fun-loving, and carefree, and to spontaneously move towards others in an animated, stimulating manner. Low-scorers tend to be more serious and self-restrained, and to be cautious, unrushed, and judicious.

**Social Boldness (Factor H):** the tendency to seek social interaction in a confident, fearless manner, enjoying challenges, risks, and being the center of attention. Low-scorers tend to be shy and timid, and to be more modest and risk-avoidant.

**Forthrightness (Factor N):** the tendency to want to be known by others--to be open, forthright,

and genuine in social situations, and thus to be self-revealing and unguarded. Low-scorers tend to be more private and unself-revealing, and to be harder to get to know.

**Affiliative (Factor Q2):** the tendency to seek companionship and enjoy belonging to and functioning in a group (inclusive, cooperative, good follower, willing to compromise). Low-scorers tend to be more individualistic and self-reliant and to value their autonomy.

In a similar manner, these researchers found that four other primary traits consistently merged to define another global factor which they called Receptivity or Openness (versus Tough-Mindedness). This factor was made up of four primary traits that describe different kinds of openness to the world:

Openness to sensitive feelings, emotions, intuition, and aesthetic dimensions (Sensitivity - Factor I)  
Openness to abstract, theoretical ideas, conceptual thinking, and imagination (Abstractedness - Factor M)

Openness to free thinking, inquiry, exploration of new approaches, and innovative solutions (Openness-to-Change - Factor Q1) and

Openness to people and their feelings (Warmth - Factor A).

Another global factor, Self-Controlled (or conscientious) versus Unrestrained, resulted from the natural coming together of four primary factors that define the different ways that human beings manage to control their behavior:

Rule-Consciousness (Factor G) involves adopting and conscientiously following society's accepted standards of behavior

Perfectionism (Factor Q3) describes a tendency to be self-disciplined, organized, thorough, attentive to detail, and goal-oriented

Seriousness (Factor F) involves a tendency to be cautious, reflective, self-restrained, and deliberate in making decisions; and

Groundedness (Factor M) involves a tendency to stay focused on concrete, pragmatic, realistic solutions.

Because the global factors were developed by factor-analyzing the primary traits, the meanings of the global traits were determined by the primary traits which made them up. In addition, then the global factors provide the over-arching, conceptual framework for understanding the meaning and function of each of the primary traits. Thus, the two levels of personality are essentially inter-connected and inter-related.

However it is the primary traits that provide a clear definition of the individual's unique personality. Two people might have exactly the same level of Extraversion, but still be quite different from each other. For example, they may both be at the 80% on Extraversion, and both tend to move toward others to the same degree, but they may be doing it for quite different reasons. One person might

achieve an 80% on Extraversion by being high on Social Boldness (Factor H: confident, bold, talkative, adventurous, fearless attention-seeking) and on Liveliness (Factor F: high-energy, enthusiastic, fun-loving, impulsive), but Reserved (low on Factor A: detached, cool, unfeeling, objective). This individual would be talkative, bold, and impulsive but not very sensitive to others people's needs or feelings. The second Extravert might be high on Warmth (Factor A: kind, soft-hearted, caring and nurturing), and Group-Oriented (low Factor Q2: companionable, cooperative, and participating), but Shy (low on Factor H: timid, modest, and easily embarrassed). This second Extravert would tend to show quite different social behavior and be caring, considerate, and attentive to others but not forward, bold or loud--and thus have quite a different effect on his/her social environment.

Today, the global traits of personality are commonly known as the Big Five. The Big Five traits are most important for getting an abstract, theoretical understanding of the big, over-arching domains of personality, and in understanding how different traits of personality relate to each other and how different research findings relate to each other. The big-five are important for understanding and interpreting an individual's personality profile mainly in getting a broad overview of their personality make-up at the highest level of personality organization. However, it is still the scores on the more specific primary traits that define the rich, unique personality make-up of any individual. These more-numerous primary traits have repeatedly been found to be the most powerful in predicting and understanding the complexity of actual daily behavior (Ashton, 1998; Goldberg, 1999; Mershon & Gorsuch, 1988; Paunonen & Ashton, 2001).