

CHAPTER 3

Personality Structure Classifying Traits

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People differ in hundreds of personality traits, but each trait is correlated with many others. An important task for personality researchers has been to classify personality traits into a few large groups, where each group consists of many correlated traits. By finding these groups of traits, researchers can measure personality more efficiently and thoroughly, and they might even gain some ideas about why personality differences exist. In this chapter, we review the research that has been aimed at finding these basic groups of personality traits—the major dimensions or “factors” of personality.

3.1 WHICH TRAITS TO MEASURE? COMPLETENESS WITHOUT REDUNDANCY

Imagine that you are planning to do some research about personality. Perhaps you are interested in assessing the extent to which personality can predict job performance, or marital satisfaction, or political attitudes. Or perhaps you are interested in finding out how a certain brain chemical, or a certain kind of experience in childhood, can influence one’s personality. Whatever research question you might have, you will need to decide

which personality traits to measure. In some cases, you might have a specific interest in a particular personality trait, and so your decision is already made. But in other cases, you might be interested in personality *in general*, in which case your task is quite difficult: How can you choose a set of personality traits that will represent the whole domain of personality as broadly as possible?

In the absence of any real knowledge about which traits to select, you might simply choose a few traits that, in your opinion, seem to be interesting, important, and diverse. In fact, this is exactly what many researchers have done in the past when investigating research questions or when constructing personality inventories. But this approach has some serious limitations. First, it is subjective, because the set of traits that strike you as interesting, important, and diverse might be quite a bit different from the set of traits that another researcher would select. If each researcher uses a different set of traits, it will be difficult for researchers to communicate with each other about their findings or to compare and combine the results of different studies.

But suppose that this first problem could be overcome—suppose that you could somehow convince other researchers that your set of favorite traits was the best set to measure. How would *you* know that your set of traits was really complete or comprehensive? It seems likely that at least some important traits would be left out of your original set. To solve this second problem, you might try adding more traits to your set, to fill in any gaps that you noticed. But even if you added many more traits, you still might not be certain of having captured every important trait. Moreover, by adding these other traits, you would now have so many traits that measuring them reliably would take a very long time. And, with such a large set of traits, it seems likely that some traits in your set would be very similar to each other, and thus somewhat redundant. Therefore, in an attempt to measure personality comprehensively—an attempt whose success would be uncertain—you would likely make the measurement of personality very inefficient. Much time would now be needed to measure a large set of traits, at least some of which would be redundant with each other.

Thus, when a researcher simply chooses his or her own favorite set of traits, the measurement of personality is incomplete and inefficient, and communication among researchers is difficult. These problems have led many psychologists to believe that a systematic approach is needed for deciding which personality traits to measure. Although these psychologists have often disagreed about the details of this approach, they have generally agreed that it will need to use the statistical technique known as *factor analysis*. This technique, which is described in the following section, allows researchers to reduce many variables into a few unrelated groups of related variables. Personality researchers can use factor analysis to classify a vast array of personality traits into a few groups. By doing this,

researchers can then measure a few traits from each group, so that all of the major aspects of personality are represented, but without redundancy.^{1,2}

3.2 A GENTLE INTRODUCTION TO FACTOR ANALYSIS

When a researcher has measured many variables that show some substantial correlations with each other, it may be useful to reduce the number of variables by categorizing them into groups according to the correlations. However, when the number of variables is large and the pattern of correlations among them is complex, it is not easy to see which variables ought to be combined into a group. This is where the statistical technique of factor analysis is used. Factor analysis allows the researcher to reduce many specific traits into a few more general “factors” or groups of traits, each of which includes several of the specific traits. The idea is that the factors can give a simple but reasonably accurate summary of the correlations between the variables.

Factor analysis can be used with many kinds of variables, not just personality characteristics. Consider the following example of a factor analysis. Suppose that I have persuaded a few hundred of my fit, healthy young personality students to change into their gym clothes and to do a battery of physical tests. Here are the variables on which my student participants are to be measured:

1. vertical jump (height of jump from a crouching position),
2. 40-yard dash (time to sprint 40 yards or 36.5 m),
3. standing triple jump (distance of hop, step, jump from standing start),
4. 12-min run (distance run in 12 min),
5. 2-km row (time to row 2 km, or 1.25 miles, on rowing machine),
6. 20-min cycle (distance cycled in 20 min on standard exercise bike),
7. percent fast-twitch muscle fiber (from tissue sample taken from thigh), and
8. percent body fat (measured by skin-fold calipers).

Now, suppose that I have measured my students on these variables. The correlations among the variables are shown in [Table 3.1](#). (Note that all of these data are artificial. I have not really measured anyone for these variables, so these correlations are just invented for the purpose of this example. But the correlations are probably not too far from what would be found in real life.)

The correlation matrix in [Table 3.1](#) shows how each variable is correlated with each other variable. By looking for one variable across the top and for the other variable down

¹ The results of factor analysis might also teach us some interesting insights about personality characteristics. For example, if we find that certain traits tend to go together on the same factor, then this might help us to understand what those traits have in common and might give us some clues about what causes those traits or why those traits are important. We will address these kinds of questions in the following chapters of this book.

² For the purpose of this chapter, we will use the term “factor analysis” broadly to include principal components analysis as well as common factor analysis. These two techniques have important conceptual differences, but those differences do not affect the findings reported in this chapter.

Table 3.1 Correlations among physical fitness and physiological measurements

Variables	VJ	Dash	TJ	Run	Row	Cycle	Type	Fat
Vertical jump height (VJ)	1.00							
40-Yard (36-m) dash time (dash)	-.52	1.00						
Standing triple jump distance (TJ)	.56	-.60	1.00					
12-min run distance (run)	.00	.01	.00	1.00				
2-km (1.25-mile) rowing time (row)	-.01	.00	.01	-.54	1.00			
20-min cycle distance (cycle)	.00	-.01	.00	.58	-.50	1.00		
Fast-twitch muscle fiber type percentage (type)	.30	-.26	.22	-.29	.25	-.21	1.00	
Body fat percentage (fat)	-.20	.28	-.24	-.21	.25	-.29	.00	1.00

These are hypothetical (imaginary) data.

the side, and then finding the cell where the column of one variable and the row of the other variable meet, you can see the correlation between those two variables. (If the cell is blank, just switch the two variables around; I have only filled in one half of the matrix, because the correlation of A with B is the same as the correlation of B with A. I have put 1.00s in the diagonals because the correlation of each variable with itself is 1.00.)

Notice in [Table 3.1](#) that there are fairly strong correlations among the first three variables. The vertical jump and standing triple jump show a strong positive correlation with each other, and the 40-yard dash time correlates negatively with both variables. Apparently, the ability to jump up and the ability to jump forward are related to each other, and both are related to the ability to sprint quickly. Note that the correlations of the jumps with the 40-yard dash are negative, because people who *took a long time* to sprint 40 yards did not jump very high or very far.

Notice also that there are fairly strong correlations among the second three variables. The 12-min run distance and the 20-min cycle distance are positively correlated with each other, and negatively correlated with 2-km rowing time. Apparently, the ability to run a long distance and to cycle a long distance are related to each other, and both are related to the ability to row a long distance. Note that the correlations of the run and cycle distances with rowing times are negative, because people who *took a long time* to row 2 km did not run or cycle very far.

With regard to these two groups of three variables, notice that the correlations across the two groups tend to be quite weak. The correlations of the vertical jump, the 40-yard sprint time, and the standing triple jump with the 12-min run, the 2-km row, and the 20-min cycle are all about zero. This indicates that a person's performance on the first three tests does not give us any indication as to how that person will perform on the second three tests, and vice versa.

Now let us consider the last two variables. First, the fast-twitch muscle fiber percentage shows some modest correlations with the first three variables (positive with vertical jump, negative with 40-yard sprint time, and positive with standing triple jump), and also with the second three variables (negative with 12-min run distance, positive with 2-km

Table 3.2 Loadings of physical fitness and physiological measurements on two factors

Variables	Factors	
	I	II
Vertical jump height	.71	-.01
40-yard (36-m) dash time	-.76	-.01
Standing triple jump distance	.77	.01
12-min run distance	-.02	.77
2-km (1.25-mile) rowing time	.01	-.70
20-min cycle distance	.01	.74
Fast-twitch muscle fiber type percentage	.35	-.34
Body fat percentage	-.32	-.34

These are hypothetical (imaginary) data.

row time, and negative with 20-min cycle distance). These results indicate that people with a higher percentage of fast-twitch muscle tended to do relatively well in the first three events, but relatively poorly in the last three events.

Finally, the body fat percentage shows some modest correlations with all six variables (negative with vertical jump, positive with 40-yard sprint time, negative with standing triple jump, negative with 12-min run distance, positive with 2-km row time, and negative with 20-min cycle distance). These results indicate the people with a higher percentage of body fat tended to do relatively poorly in all six events.

Now, let us see what happens when we factor analyze these correlations. According to the factor analysis, the correlations among the eight variables measured here indicate that those variables can be sorted into two groups or factors.³ Table 3.2 shows these two factors by indicating how strongly each variable belongs to each group—or, to use more technical terms, how much each variable “loads on” each “factor.”

Look first at the column of numbers on the left for factor I. These numbers are called *factor loadings*, and they can range in size between -1 and $+1$, just like correlation coefficients. Notice that, for this column, the numbers beside vertical jump, 40-yard sprint time, and standing triple jump are quite large: Vertical jump has a “loading” of .71, 40-yard sprint time has a loading of $-.76$, and standing triple jump has a loading of .77. These large loadings indicate that these variables very clearly are part of the first factor. This factor apparently represents a general jumping and sprinting ability, because the three jumping and sprinting variables have high loadings (the highest of any of the variables) on this factor. Notice that, unlike the loadings of the two jumping variables, the loading for 40-yard sprint time is negative; however, this makes sense, because a person who takes a long time to sprint 40 yards is slow, and would be unlikely to jump very high or very far.

³ The mathematical calculations involved in factor analysis are fairly complex and are beyond the scope of this book. You can learn how to do factor analysis in a course on measurement, but when you actually do factor analysis, you will use a computer, which is much faster. Doing factor analysis by hand is nowadays done only on small, simple variable sets, for the purpose of understanding how it is done.

Now look at the column of numbers on the right for factor II. Notice that, for this column, the numbers beside 12-min run, 2-km row time, and 20-min cycle are quite large: 12-min run has a loading of .77, 2-km row time has a loading of $-.70$, and 20-min cycle has a loading of .74. These large loadings indicate that these variables very clearly are part of the second factor. This factor apparently represents a general long-distance racing ability, because the three long-distance variables—running, rowing, and cycling—have high loadings (the highest of any of the variables) on this factor. Notice that, unlike the loadings of running and cycling, the loading for 2-km rowing time is negative; however, this makes sense, because a person who takes a long time to row 2 km is unable to maintain a fast rowing pace and would be unlikely to run or cycle a very long distance.

So, the factor analysis has revealed one factor that includes variables associated with sprinting and jumping ability, and another factor that includes variables associated with endurance or long-distance performance. It is important to understand that these are two separate, independent factors; they are not two opposite poles of the same factor. If the sprinting/jumping variables and the long-distance variables had been opposite to each other—if they had been strongly negatively correlated—then they would have belonged to the *same* factor, but would have shown *opposite* loadings on it. Instead, each of these groups of variables defined its own factor. Notice that the sprinting and jumping variables all had loadings close to zero on the second factor, and that the long-distance variables all had loadings close to zero on the first factor. This indicates that each set of variables is unrelated to the factor that is defined by the other set of variables; that is, each set is neither positively nor negatively related to the other set.

There are two other variables that we have not yet considered. First, look at the loadings for percent fast-twitch muscle fiber. As you can see, this variable showed a modest-sized positive loading on the first factor (.35) and a modest-sized negative loading on the second factor ($-.34$). These results indicate that this variable does not fit neatly within either factor but is instead partly within both factors. The positive loading on the first factor indicates that having a high percentage of fast-twitch muscle fibers is associated with good sprinting and jumping performances. However, the negative loading on the second factor indicates that having a high percentage of fast-twitch muscle fibers is associated with poor long-distance, endurance performances. (This makes sense given the function of fast-twitch muscle fiber: If you have taken a kinesiology class, you might be aware that these muscle fibers contract quickly and allow rapid, explosive movement, but become tired easily and do not enable sustained steady effort.)

Next, look at the loadings for percent body fat. As you can see, this variable showed a modest-sized negative loading on both the first factor ($-.32$) and also the second factor ($-.34$). As was the case for the muscle fiber variable mentioned in the previous paragraph, these results indicate that percent body fat does not fit neatly within either factor but is instead partly within both factors. But notice that the pattern is different, because percent body fat loads negatively on both the first and the second factors. These loadings indicate that high body fat percentage is associated both with poor sprinting and

jumping performance and with poor long-distance, endurance performance. This makes sense, because having a lot of body fat means a lot of extra “dead” weight that will make it harder to sprint and jump explosively and harder to cover a long distance at a sustained speed.

From these results, we can see that factor analysis allows us to summarize the relations among many variables in terms of only a few groups, or factors. Whereas we began with eight variables, we were able to show that these represented two major groups of variables, and we were able to understand the nature of each group by considering the identity of the variables within it. From now on, if I have limited time to measure these kinds of physical abilities of my students, I could probably save some time by using just one sprinting or jumping test, and just one long-distance test, instead of the full battery of eight variables. For example, perhaps I could just measure the standing triple jump (which represents the “sprinting and jumping ability” factor) and the 12-min run (which represents the “long-distance” factor). (Of course, if I were interested in every variable for its own sake, I would continue to use all eight.)

In the example just shown, the number of variables was fairly small, and the pattern of correlations among those variables was relatively simple. By looking at the matrix of correlations among the variables, you could probably see that the variables would fall into two main factors. But in most cases when psychologists use factor analysis, the results are not nearly so obvious: There are often many variables, and the pattern of correlations among them is very complex, with many medium-sized correlations and fewer correlations that are large or very small.

When this is the case, factor analysis helps the researcher by finding a relatively small set of factors that can summarize the correlations within a much larger set of variables.

But in many of the variable sets studied by psychologists, the number of factors is not obvious. Instead, the researcher must decide whether to have only a few factors (each of which is relatively large) or to have many factors (some of which are quite small). Having only a few factors gives a simpler but only approximately accurate summary of the correlations between the variables; having many factors gives a more accurate summary but is far less simple (thus potentially defeating the purpose).

A researcher can use various mathematical rules to decide on the ideal number of factors in a given variable set. But for the broader goal of finding the main factors for a domain of characteristics, probably the best way is to conduct many studies using different samples of people and different variable sets that measure those characteristics. If a particular set of factors is consistently found in such studies, then this suggests that those really are the main factors underlying that domain of characteristics (e.g., [Goldberg & Digman, 1994](#); [Goldberg & Velicer, 2006](#)).

One important note about factor analysis: The groups of variables identified by this technique should be thought of as *dimensions* along which people differ, and not as “types” of people. In the example just given, people have different levels of the factor (or dimension) of sprinting and jumping ability, with a few people being very good at

these abilities and a few others being very poor, but with most people somewhere in between. Similarly, for the other factor (or dimension) of long-distance racing ability, there are also a few people with very high levels, a few others with very low levels, and most others somewhere in between. That is, for *each* of these two dimensions, we can describe an individual in terms of some number (such as a standard score) that represents his or her *level* of that dimension.

3.3 FACTOR ANALYSIS OF PERSONALITY TRAITS: HOW TO FIND A REPRESENTATIVE SET OF TRAITS?

The use of factor analysis might seem like an ideal way to find a set of personality trait categories that would together account for all of the important personality traits. If we measure many people on a wide variety of personality traits, a factor analysis of those traits should reveal the major groups of traits. But we still face the problem of deciding which traits should be factor analyzed. This decision is a crucial step, because if there are some important aspects of personality that are not well represented in our list of traits, then factor analysis will probably fail to reveal any groups defined by those traits. Therefore, we need to select a set of traits in such a way that all of the important aspects of personality are well represented.

This brings us back to the problem that was discussed in the previous sections. Just as a researcher's list of a few favorite traits might miss some important aspects of personality, so too might a researcher's list of all of the important traits. If a researcher simply tries to assemble a list of traits that represents the personality domain as a whole, it is difficult for anyone to judge whether or not this list really does cover all of the important aspects of personality. Another researcher might well generate a very different list of traits, and in fact it seems likely that every researcher would provide a somewhat different collection.

At this point, you might wonder whether these disagreements could be resolved by holding a big meeting of all personality researchers, who would collectively try to decide on the complete list of important traits. (For example, perhaps they could put together the scales measured by the personality questionnaires that have been developed by various researchers.) This would probably produce a more complete list than any lone researcher could produce, but there is no guarantee that the collective choices of these researchers would represent all aspects of personality. Instead, it is still possible that some important personality traits would be underrepresented in their list, if those researchers tended to neglect some aspects of personality in favor of other aspects. For example, researchers might be particularly interested in characteristics that are associated with good (or poor) mental health or with good (or poor) job performance. Consequently, they might tend to include many of those traits at the expense of other traits that are also interesting parts of personality but that are less strongly related to those criterion variables. Therefore, we might not feel much confidence in the results of a factor analysis of a list of traits that was generated according to the interests of personality researchers.

3.3.1 The Idea of the Lexical Approach

Given the difficulties described in the preceding section, you might wonder how it would ever be possible to obtain a list of important personality traits, in which all aspects of personality are represented fairly. The solution that most researchers have adopted is one that takes much of the decision making out of their own hands and instead uses an already existing list of traits. This existing list is simply the set of personality-descriptive adjectives that can be found in the dictionaries of any language.

The idea behind the use of the dictionary as a source of personality characteristics is the *lexical hypothesis*. The lexical hypothesis states that people will want to talk about the personality traits that they view as important. As a result, people will inevitably invent some words to describe people who have high or low levels of these important traits. Over long periods of time, words that describe important traits should become established in every language. Therefore, by considering the full list of personality-descriptive adjectives in a given language—in other words, a language’s personality “lexicon”—we should be able to get a reasonably complete list of important personality traits. If we then do a factor analysis of the adjectives in this list, we should be able to find the major groups of personality traits. (Or, to be more precise, we should be able to find the major groups of the personality traits that people have found important enough to talk about.)

In the next section, we will discuss the results obtained using the lexical approach to finding the basic categories of personality traits. But first, let us consider how researchers typically implement this approach. First, the researchers search systematically throughout the dictionary of the language to be studied, to obtain a list of adjectives that can each describe people in terms of a personality trait. When going through the dictionary, the researchers try to identify every word that is mainly used for the purpose of describing normal personality variation. (Yes, this is a boring job.) After obtaining such a list, the researchers exclude terms that are very rarely used (and hence not widely understood). The resulting list—usually several hundred adjectives in length—is then administered to a large sample of people who are willing to serve as the participants in the research study. Those people are asked to provide self-ratings on these adjectives, indicating the extent to which each adjective describes their own personalities. (Or, sometimes, the participants are asked to provide observer ratings on the adjectives for some other persons whom they know well.) For example, the participant might be asked to rate how accurately a given adjective describes himself or herself, using a scale from, say, 1 (very inaccurate) to 5 (very accurate). When ratings have been obtained from several hundred participants, the researcher can then calculate the correlations among the adjectives, and conduct a factor analysis to find the major categories of personality traits.⁴

⁴ See [Ashton and Lee \(2005a\)](#) for a detailed discussion of many criticisms of the use of the lexical hypothesis in personality research.

3.3.2 The Early Use of the Lexical Approach

As early as the nineteenth century, some psychologists understood the basic idea of the lexical approach: Galton (1884) noted that the various personality-descriptive words listed in the dictionary would overlap and blend into each other, with each word partly sharing its meaning with other words, and partly having some unique meaning of its own. But the first systematic attempts to list the personality lexicon of a given language were only made in the 1930s. Baumgarten (1933) undertook an inventory of German personality-related words, and Allport and Odbert (1936) did the same in the English language, using Webster's dictionary. The result of Allport and Odbert's work was a list of nearly 18,000 English words that described people, of which about 4500 actually described people's personality traits.

The first researcher to factor analyze ratings on the adjectives assembled by Allport and Odbert was Raymond Cattell (e.g., Cattell, 1947). Cattell did not analyze all 4500 terms, however. This full list would be too long for research participants to complete, but even more importantly, it was far too large a variable set to be factor analyzed during the 1940s. (In the days before computers, factor analysis had to be performed by hand, and the calculations are very complex and time-consuming.) To allow a study whose computations would be manageable, Cattell sorted through the adjectives, putting synonyms and antonyms together, and produced a set of 35 variables. He then asked research participants to provide observer ratings of their peers on those variables and factor analyzed the responses.

Cattell (1947) reported that his data revealed 12 factors, which is a rather large number. However, when other researchers later reanalyzed Cattell's data, or when they collected new data from other research participants using the same variables, they were unable to recover those same 12 factors. This is probably because Cattell's method of using factor analysis—a technique that was still being refined at the time of his research—tended to produce more factors than really existed among the variables being analyzed. But although it was not possible to replicate Cattell's finding of 12 personality factors, some researchers did notice a striking similarity in the results of several studies in which Cattell's 35 adjective-based variables had been factor analyzed. These results showed a consistent set of only five personality factors (Tupes & Christal, 1961; later republished as Tupes & Christal, 1992).

3.4 LEXICAL STUDIES IN THE ENGLISH LANGUAGE: THE BIG FIVE PERSONALITY FACTORS

3.4.1 The Big Five

The summary of studies using Cattell's list of personality variables was conducted by two researchers—Ernest Tupes and Raymond Christal—who analyzed many different personality data sets. The consistent result from these data sets was that the 35 variables

of Cattell's list could be classified in terms of a set of five factors. Soon after Tupes and Christal's research, these five groups of traits were also recovered in several new studies. This finding was an important one, because it suggested that the wide variety of personality characteristics—and hence the personalities of individuals—could be summarized reasonably well by a set of only five basic dimensions.

At this point, you are probably wondering about the content of these five personality factors: Just what are they, exactly? Let us consider each of these “Big Five” dimensions in turn. These factors and longer lists of their defining traits are also given in [Table 3.3](#).

Extraversion. This factor includes traits such as talkativeness, liveliness, and outgoingness versus shyness, quietness, and passivity.

Agreeableness. This factor includes traits such as kindness and gentleness versus rudeness and harshness.

Conscientiousness. This factor includes traits such as organization, discipline, and thoroughness versus sloppiness, laziness, and unreliability.

Emotional Stability (vs. Neuroticism). This factor includes traits such as relaxedness versus moodiness, anxiety, and touchiness. You will often see this factor described in terms of its opposite pole and referred to as Neuroticism. In other words, the opposite end of Emotional Stability is Neuroticism, which roughly means the same thing as emotional instability.

Intellect or Imagination. The fifth factor includes traits such as philosophicalness, complexity, and creativity versus shallowness and conventionality. The choice of name for this fifth factor was a difficult one for researchers; it was originally called Culture by Tupes and Christal, and many researchers now refer to this factor as Openness to Experience.

Table 3.3 Examples of adjectives that have high loadings on the Big Five personality factors as obtained in lexical studies of personality structure in the English language

Factor	Adjectives
Extraversion	Talkative, extraverted, sociable, assertive, enthusiastic, verbal versus withdrawn, silent, introverted, shy, reserved, inhibited
Agreeableness	Sympathetic, kind, warm, cooperative, sincere, compassionate versus cold, harsh, rude, rough, antagonistic, callous
Conscientiousness	Organized, systematic, efficient, precise, thorough, practical versus careless, sloppy, absent-minded, haphazard, disorderly, unreliable
Emotional stability (vs. Neuroticism)	Relaxed, unemotional, easy-going, unexcitable versus moody, jealous, possessive, anxious, touchy, high-strung
Intellect/Imagination ^a	Intellectual, complex, philosophical, innovative, unconventional versus simple, conventional, uninquisitive, unintelligent, shallow

^aIntellect/Imagination is also known as Openness to Experience.

Based on Hofstee, W. K. B., De Raad, B., & Goldberg, L. R. (1992). Integration of the Big Five and circumplex approaches to trait structure. *Journal of Personality and Social Psychology*, 63, 146–163; Saucier, G., & Goldberg, L. R. (1996). Evidence for the Big Five in analyses of familiar English personality adjectives. *European Journal of Personality*, 10, 61–77.

Keep in mind that the various traits belonging to the same Big Five factor are correlated with each other, with traits at the same pole being positively correlated and traits at opposite poles being negatively correlated. Traits belonging to different Big Five factors would generally be roughly uncorrelated with each other. This means that in principle you could summarize people's personalities by measuring a few traits within each of the Big Five factors.

Now we return to the history of the Big Five factors. By the 1960s, these five personality dimensions had been found in several different studies, but nearly all of this research had been based on Cattell's 35 variables. (Recall that Cattell had obtained this list of 35 by taking the list of 4500 personality-descriptive words from Allport and Odbert's list, and then forming groups of roughly synonymous words.) Because Cattell's method had been quite subjective, some researchers wondered whether other personality factors, additional to the Big Five, might be found if a larger, more complete list of personality-descriptive adjectives were administered to research participants.

The researcher who undertook such a project was Warren Norman, a psychologist who had earlier used Cattell's variables in his own research. Norman and his assistants used the original list that Allport and Odbert had compiled during the 1930s and added some new words from a more recent edition of the dictionary. [Norman \(1967\)](#) took the resulting list and reduced it to approximately 2800 terms that he considered to be descriptive of personality. Norman himself never conducted a factor analysis of these terms, but a colleague of his, Lewis Goldberg, did. Goldberg used about 1700 of these terms, excluding the ones whose meanings were unfamiliar to the university students who participated in his research.

When Goldberg performed his factor analyses during the 1970s and 1980s, computers were not yet powerful enough to analyze all 1700 adjectives separately. So, before conducting the factor analysis, he combined similar adjectives into 75 clusters that Norman had recommended. [Goldberg \(1990\)](#) factor analyzed the 75 clusters of adjectives, using responses from college students who provided self-ratings and observer ratings on the adjectives. The results were clear: Again, the Big Five factors—and only the Big Five factors—were found. Moreover, even when Goldberg rearranged the adjectives into other clusters, based on his own judgment, he again recovered the Big Five factors, and nothing else. These results were strong evidence in favor of the Big Five factors, because they showed that the emergence of these categories of personality traits did not depend on the variables that Cattell had used. Instead, the Big Five categories emerged even when different researchers assembled adjectives in different ways (see also [Saucier & Goldberg, 1996](#)).

3.4.2 Personality Inventories and the Five-Factor Model

By the 1980s, many researchers had begun to accept the Big Five factors as the major categories of personality traits. Among the psychologists who adopted the Big Five factors

were Paul Costa and Robert McCrae. Costa and McCrae were interested in studying personality in relation to the aging process, but they wanted to develop a complete and efficient system for measuring personality. They conducted some analyses of questionnaire scales that Cattell had developed on the basis of his earlier lexical research, and then combined the results of those analyses with results from recent lexically based findings. Taken together, these results convinced Costa and McCrae that the Big Five framework was the best way to organize personality traits. To measure the factors of this “Five-Factor Model,” [Costa and McCrae \(1985\)](#) constructed a questionnaire called the NEO Personality Inventory, and this instrument was soon being widely used in personality research. Its later versions, the NEO Personality Inventory–Revised and the shorter NEO Five-Factor Inventory ([Costa & McCrae, 1992b](#); see Box 2.2), became so popular that many psychologists were familiar with the Big Five factors chiefly through the high profile of those instruments and were not even aware of the lexically based research that led to the discovery of those factors. These NEO questionnaires were used in a series of studies by Costa and McCrae during the 1980s and 1990s, in which they showed that nearly all of the scales of other personality inventories were related to one or more of the five factors (e.g., [Costa & McCrae, 1988a](#)), and that the NEO scales themselves produced five factors even when administered (in translation) in other countries (e.g., [McCrae & Costa, 1997](#); [McCrae, Zonderman, Costa, Bond, & Paunonen, 1996](#)).

For most purposes, the Five-Factor Model as assessed using the NEO inventories can be considered to be the same as the Big Five structure. As seen in [Table 3.4](#), the characteristics that are measured within the five broad factors of the NEO Personality Inventory–Revised are generally very similar to those that defined the Big Five factors in lexical studies (see [Table 3.3](#)). But one difference involves the name of the Big Five Intellect or Imagination factor, which in the Five-Factor Model is instead labeled Openness to Experience. This alternative name emphasizes the characteristics that Costa and McCrae view as the central elements of this factor, such as a willingness to examine new ideas, to explore one’s imagination, and to try new things. It also downplays the role of intellectual ability, which Costa and McCrae (and many other researchers) consider to be something different from a personality characteristic. Another minor difference involves the Agreeableness factor, within which Costa and McCrae have included some traits—such as straightforwardness and modesty—that were only weakly related to the Big Five Agreeableness factor as found in early English lexical studies of personality structure.

3.5 LEXICAL STUDIES IN MANY LANGUAGES: THE HEXACO PERSONALITY FACTORS

3.5.1 Different Languages, Same Six Factors

Now let us return to our discussion of the results of lexical studies of personality structure. As we have seen, the repeated emergence of the Big Five factors in English-language

Table 3.4 Broad personality factors and narrower personality traits assessed by the NEO Personality Inventory (NEO-PI-R)

Neuroticism Anxiety Angry hostility Depression Self-consciousness Impulsiveness Vulnerability Extraversion Warmth Gregariousness Assertiveness Activity Excitement-seeking Positive emotions Openness to experience Openness to fantasy Openness to aesthetics Openness to feelings Openness to actions Openness to ideas Openness to values	Agreeableness Trust Straightforwardness Altruism Compliance Modesty Tender-mindedness Conscientiousness Competence Order Dutifulness Achievement striving Self-discipline Deliberation
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The five headings refer to the five broad factors (i.e., dimensions, domains) assessed by the NEO-PI-R; the six names under each heading refer to the six narrower traits (i.e., facets) that form each of the broad factors. The 30 facets are intended to capture a variety of traits within each broad factor but are not claimed to represent the only way of dividing the factors. Based on Costa, P.T., Jr., & McCrae, R.R. (1992b). *NEO personality inventory—revised (NEO-PI-R) and NEO five-factor inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.

research led many psychologists to conclude that these five dimensions represented the major groups of human personality characteristics. But personality researchers wanted to find out whether or not these results would also occur when other languages were studied. By conducting lexical studies of personality structure in a variety of languages, psychologists could hope to learn whether or not there existed a universal set of basic groups of personality traits. One possibility was that the Big Five factors would be found in each language, in much the same form as in English. Another possibility was that one or more of the factors would fail to emerge in most other languages; if so, this would suggest that those missing factors were not really among the main groups of personality traits. Still another possibility was that most other languages would contain one or more factors that were missing in the English-language results; if so, this would suggest that the English lexical studies had missed some major aspects of personality variation.

Beginning in the late 1980s, lexical studies of personality structure were conducted in several languages, using methods similar to those of the English-language studies described in the previous section. However, unlike those English investigations, the studies

conducted in other languages generally each used several hundred adjectives that could all be factor analyzed individually, rather than in clusters of synonyms as had been done in English. The reason for this change was that, at about this time, advances in computing power had made it feasible to factor analyze very large numbers of variables. By the early 2000s, lexical studies of personality structure had been conducted in many languages, including Croatian, Dutch, Filipino, French, German, Greek, Hungarian, Italian, Korean, Polish, and Turkish. Interestingly, the results of these studies showed some striking similarities among these languages, but also some surprising differences from the earlier English-language studies (see Ashton, Lee, Perugini et al., 2004; Lee & Ashton, 2008).

The main finding of these lexical studies was that a similar set of six personality factors was found in each of these diverse languages. The English translations of the adjectives that typically had high loadings on a given factor are shown, for all six factors, in Table 3.5.⁵ Here are some comparisons of these six factors with the Big Five.

Extraversion, Conscientiousness, and Intellect or Imagination (Openness). Three of the factors obtained from the various languages were nearly identical in content—that is, in the overall meaning of their defining adjectives—to the Extraversion, Conscientiousness, and Intellect or Imagination (a.k.a. Openness to Experience) factors of the Big Five (compare with Table 3.3). Note, however, that the adjectives of the latter factor tended to vary somewhat across different studies. In several cases, this factor included terms suggesting unconventionality, in addition to intellectual or imaginative tendencies.

Agreeableness. Each of the languages also revealed an Agreeableness factor (see Table 3.5) that was similar to the Big Five Agreeableness factor in some ways. For example, adjectives describing gentleness versus quarrelsomeness loaded on this factor in various languages. But this version of Agreeableness was in some ways different from the Big Five version, as we will discuss later.

Emotionality. Across the various languages, a factor called Emotionality (see Table 3.5) was recovered. Notice that in some ways this factor is the same as the Big Five Emotional Stability factor, but is “flipped” to the opposite side of that Big Five factor—that is, to the Neuroticism side. For example, the Emotionality factor includes characteristics such as anxiety, which are also associated with Big Five Neuroticism (i.e., with low Big Five Emotional Stability, as viewed from the opposite direction). But in other ways, this Emotionality factor obtained from many languages is different from the Big Five Neuroticism factor obtained in English.

⁵ A broadly similar set of six factors has also been found by Saucier (2009) in a review of lexical studies of several languages. Some of the studies of this review included some adjectives that some researchers consider as evaluations (e.g., *awful*, *impressive*) rather than as personality characteristics. One of the challenges in conducting lexical studies of personality structure is in deciding precisely which adjectives represent personality characteristics and which do not.

Table 3.5 Examples of English translations of adjectives that typically have high loadings on the six factors obtained in lexical studies of personality structure in various languages

Factor	Adjectives
Honesty–Humility	Sincere, honest, faithful/loyal, modest/unassuming, fair-minded versus sly, deceitful, greedy, pretentious, hypocritical, boastful, pompous
Emotionality	Emotional, oversensitive, sentimental, fearful, anxious, vulnerable versus brave, tough, independent, self-assured, stable, insensitive
Extraversion	Outgoing, lively, extraverted, sociable, talkative, cheerful, active versus shy, passive, withdrawn, introverted, quiet, reserved
Agreeableness	Patient, tolerant, peaceful, mild, agreeable, lenient, gentle versus ill-tempered, quarrelsome, stubborn, choleric, aggressive, irritable
Conscientiousness	Organized, disciplined, diligent, careful, thorough, precise versus sloppy, negligent, reckless, lazy, irresponsible, absent-minded
Intellect/Imagination/Unconventionality ^a	Intellectual, creative, unconventional, innovative, ironic versus shallow, unimaginative, conventional

^aIntellect/Imagination/Unconventionality is also known as Openness to Experience.

Based on Ashton, M. C., & Lee, K. (2007). Empirical, theoretical, and practical advantages of the HEXACO model of personality structure. *Personality and Social Psychology Bulletin*, 11, 150–166; Ashton, M. C., Lee, K., Perugini, M., Szarota, P., de Vries, R. E., Di Blas, L., et al. (2004). A six-factor structure of personality-descriptive adjectives: Solutions from psycholexical studies in seven languages. *Journal of Personality and Social Psychology*, 86, 356–366.

Fig. 3.1 illustrates the differences between, on the one hand, the original Big Five Agreeableness and Emotional Stability (vs. Neuroticism) factors, and on the other hand, the Agreeableness and Emotionality factors observed in many languages. First, notice that the Big Five Emotional Stability (vs. Neuroticism) factor contains traits such as patience versus irritability. Notice also that the Big Five Agreeableness factor contains traits such as sentimentality versus toughness. But in the lexical studies of many languages, the arrangement of traits within factors is different. Traits of patience versus irritability belong to the Agreeableness factor, and traits of sentimentality versus toughness belong to the Emotionality factor. (The name “Emotionality” is used instead of “Neuroticism” or “low Emotional Stability” for the factor observed in many languages.)

Honesty–Humility. In addition to the differences involving the Agreeableness and Emotionality factors, there was another striking difference between the results obtained in various languages and those obtained in the earlier English studies. This surprising difference was the consistent finding of a factor that has been called Honesty–Humility. This factor includes traits such as sincerity, fairness, and modesty versus slyness, deceit, greed, and pretentiousness. In the earlier English-language studies, these traits were to some extent located within the Agreeableness factor.

As with the Big Five, the various traits belonging to the same HEXACO factor are correlated with each other (with traits at the same pole being positively correlated and traits

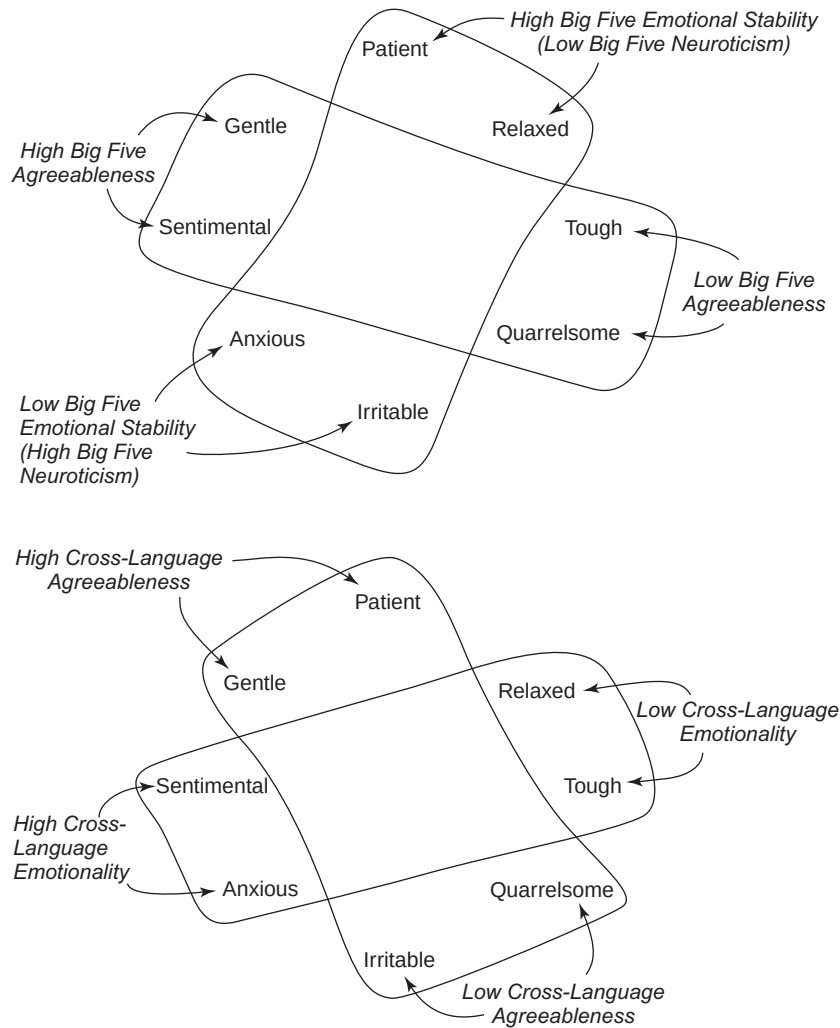


Figure 3.1 Graph showing similarities and differences between the Big Five Agreeableness and Emotional Stability (vs. Neuroticism) factors (top panel) and the cross-language Agreeableness and Emotionality factors (bottom panel). Note that the traits are arranged in the same pattern in the two panels but are grouped differently.

at opposite poles being negatively correlated); traits belonging to different HEXACO factors tend to be uncorrelated with each other. To summarize people's personalities, you could measure them on a few traits from each of the HEXACO factors.

The finding of a set of six personality factors was an interesting result, but it raises the question of why the entire set of six factors did not emerge in the English language. After all, the English language does have many adjectives to describe a wide array of personality traits, and each of the six factors found in other languages appears to be described by many

English adjectives. One possible explanation for the discrepancy is that the studies done in English involved the factor analysis of *clusters* of very similar adjectives, rather than on individual, separate adjectives. As you will recall from the previous section, computers were not fast enough or powerful enough, until quite recently, to factor analyze very large numbers of variables. So, at the time when the English-language studies were conducted, it was necessary to combine similar terms into clusters before performing the factor analysis. For example, [Norman \(1967\)](#) had identified many hundreds of personality terms, but because of limited computing power, he and Goldberg (e.g., [Goldberg, 1990](#)) had to condense those terms into 75 clusters of synonyms before performing any factor analyses. After the adjectives had been averaged together into the 75 clusters, then it was possible to do a factor analysis. But for the purpose of finding all of the major dimensions of personality, analyzing the clusters is not as powerful as analyzing the original adjectives themselves.

With modern high-speed computers, it became possible to factor analyze all of the adjectives separately. One study ([Ashton, Lee, & Goldberg, 2004](#)) examined all 1700 of the adjectives identified by Goldberg and Norman, and another study ([Lee & Ashton, 2008](#)) examined about 450 of the most familiar adjectives from this set. The results of these studies, based on self-rating responses, showed six factors that were similar to those found across the various other languages described previously. Not surprisingly, there were very clear Extraversion, Conscientiousness, and Openness to Experience factors. But also in both studies, there were Agreeableness and “Emotionality” factors similar to those of the various other languages, not to the previous English-language factors. Both studies also found an Honesty–Humility factor similar to those of other languages. So, these results indicated that there was little discrepancy between the results in English and those in other languages: The English language contained all six personality-descriptive factors, but limited computing power had made it difficult to find them until fairly recently.⁶

You might wonder whether there could be a set of seven (or even more) personality factors that can be found across languages. Researchers have checked this possibility, but when they have compared the sets of seven factors obtained from different languages, they find that the results differ widely, without any particular set of seven being widely recovered.

3.5.2 The HEXACO Model of Personality Structure

The set of six personality factors that has been observed in studies of many languages has been called the “HEXACO” structure. This label suggests both the number of factors (the Greek prefix “hexa” means six) and also their names: H is for Honesty–Humility, E is for Emotionality, X is for Extraversion, A is for Agreeableness, C is for

⁶ Some researchers argued that the various languages did not really show a similar set of six factors, or even five factors ([De Raad et al., 2010](#)), but their later analyses ([De Raad et al., 2014](#)) confirmed the six-factor solution (see also [Ashton & Lee, 2010](#)).

Conscientiousness, and O is for Openness to Experience. (Note that the last factor is named as in the Five-Factor Model, rather than as in the original Big Five.) For the purpose of measuring these six factors, a questionnaire called the HEXACO Personality Inventory was developed (HEXACO-PI; Lee & Ashton, 2004, 2006). The traits measured within the six broad factors of the revised version of this instrument (Ashton & Lee, 2009a; Lee & Ashton, 2018) are listed in Table 3.6.

As can be seen by comparing this table with Table 3.4, the Extraversion, Conscientiousness, and Openness to Experience factors of the HEXACO-PI-R are largely similar to the same-named factors of the NEO-PI-R. Some differences can be observed, however, in the remaining factors: HEXACO-PI-R Emotionality includes some traits associated with NEO-PI-R Neuroticism, but also some traits not included in Neuroticism. Also, HEXACO-PI-R Agreeableness includes traits associated with NEO-PI-R Agreeableness but also traits associated with low Neuroticism. Finally, HEXACO-PI-R Honesty–Humility includes some traits associated with NEO-PI-R Agreeableness, but also some traits not included in the NEO-PI-R version of Agreeableness.⁷

Table 3.6 Broad personality factors and narrower personality traits assessed by the HEXACO Personality Inventory–Revised (HEXACO-PI-R)

Honesty–Humility	Agreeableness
Sincerity	Forgivingness
Fairness	Gentleness
Greed-avoidance	Flexibility
Modesty	Patience
Emotionality	Conscientiousness
Fearfulness	Organization
Anxiety	Diligence
Dependence	Perfectionism
Sentimentality	Prudence
Extraversion	Openness to experience
Social self-esteem	Aesthetic appreciation
Social boldness	Inquisitiveness
Sociability	Creativity
Liveliness	Unconventionality

The six headings refer to the six broad factors (i.e., dimensions, domains) assessed by the HEXACO-PI-R; the four names under each heading refer to the four narrower traits (i.e., facets) that form each of the broad factors. The Social self-esteem scale of the HEXACO-PI-R replaced the Expressiveness scale of the original HEXACO-PI. An additional facet scale, Altruism (versus Antagonism) is related to the Honesty–Humility, Emotionality, and Agreeableness factors. The 25 facets are intended to capture a variety of traits within each broad factor but are not claimed to represent the only way of dividing the factors.

⁷ Note that the traits measured by the NEO-PI-R and the HEXACO-PI-R were not meant to be a complete list of all personality traits associated with each factor. Instead, those traits were intended simply as a sampling of several characteristics within each of the factors, and presumably some other traits could have been selected as an alternative way of sampling the content of the factors.

Do these differences matter? Some investigations have examined whether or not the HEXACO framework can account for some personality traits that are not well accounted for by the Big Five or Five-Factor Model. The results of these studies (e.g., [Lee, Ogunfowora, & Ashton, 2005](#)) have suggested that several traits do not fit well within the Five-Factor Model, but do fit well within the HEXACO framework. For example, traits such as physical risk taking and femininity are strongly related to low Emotionality of the HEXACO model, but not to any combination of factors of the Big Five or Five-Factor Model. Similarly, traits such as egotism, manipulativeness, and lack of integrity are strongly related to low Honesty–Humility of the HEXACO model, but less strongly to any combination of factors of the Big Five or Five-Factor Model (see also [Gaughan, Miller, & Lynam, 2012](#)). These results suggest that the domain of personality characteristics is more thoroughly summarized by the HEXACO framework than by the five-dimensional framework. However, since the 1980s, hundreds of researchers have measured the Big Five factors in their studies of personality, and those dimensions continue to be studied widely. Therefore, it is worthwhile to study the content of both the Big Five factors and the HEXACO factors, and thus to understand the similarities and differences between the Five-Factor Model and the HEXACO model.

BOX 3.1 Many Traits Are Blends of Two (or More) Factors

When researchers conduct a factor analysis of a set of variables, they use some mathematical procedures to make the results as simple and as easy to interpret as possible. One aspect of this is that the variables tend to be sorted rather neatly into the various factors: Most variables have strong loadings on only one factor, and most factors have strong loadings for a few variables only. But this ideal cannot be achieved completely, because some variables tend to be mixtures, or blends, of two or more factors.

Let us consider a couple of examples, using the set of six factors described previously. Some traits, such as self-confidence, usually have some loadings on the positive pole of the Extraversion factor and also on the negative pole of the Emotionality factor; sometimes the highest loading is on Extraversion and sometimes on (low) Emotionality. This result suggests that self-confidence is a blend of high Extraversion and low Emotionality. As another example, consider the trait of generosity. This trait usually has some loadings on the positive poles of both Honesty–Humility and Agreeableness, sometimes showing its highest loading on one and sometimes on the other. Thus, generosity appears to be a blend of Honesty–Humility and of Agreeableness.

The preceding examples are described with reference to the six factors observed across many languages, but similar cases can be observed for the loadings of traits within the Big Five framework. In fact, most research on the existence of traits that represent blends of two or more factors has been conducted using the Big Five factors (e.g., [Hofstee et al., 1992](#); [Saucier, 1992](#)).

BOX 3.2 Even Bigger Personality Factors?

The Big Five personality factors are considered to be roughly uncorrelated with each other. But there are often sizeable correlations between the Big Five as measured by self-report (or by observer report) questionnaire scales. For example, in many questionnaires, Agreeableness, Conscientiousness, and Emotional Stability (i.e., low Neuroticism) all correlate positively with each other; Extraversion also tends to correlate positively with those three and also with Openness to Experience. These results have led some researchers to suggest that the Big Five factors could be grouped into two even broader factors: one for Agreeableness, Conscientiousness, and Emotional Stability (i.e., low Neuroticism) and the other for Extraversion and Openness (Digman, 1997; DeYoung, 2006). And some researchers have suggested that all of the Big Five could be grouped into one very broad factor (Musek, 2007).

However, other researchers have argued that these very large factors are not needed, because it is possible to make scales measuring the Big Five (or similar factors) that are nearly uncorrelated with each other (e.g., Ashton, Lee, Goldberg, & de Vries, 2009). With regard to the HEXACO factors, questionnaire scales measuring Agreeableness and Honesty-Humility generally correlate positively with each other, even though some of the narrow traits within Agreeableness are only weakly correlated with some of the narrow traits within Honesty-Humility. This correlation between HEXACO Agreeableness and Honesty-Humility implies that one could consider them as two factors belonging to an even broader factor involving cooperative tendencies (e.g., Ashton, Lee, and de Vries, 2014; see Chapter 7 of this book for discussion of these two factors in relation to “reciprocal altruism”). Nevertheless, the association between Agreeableness and Honesty-Humility is relatively modest, and the two factors differ widely in their links with many important variables; for these reasons, it is better to treat them as two separate dimensions.

3.6 WHAT IT ALL MEANS: A FEW DIMENSIONS, BUT MANY PERSONALITIES

Now that we have described the nature of the major categories of personality traits, it is worth reflecting on why this knowledge matters. Essentially, the results of the lexical studies of personality structure tell us that human personality traits can be classified into six major groups. Therefore, if you could find an individual’s overall level of the traits within each group, then these six levels would give you a pretty complete summary of his or her personality. Of course, some of the finer detail would certainly be lost, because any person would show differences among the traits that fall within the same category. (For example, two people might both be fairly high in Extraversion, but one of them might be very outgoing and moderately lively, whereas the other might be moderately outgoing and very lively.) But nevertheless, the six broad personality factors would together account for the important features of personality. Note that, because

the six factors are roughly uncorrelated with each other, you would need all six to summarize people's personalities.

It might seem surprising that human personality traits can be summarized by only six groups and, by extension, that people's personalities can be summarized by only these six dimensions. At first, it might even seem preposterous that something as complicated as human personality can be reduced, even in rough outline, to only six broad characteristics. But remember that the finding of six personality factors does not mean there are only six "types" of people. To appreciate this point more fully, let us consider how many different "kinds" of people can be described with these six variables.

First, suppose that, for each factor, we can discriminate among five different levels of the factor. For example, let us say that for Agreeableness, we can divide people up into five levels, say, "very disagreeable," "disagreeable," "average," "agreeable," and "very agreeable." If we do this for each of the six factors, then we could describe $5 \times 5 \times 5 \times 5 \times 5 \times 5 = 15,625$ different kinds of people. And, if we could discriminate with a bit more precision, with seven levels for each factor, then we would be able to describe nearly 118,000 different kinds of people. So, it is possible to explain a great deal of the variety and complexity of human personality with only six basic factors. Again, this is not to say that personality is *completely* accounted for by these factors—instead, the various specific traits within a given factor will provide us with important details about a person's personality—but we can go a long way toward describing someone's personality using only the six broad dimensions.

Another important implication of the results described in this chapter is that there is apparently some similarity across cultures in the nature of the major elements of personality. Recall the languages that were investigated in the lexical studies of personality structure described earlier in this chapter: Even though some of these languages were closely related to each other (e.g., French with Italian, or Dutch with German), other languages were almost completely unrelated to each other (e.g., Hungarian, Korean, and English). Nevertheless, these languages all contained similar sets of personality-descriptive adjectives, and this indicates that people in very different cultures are describing the same major elements of personality. Across these diverse cultures, people talk about personality traits that can be classified within the same six groups, and this result suggests that these six factors represent the basic components of human personality variation. It will be interesting to examine the results of future research involving other languages: For example, it is possible that not all six factors will be obtained from the personality lexicons of languages spoken by very small populations and having an exclusively oral (not written) tradition; some recent research suggests that only two very broad personality dimensions would be found (Saucier et al., 2014).

BOX 3.3 Are There Personality “Types?”

If we consider the many possible combinations of levels of the personality factors, we can describe many distinctly different personalities. But some researchers have suggested that certain combinations of personality trait levels are especially common and therefore make it useful to speak of a few main “types” of people. For example, some researchers (e.g., [Asendorpf, 2003](#)) have suggested that there are three such personality types:

1. The resilient type: An all-around well-adjusted person, characterized by a somewhat low level of Big Five Neuroticism (i.e., high Emotional Stability) and somewhat high levels of the other four Big Five factors.
2. The internalizing type: A rather anxious and timid person, characterized by a low level of Big Five Extraversion and a high level of Big Five Neuroticism. (This person is said to “internalize” his or her emotions.)
3. The externalizing type: A rather aggressive and impulsive person, characterized by low levels of Big Five Agreeableness and Conscientiousness. (This person is said to “externalize” his or her emotions.)

The main problem with the idea of three personality types, however, is that these precise combinations are not particularly common. Most people have combinations of personality trait levels that do not fit any of the aforementioned three types ([Ashton & Lee, 2009b](#); [Costa, Herbst, McCrae, Samuels, & Ozer, 2002](#)). For example, many people are high in both Extraversion and Neuroticism or low in Agreeableness and high in Conscientiousness. If we try to classify people into a few types, we find that most people just do not fit the descriptions very well. (The same problem still applies even if we look for many more types of people.) And if we try to use personality types to predict people’s behavior, the prediction is much less accurate than it is if personality trait levels are used instead ([Asendorpf, 2003](#); [Ashton & Lee, 2009b](#); [Costa et al., 2002](#)). Nevertheless, results from large datasets do suggest that certain trait combinations are statistically more common than others ([Espinoza, Daljeet, & Meyer, 2020](#)).

In some sense, the fact that people have so many different combinations of personality trait levels is an unfortunate one for personality researchers: If everyone fit neatly into just a few basic personality types, it would make research much easier. But then again, it would also make personality a lot less interesting.

3.7 SUMMARY AND CONCLUSIONS

We began this chapter with the problem of how to summarize the vast array of personality characteristics in terms of a few major dimensions. By finding the basic personality factors, researchers would be able to measure people’s personalities thoroughly (i.e., without missing important characteristics) but without redundancy (i.e., without measuring many very similar characteristics). This in turn would make personality research much easier, and it would also give us a better understanding of the meaning of personality itself.

BOX 3.4 Broad Factors Versus Narrow Traits

The finding that so many personality traits can be classified into six broad categories is important, because it allows us to summarize people's personalities very efficiently, and it gives us some direction for future research about personality. But we should not get too carried away with this result, because it is important to remember that the broad factors are only summaries of many narrower traits that each has some unique aspect that is not shared with the others.

The importance of this fact can be seen when we use personality measurements to predict criterion variables. In many cases, the criteria that we want to predict are likely to be strongly related to some specific narrow trait, but not so strongly related to other narrow traits (even those that belong to the *same* factor as does the one that we expect to be a good predictor). As a result, that specific narrow trait would probably be a more valid predictor of the criterion than would the broad factor that combines this narrow trait with many other narrow traits that are less relevant to the criterion. That is, if one of the narrow traits within a factor is strongly relevant to a criterion variable, its validity will be weakened by combining it with other narrow traits that are less relevant to that criterion. Consider the following example. Suppose that you are interested in predicting students' levels of academic performance. Presumably, measurements of students' levels of the Conscientiousness factor would be associated with the grade point averages obtained for the students. However, some traits within Conscientiousness, such as achievement motivation, seem likely to contribute especially strongly to academic performance and might be strongly associated with grade point average. In contrast, other traits within Conscientiousness, such as impulse control or neatness, seem less relevant to academic performance and might be only weakly associated with grade point average. Therefore, if we want to predict students' grade point averages, we might be better off measuring students' levels of the narrow trait that seems most relevant to the criterion (in this case, achievement motivation) rather than the broad factor (in this case, Conscientiousness) that contains this trait (Paunonen & Ashton, 2001a, 2001b).

So, despite the importance of the broad factors of personality, we should not forget that the narrow traits that make up those factors are themselves important. By measuring these specific aspects of personality, we can sometimes predict criterion variables more effectively than we could if we were to rely only on a half-dozen major factors.

The process of identifying the major personality dimensions involves a technique called factor analysis, which uses the correlations among variables to categorize them into groups called factors. One of the challenges in trying to find the basic factors of personality is to obtain a set of personality characteristics that represents all of the important aspects of personality. Researchers have accomplished this through the "lexical" approach, which involves identifying the familiar personality-descriptive adjectives of a language. By finding such a variable set, researchers can study the characteristics that the speakers of that language have found to be useful and important for describing personality.

Factor analyses of the personality characteristics identified in lexical studies were first conducted in the English language. Researchers obtained self- or observer ratings of personality, using familiar personality-descriptive adjectives taken from the dictionary. When these adjective ratings were factor analyzed, the results indicated a set of five factors now called the “Big Five.” These factors are known as Extraversion, Agreeableness, Conscientiousness, Emotional Stability (vs. Neuroticism), and Intellect/Imagination. The Big Five factors became popular in personality research partly through the “NEO” questionnaires, which measure the characteristics of this “Five-Factor Model.” In the Five-Factor Model, the Intellect/Imagination factor is called Openness to Experience.

Beginning in the late 20th century, lexical studies of personality structure were conducted in many different languages, using much larger sets of adjectives than were used in the earlier research. These studies have recovered a set of six—not just five—factors. Three of the factors are similar to the Big Five Extraversion, Conscientiousness, and Intellect/Imagination (or Openness to Experience) dimensions. Two other factors of the six (Agreeableness and Emotionality) are broadly similar to the Big Five Agreeableness and Emotional Stability factors but differ in some noteworthy ways. Another of the six factors is called Honesty–Humility and is only modestly related to the Big Five factors. This six-dimensional framework is called the “HEXACO” model, and there exists a personality inventory to assess those six factors. Some personality characteristics show considerably stronger relations with the HEXACO dimensions than with those of the Big Five or Five-Factor Model.

Since the 1980s, many researchers have measured personality using the Big Five framework, and today many researchers continue to use that framework or have adopted the newer HEXACO model. By assessing these sets of basic personality dimensions, researchers have been able to examine more efficiently some very interesting questions about personality. How do people’s personalities change throughout the life span? How do brain structures and brain chemicals relate to personality? What are the genetic and environmental influences on personality? How did personality variation evolve and maintain itself across human history? How does personality influence important life outcomes? These fascinating questions will be the subjects of the next several chapters of this book.