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A Defence of the Lexical Approach to the Study of Personality Structure

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Abstract

In recent years there have been many investigations of personality structure, and much of this research has been based on the lexical strategy for finding the major personality dimensions. However, this approach has frequently been criticized on several grounds, including concerns regarding the use of adjectives as personality variables, the use of lay observers of personality, the limited explanatory power of lexically derived personality dimensions, and the lack of any similar strategies used in other sciences. In this paper, these criticisms are addressed in detail and judged to be invalid. It is argued that the study of personality structure via the lexical approach is an important area of research.

One of the most dynamic areas of personality research during the past two decades has been that of personality structure. Although there is still debate regarding the optimal structure of personality characteristics (see, e.g., Ashton et al., 2004), most researchers who investigate this topic have agreed that the solution must be derived, at least in large part, from lexical studies of personality structure. According to the lexical strategy, the major dimensions of personality should be represented in the common personality-descriptive adjectives of natural languages (Goldberg, 1982, 1993a).

Although the lexical approach has been fairly widely accepted among researchers who are interested in finding the major dimensions of personality, there have been several criticisms of the lexical strategy, and of the structural models of personality that have resulted from that approach (e.g. Bandura, 1999; Block, 1995; Caprara & Cervone, 2000; Shadel & Cervone, 1993; Westen, 1996). In this article, we will first explain the reasoning on which lexical studies of personality structure are based, and we will then address the many criticisms that have been made against the lexical approach.

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THE LEXICAL HYPOTHESIS

It has long been recognized that personality characteristics tend to become encoded in language as words (see e.g. Galton, 1884). More recently, this phenomenon has been formalized in the lexical hypothesis, which holds that 'Those individual differences that are of most significance in the daily transactions of persons with each other will eventually become encoded into their language. The more important is such a difference, the more people will notice it and wish to talk of it, with the result that eventually they will invent a word for it' (Goldberg, 1981, pp. 141–142; see also De Raad, Perugini, Hrebickova, & Szarota, 1998; Goldberg, 1982, 1993a; Saucier & Goldberg, 1996, 2001). It follows from the lexical hypothesis that researchers who wish to assess personality variables might ensure adequate representation of the personality domain by referring to the personality lexicon. Indeed, this idea has been the basis of much personality research during the past several decades that has relied on the lexical hypothesis as a guide to variable selection.

A few important points should be clarified regarding the lexical hypothesis. First, the lexical hypothesis makes no assumption that the personality attributes encoded in the lexicon represent personality 'traits', at least in the sense of having long-term stability and a biological basis. Certainly, many researchers whose work is associated directly or indirectly with the lexical tradition would agree that those personality attributes generally do in fact represent traits; however, the lexical perspective itself does not require this assumption (see Saucier & Goldberg, 1996). For example, consider the Five-Factor Model of personality structure (e.g., McCrae & Costa, 2003), which was derived ultimately from research based on the lexical approach (see a historical overview by McCrae, 1989). This model is associated with a theory that postulates a biological basis—largely genetic, but also reflecting other biological influences, such as the womb environment—for the major personality dimensions (see McCrae & Costa, 2003). This theory may prove to be a useful framework in generating hypotheses to be tested in the future, but its proposed causal explanations were developed independently of the lexical hypothesis.

Second, the lexical hypothesis does not itself specify the parts of speech in which personality attributes will be encoded; therefore, investigations of the personality lexicon might include nouns, verbs, adjectives, and adverbs. However, as discussed by Saucier and Goldberg (1996), not all parts of speech are equally useful as objects of study in the context of personality description. Saucier and Goldberg noted that adjectives denote properties that can be applied in varying degrees or amounts, and therefore are well suited to describing individual differences in personality attributes. More generally, they explained (Saucier & Goldberg, 1996, pp. 30–31) that

> adjectives are the prototypical and central repositories of the sedimentation of important individual differences into the natural language. Person-description, as a description of the qualities and characteristics of an object, is inherently an adjective function, although it can be carried out using other word classes. Therefore, the lexical perspective on personality is properly focused on the adjective function. In most languages, this perspective will be adjective-centered, but lexical researchers need to be alert to potential variations: The adjective function of describing kinds of individual differences in certain languages may operate largely through nouns or even verbs.

Saucier and Goldberg (1996) also noted that, in the latter case, the adjective function is usually taken over by abstract attribute nouns (e.g. the noun *generosity* for the adjective *generous*) rather than by verbs.

As described above, the lexical hypothesis provides a basis for identifying a variety of personality attributes that are of sufficient importance in everyday transactions to have been encoded in language. However, the chief value of the lexical hypothesis, in our opinion, is not merely that it allows the researcher to develop a long catalogue of the personality attributes used by speakers of a given language. Instead, the primary significance of the lexical hypothesis is that it provides a strategy for research aimed at identifying the major dimensions of personality variation—that is, a relatively small set of roughly independent axes along which people differ in their typical behavioral tendencies.[1]

THE LEXICAL APPROACH AS APPLIED TO THE PROBLEM OF PERSONALITY STRUCTURE

People differ in hundreds of diverse characteristics, as expressed in the vocabularies both of lay persons and of psychologists. This diversity raises difficulties for researchers who aim to understand the crucial features of personality, such as its causes, development, evolution, and consequences. First, it would be thoroughly impracticable to address each of these very large topics for every identifiable personality characteristic. Moreover, many of these variables are likely to overlap considerably with each other, and this substantial redundancy also raises doubts about the value of investigating every characteristic separately.

The above problems lead inevitably to the idea of identifying a few major dimensions of personality variation, each of which should summarize a large amount of variance shared by many of the subjectively important characteristics within the domain of personality. Given the unmanageable number of personality characteristics, and the likelihood of substantial common variance shared by those variables, the usefulness of such an endeavour should be clear. By finding a few basic axes of personality variation, our subsequent attempts to understand personality variation will be both efficient and thorough—efficient in the sense that we will be able to explain a large amount of personality variation with a small number of constructs, and thorough in the sense that we will not omit any comparably large aspect of personality variation. Equipped with the knowledge of which are the major dimensions of personality, researchers who wish to study the causes and consequences of personality variation will know which are the most important variables to study. Moreover, the nature of the variables defining each of the obtained dimensions may itself suggest some hypotheses regarding the above topics.

The endeavour of seeking the major dimensions of personality variation is ideally suited to the mathematical technique of factor analysis: if we can measure individuals in terms of some exhaustive or representative set of personality characteristics, and then factor-analyse those variables, we should then obtain factors that represent the major dimensions of personality variation.[2] However, it is not easy to obtain an exhaustive or representative set of personality variables, and of course an inappropriate selection of variables may distort the obtained factor structure. If different researchers were each to attempt independently to produce a list of characteristics that represents the domain of personality

[1]Again, the lexical approach itself does not assume that these dimensions exhibit long-term stability or heritability, even though these properties are theoretically plausible and, by now, empirically well established (see, e.g., McCrae & Costa, 2003).

[2]Of course, other data reduction techniques, such as multidimensional scaling, might conceivably also be applied.

variation, they would probably produce quite different lists, whose factor structures would also be quite different. Certainly, the various personality inventories constructed by researchers have quite different factor structures (e.g. Cloninger, Svrakic, & Przybeck, 1993; Comrey, 1970; Tellegen, in press), so it is obvious that some (or all) inventories do not provide a representative sampling of personality characteristics.[3] For example, the scales of a given inventory might not directly assess a given dimension; alternatively, two distinct dimensions might be confounded within some scales, or the various subcomponents of one or more dimensions could be sufficiently over-represented as to produce spurious additional factors.

Fortunately, the lexical hypothesis provides a potential solution to the problem of obtaining a set of variables that is representative of the personality domain. Following the logic of the lexical hypothesis—which, as described in the previous section, holds that important personality differences should be encoded in language—one might obtain a representative sample of personality characteristics by finding the set of familiar personality-descriptive terms of a language. As described in the previous section, these terms might potentially include any or all parts of speech, but adjectives are likely to be the most useful objects of study. Therefore, if we can obtain ratings of a large number of people in terms of the familiar personality-descriptive adjectives of a given language, then a factor analysis of those adjective ratings should reveal the major dimensions underlying the domain of subjectively important personality characteristics.[4] Of course, the relative sizes and rotational orientations of the obtained factors may vary from sample to sample, but the *space* defined by the obtained factors should represent the space of the major personality dimensions fairly faithfully. Moreover, it should be possible to test the generality of these factors by conducting independent analyses in different languages: that is, the space defined by the set of the k major dimensions should be widely replicable across languages. In contrast, the space defined by any number of dimensions greater than k should not be widely replicable, provided that the analyses are limited to personality-descriptive terms.[5]

[3]It has been shown that the scales of many personality inventories can be accommodated within the factor space defined by markers of the Five-Factor Model (see summary by McCrae & John, 1992), but this is not the same as showing that these inventories' scales can themselves produce that factor structure in the absence of specially imported marker scales.

[4]The task of obtaining a list of the familiar personality-descriptive adjectives has usually involved a systematic search through the dictionary. However, an alternative method would be to use free descriptions of personality as generated by persons who are asked to describe the personality of some target individual (see e.g. Kohnstamm, Halverson, Mervielde, & Havill, 1998; Mervielde & De Fruyt, 2002).

[5]Of course, the problem of selecting a set of personality-descriptive adjectives is not a trivial one, and a great deal could be written about the many decisions that must be made when conducting a lexical study of personality structure. Here we will only state briefly what we believe to be the appropriate guidelines, in a broad sense, for selecting personality-descriptive adjectives. First, we suggest that adjectives should be included in a lexical study of personality structure only if they primarily describe an enduring pattern of typical behavioural tendency, where 'behavioural' is taken broadly to include actions (both physical and verbal), thoughts, and emotions. In contrast, adjectives whose chief role is to describe highly temporary states, to describe physical characteristics, to describe effects upon others, or to evaluate, ought to be excluded. Second, we suggest that adjectives should be included only if their meaning is understood by the large majority of individuals who provide ratings. Third, we suggest that adjectives should be included only if they describe 'normal' personality variation, such that ratings would likely show substantial variation. In contrast, adjectives having especially extreme response distributions (e.g. *murderous*, *illiterate*) are unlikely to describe normal personality variation, and are likely to covary mainly because of response styles rather than substantive similarity (see Ashton & Lee, 2001, 2002). Finally, another interesting issue is whether or not adjectives describing gender-role orientation, religious belief, and cognitive ability should be included in lexical studies of personality structure. One's decisions regarding these latter terms depend on how broadly or narrowly one defines the domain of personality.

To summarize the above description of the lexical approach to the study of personality structure, we now recapitulate several of the main points. First, to make systematic progress in understanding personality variation, it is important to identify a few large, independent dimensions of personality.[6] If researchers can achieve an accurate consensus regarding the identity of these dimensions, then efforts to understand the origins and implications of personality will be undertaken much more effectively than would be the case if research were aimed haphazardly at many overlapping traits that might, despite their number, omit some large regions of the personality domain. Second, the lexical approach to personality structure provides a rationale for selecting a set of personality variables that will represent each of the major dimensions of personality (or at least, each dimension that has been of sufficient subjective importance to have been described by a variety of related words). In contrast, when personality variables are generated on the basis of personality theories or on the basis of perceived practical utility, there is less reason to be confident that every dimension will be represented adequately and independently of the others. Third, the lexical approach to personality structure also provides a basis for identifying a set of dimensions that have, if not cross-cultural universality, at least a substantial level of cross-cultural generality. Because the personality dimensions recovered in lexical studies are indigenous to their languages rather than merely imported from another language, we can have some confidence that widely replicated dimensions obtained in lexical studies do indeed represent the most important vectors of human personality variation.

During the past decade, many researchers have expressed criticisms of the lexical approach to personality structure. In the sections below, we will address these criticisms, many of which we believe to be based on a misunderstanding of the rationale behind the lexical approach.

CRITICISMS AND RESPONSES

Criticisms regarding the use of adjectives as personality variables

Criticism 1. A common criticism of the lexical approach to personality structure is that the adjectives used by lay people to describe personality variation are too simple to explain many of the complex but important traits that are of interest to psychologists. Here are two examples:

> . . . how does one convey with a single adjective or a number of separate, unlinked adjectives what may be called the 'pecking order personality', the kind of person who is affable with peers, deferent to superiors, and nasty to individuals of lower rank? . . . the

[6]A complementary method of investigating personality structure would be to use a person-centred, rather than variable-centred, approach, and to identify a set of basic personality *types* (see e.g. Asendorpf, 2002; De Fruyt, Mervielde, & Van Leeuwen, 2002). This approach is meant not to compete with but to complement variable-centred research, by identifying the most frequently occurring *intra*individual organizations of behaviour; to use the card-playing analogy of Mervielde and Asendorpf (2000), variable-centred investigations identify the features of the playing cards (e.g. value, colour, suit), whereas person-centred investigations identify the hands received by the players. Given the importance of identifying an appropriate domain of personality variables when looking for configurations of personality variables within persons, the ability of the lexical approach to provide a strong basis for delineating that domain is a reason to apply that approach also to person-centred investigations of personality (see Mervielde & Asendorpf, 2000, for a more complete explanation). If variable-centred investigations can identify the most prominent features of personality variation, then these findings can provide a useful starting point for variable selection in person-centred investigations.

> hysteric personality—its rigidity conjoined with impulsivity and 'la belle indifference'? . . . the kind of individual who is so disorganized or capturable by a compelling social surround as to be negligent in fulfilling responsibilities but who is subsequently racked by guilt? . . . the person who, confronted with an anxiety-inducing decision situation, is quickly decisive, not with the confidence that rapid decision is so often interpreted to imply but only to get past the stress of the situation? . . . the kind of person who, in desperate circumstances, becomes unnaturally calm and poised? (Block, 1995, p. 196).

> An individual who characteristically bristles when asked to perform a task by an authority figure but not by a peer is nevertheless characterized by an enduring personality dynamic, even if it is not easily described by a single adjective. . . . An individual who bristles at *any* request, in contrast, is a very different person (Westen, 1996, p. 401; italics in original).

Response. In fact, combinations of single adjectives could probably go a long way toward the description of each person described above. For Block's individuals, the first would be called authoritarian, obedient, and harsh, the second would be called hysterical, rigid, flighty, and impulsive, the third would be called disorganized, irresponsible, negligent, and guilt prone, the fourth would be called anxious, unsteady, and impulsive, and the fifth would be called calm, brave, poised, and fearless. For Westen's individuals, the first would be called disobedient and rebellious, and the second would be called uncooperative and hostile. That is, each of the individuals described above would probably score very much above the mean on ratings based on some relevant set of single adjectives.

However, even if each characteristic described above retained some substantial unique component that could not be summarized in terms of single personality-descriptive adjectives, this would not undermine the assumptions on which the lexical approach is based. The idea behind the lexical strategy is not that every meaningful personality construct, no matter how complex, has been encoded as a personality-descriptive adjective. Instead, the rationale for that strategy, in the context of the study of personality structure, is that *each of the major dimensions of personality should be manifested in a large number of correlated characteristics that will have been encoded as personality-descriptive adjectives*. In other words, the personality lexicon will not necessarily include an adjective that corresponds isomorphically to a given personality construct, but every important axis of personality variation will be represented by a large collection of correlated adjectives.

Criticism 2. The lexical approach is also criticized on the grounds that many of the adjectives that people use to describe personality are ambiguous in their meaning, and that these ambiguities undermine their usefulness as descriptors of specific constructs. For example, Block (1995, p. 197) noted that 'Laypersons sometimes use the term ''aggressive'' to mean assertiveness or opportunity-seizing and sometimes to mean the expression of hostility'. In a somewhat different sense, Bandura (1999, p. 167) pointed out that an adjective might be ambiguous in terms of the causal forces that produce the relevant behaviour: 'Aggressive acts by delinquents toward parish priests and toward rival gang members may correlate poorly, however much averaging one does'. Westen (1996, p. 403) made a similar point, noting that 'For some people, conscientiousness reflects concern about meeting obligations to others; for others, it reflects obsessional attention to detail'.

Response. The ambiguity of some personality-descriptive adjectives is obvious, but this does not undermine the lexical approach to personality structure. Even if a given adjective

is used in two or more different senses, such that self- or peer ratings on that adjective may reflect variance in two or more personality dimensions, this would merely result in a somewhat complex loading pattern for that adjective. The number of obtained dimensions would not change as a result of the presence of some adjectives that possess dual meanings, and those dimensions would still be readily interpretable by means of examining the common content of the adjectives defining a given factor. Certainly, the dual meanings of some adjectives have not prevented the consistent identification of coherent factors in previous lexical studies of personality structure in various languages.

The same argument applies equally to adjectives that unambiguously describe a certain specified pattern of behaviour, but for which quite different causes might underlie that behaviour in different contexts. If we accept the suggestion, above, that aggressive behaviours (or conscientious behaviours) are a function of two or more basic underlying causes that are differentially relevant across situations or across persons, then we would simply expect that terms such as 'aggressive' or 'conscientious' would each define two or more personality factors, with no adverse consequences for the interpretation of the factor space.

To complete the above argument, it should also be noted that even a behaviour that is highly unitary, in the sense of being caused by the same personality sources across the range of situations in which it is expressed, may nevertheless be a function of two or more underlying dimensions. For example, if one believes that 'restrained' behaviour in any and all situations always reflects the same motivational source, that source might nevertheless be the combined action of causes associated with two different factors, such as Conscientiousness and low Extraversion (Hofstee, De Raad, & Goldberg, 1992).

Criticism 3. The lexical approach to personality structure is sometimes criticized on the basis that the variables from which factors are derived are simply those used by lay people, rather than those selected by experts. According to this criticism, personality experts would be better able to select a set of important variables to be factor analysed (see e.g. Block, 1995; Westen, 1996).

Response. Recall that the lexical approach to the study of personality structure usually involves the selection of personality-descriptive adjectives from the dictionary. This method thereby obtains a set of personality variables that are used by lay people in their everyday discussions of personality, and that have been consistently used over a long historical period.

In contrast to the lexical approach, one could ask one or more experts to nominate a set of personality variables to be factor-analysed in search of the major dimensions, but this strategy suffers from the drawback that experts may select variables in such a way that certain aspects of the personality domain are over- or under-represented, leading to a distorted factor-analytic result. For example, clinical psychologists might select a set of variables that would over-represent characteristics relevant to personality pathology and under-represent other characteristics; moreover, different clinicians might emphasize different kinds of pathology. Similarly, industrial/organizational psychologists might select a set of variables that would over-represent characteristics having relevance to the workplace, and under-represent those that do not. Personality psychologists might also produce an unrepresentative variable set, with each researcher selecting a set of variables that will produce his or her favourite factor structure.

In principle, one could use a strategy parallel to that of the lexical approach in order to select variables from the constructs used by personality experts. This approach would be simply to identify the personality constructs that are most widely assessed in

psychological research, and then to factor-analyse this large set of expert characteristics, with the expectation that all of the major dimensions should be represented in this variable set. However, such an approach would rest on the assumption that the biases inherent in the selection of personality variables by different experts will 'cancel out' to produce a roughly representative sample of personality characteristics. It is not at all clear, though, that the under-representation of certain characteristics by some researchers will be balanced by an over-representation of those same characteristics by other researchers.

Criticisms regarding the use of lay persons as observers of personality

Criticism 4. One criticism of lexical studies of personality structure is directed at the selection of observers who make ratings of personality. These observers are virtually always lay people, usually undergraduate university students, who make self- or peer ratings on familiar personality-descriptive adjectives. According to this criticism, these lay people do not understand people or the causes of personality variation as well as experts do. Moreover, the ratings made by these people do not necessarily reflect personality, but rather the 'conscious self-concept' (see e.g. Westen, 1996), which may be subject to biases. Implicit in the criticism of the use of lay persons as observers of personality in lexical studies of personality structure is the suggestion that expert observers of personality would provide more accurate ratings that would generate an alternative structure.

Response. First, to the extent that the self- and peer ratings made by lay observers of personality are inaccurate, this may be less important than one would suppose. If, for example, a particular individual's 'conscious self-concept' is biased in such a way that he or she underestimates the extent to which he or she is *anxious*, this is unlikely to distort the results of a lexical study of personality structure (or of affect structure), as long as his or her responses are correspondingly biased with regard to variables that actually do covary with anxiety. That is, if this person also underestimates the extent to which he or she is *nervous* and *tense*, and overestimates the extent to which he or she is *easy-going*, *relaxed*, and *calm*, then this is unlikely to obscure the identity of any common dimension that underlies these variables. Even if there is a general bias toward attributing somewhat higher levels of socially desirable characteristics to oneself than to others, this need not distort or bias the structure derived from covariation among the trait ratings.

Aside from the above point, however, an extensive body of research has shown that self- and peer ratings on personality variables generally are fairly accurate. Ratings by close acquaintances seem to be more accurate than self-ratings (Kolar, Funder, & Colvin, 1996), although even self-ratings are valid predictors of criteria that are theoretically relevant to the traits being rated (see e.g. Paunonen & Ashton, 2001). Moreover, the fact that peer ratings are frequently used in lexical studies of personality structure is important, because the finding of similar factor structures from self- and peer ratings (see e.g. Goldberg, 1990) undermines the criticism that structures derived from self-ratings merely represent interindividual variation in a 'conscious self-concept'. (Interestingly, structures derived from self-ratings actually tend to be somewhat more differentiated than are structures derived from peer ratings, as indexed by the lower interfactor correlations in self-rating solutions; see e.g. Goldberg, 1992.)

Related to the above point, it is difficult to understand how biases in people's self-concepts (or peer concepts) could generate the rather differentiated solutions that have

been consistently reported, across diverse languages, in lexical studies of personality structure. If, for example, the only widely replicable dimension were the first unrotated factor—which is typically defined by desirable versus undesirable characteristics—then it would seem plausible that this result could reflect global biases in personality ratings made by lay observers. However, studies in languages as diverse as French, Hungarian, and Korean have reported a similar six-dimensional space (Ashton & Lee, 2001; Ashton et al., 2004), even though the existence of global biases in self- and peer ratings (e.g. desirability) would tend to obscure a relatively complex solution such as this. Certainly, there is no clear reason why biases in the self- or peer concepts of lay persons would produce such a differentiated structure.

With regard to the claim that lay people do not understand the causes of personality variation as well as experts do, this claim might well be true, but even if experts do have a deeper understanding of the causes of personality variation, this would not necessarily make them more accurate observers or raters of personality. We believe that lay people would be almost as accurate as experts in rating targets on various trait adjectives (e.g. *active*, *affectionate*, *aggressive*, *ambitious*, *anxious*, *arrogant*, *artistic*, etc.), particularly if verbal ability is controlled.

However, if we do assume that the accuracy of self- and peer ratings in lexical studies of personality structure is sharply limited by biases and errors in those ratings, and that expert raters would produce more accurate ratings than would lay person raters, it is still not at all clear how this would change the obtained structure. Presumably, if expert raters made fewer random errors, then we would expect to see the same dimensions as we obtain from self- and peer ratings made by lay persons, but in clearer and better-defined form. Similarly, if expert raters showed less variance in global biases, then presumably there would be a smaller first unrotated factor, but again this would tend to improve the independence and replicability of the factors that typically emerge from lay persons' self- and peer ratings. In any case, there has been no specific suggestion made as to how self- and peer ratings made by lay persons could be distorting some alternative and more complex solution that would consistently occur if the ratings were made by expert observers of personality (see also Goldberg & Saucier, 1995, for discussion of the issue of expert versus lay observers).

Criticism 5. A criticism related to both the variables and the observers used in the lexical approach is that the resulting factor structures provide merely a model of *lay perceptions of personality*—derived from lay people's observations on variables used by lay people—rather than a model of personality itself (Westen, 1996). An implication of this criticism is that the dimensions obtained in lexical studies of personality structure do not represent dimensions of personality as such, but dimensions of *person perception* that may not accurately reflect personality variation.

Response. The main problem with the above criticism is its lack of parsimony in explaining the emergence of similar structures in languages that have almost no lexical similarity (e.g. French, Hungarian, Korean), having evolved separately since their divergence from a common ancestor over ten thousand years ago. In order to explain these structures in terms of person perception rather than personality, one would have to argue that the human brain has somehow evolved a tendency to describe personality variation in terms of a complex space, consisting of several dimensions, even though this space does not correspond to the space of actual personality variation. We think it is much more parsimonious to suggest, instead, that there exist a few major personality dimensions, the specific manifestations of which are noticed by people and have been encoded by them as

adjectives (see also McCrae & John, 1992). When these adjectives are factor-analysed, they tend to reveal these major dimensions.[7]

Criticisms regarding the explanatory power of personality dimensions, especially those derived lexically

Criticism 6. One criticism of the lexical approach to personality structure—or perhaps of any approach to finding the major dimensions of personality—is that the obtained factors can provide only tautological or circular explanations of personality. According to this criticism, the recovery of a factor such as the one called Conscientiousness is useless for explanatory purposes. For example, Bandura (1999, p. 166) noted that 'conscientious behavior is neither a personality structure nor a cause of itself'. Similarly, Caprara and Cervone (2000, pp. 114–115) argued that the emergence of such a factor can tell us only that

> People tend to behave consistently in a conscientious manner . . . because of their conscientiousness. Although this form of explanation has been popular in personality psychology, it unfortunately violates a basic principle of scientific explanation. The principle is that the scientific constructs used to explain a given property or attribute should not themselves contain that attribute. . . . if there is to be an explanation of agreeable or conscientious tendencies . . . it should be in terms of variables that are *not* agreeable*ness* or conscientious*ness* (italics in original).

Similarly, some commentators have argued that the identification of personality factors merely reveals obvious links among similar variables. For example, Bandura (1999, p. 166) wrote that it 'comes as no surprise' that factor analyses have produced dimensions such as Conscientiousness, defined by 'a collection of behaviors resembling one another, such as being organized, disciplined, dutiful, and effortful'.

Response. To begin, it should be noted that the above criticisms are intended to point out that personality factors do not explain the causal mechanisms that underlie personality variation. Now, given that lexical researchers do not necessarily claim to make explanations of this kind (see e.g. Goldberg, 1993b), it might seem that the above criticisms do not apply to the lexical approach. But it is important to recognize that the factors obtained from lexical studies of personality structure do in fact have an important explanatory value, and one that is unrecognized by critics of factor-analytic studies of personality variables. When we learn that a set of characteristics load together on a factor, we do learn something about the psychological meaning of those characteristics—something that was not necessarily predicted prior to the discovery of the factor.

To understand this claim, consider the Conscientiousness example as described by Bandura. Lexical studies of personality structure do indeed tend to reveal a Conscientiousness factor defined strongly by terms such as *organized*, *disciplined*, *thorough*, and *responsible*, and it is perhaps unsurprising that these characteristics should

[7]Another potential criticism might follow from a misinterpretation of the nature of the factor structures obtained from lexical research on personality. If one views these structures as representing 'the layperson's intuitive taxonomy of individual difference terms' (Cervone, 1991, p. 376), then one might criticize the lexical approach on the basis that the obtained dimensions do not represent personality structure per se, but merely people's intuitive ideas about personality structure. However, lexical studies of personality structure do *not* ask respondents to provide their own intuitive suggestions about the number and substantive content of the major dimensions of personality.

load together on the same factor. But this factor is also defined strongly and nearly univocally by characteristics whose mutual similarity is not so obvious: for example, both *decisive* and *cautious* load strongly on the positive pole of Conscientiousness, as do both *studious* and *practical* (e.g. in the English lexical study of Ashton, Lee, & Goldberg, 2004). What this result tells us is that all of these characteristics have some important common element, and that this common element (which we happen to call Conscientiousness) is particularly pervasive in characteristics such as organization, discipline, thoroughness, and responsibility. That is, we can *explain* decisiveness, caution, studiousness, and practicality as manifestations of a more general construct of 'Conscientiousness'.[8,9]

The argument that the factors obtained from lexical studies of personality structure can explain the meaning of their defining characteristics should not be misconstrued as a claim that these factors are causes of those characteristics. That is, although we explain the characteristics as *examples* of the broader constructs represented by the factors, we do not explain the characteristics as *consequences* of those broader constructs. The lexical approach to personality structure makes no assumptions regarding the nature of the causes of personality variation, which must be studied as a separate question in its own right.[10] In this sense, our position is similar to that of Funder (1991, p. 35):

> A reviewer of this paper expressed concern that it fails to distinguish sufficiently 'between trait words as descriptions of regularities in other's behavior, and trait words as explanations of those regularities.' My position is that the identification of a regularity in a person's behavior *is* an explanation of the specific instances that comprise the regularity, albeit an incomplete explanation (i.e., the next question will always be, What is the source of the regularity?).

We should also add that the task of explaining the psychological meaning of a personality factor is often far from tautological, but rather a subtle problem for which there are plausible competing answers. When we attempt to interpret a factor, we want to identify a common construct that is manifested in each of its defining characteristics. Sometimes, however, the identity of this common element is not at all obvious. For example, consider the factor of Extraversion, which is defined by such variables as affiliation, ascendance, and venturesomeness. Lucas, Diener, Grob, Suh, and Shao (2000) tested competing hypotheses regarding the identity of the 'central feature' of

[8]Note that, in spite of the intuitive plausibility of this explanation, it was in no way obvious before the factor-analytic results were known: one could easily have expected, instead, that *decisive* and *cautious* would load at opposite poles of a factor defined by fearlessness versus fearfulness, or that *studious* and *practical* would load at opposite poles of a factor defined by complexity versus simplicity. If these alternative results had emerged, then our explanation of the psychological meanings of these characteristics would have been very different: we would have explained decisiveness versus caution as manifestations of a broader construct involving fearfulness and anxiety, and we would have explained studiousness versus practicality as manifestations of a broader construct involving complexity and philosophicalness. So, by finding that these characteristics actually load on the Conscientiousness factor, we have learned something about the psychological meaning of these characteristics.
[9]Note that such results might conceivably be obtained not only from self- or peer ratings on personality-descriptive adjectives, but also from raters' estimates of the covariation or of the semantic similarity among those attributes. Presumably, however, the most accurate indication of the true covariation among the attributes would be obtained by observing a large number of persons in the full range of relevant behaviour-in-situation contexts.
[10]We should note, of course, that there is unlikely to be a single cause of any major dimension of personality variation. Already, much behavioural genetic research has partitioned the sources of personality variation into genetic and environmental components, and these components each involve several contributing causes: many genes combine both additively and non-additively, and many sources of shared and non-shared environmental variation are probably also involved.

Extraversion—that is, they investigated the nature of the common element of these characteristics. They suggested that a construct known as reward sensitivity was the core feature of the Extraversion factor, rather than the more widely recognized construct of social interaction. Ashton, Lee, and Paunonen (2002) tested the additional hypothesis that the central feature of Extraversion was actually a construct that they described as the tendency to engage and enjoy social attention. Issues such as this one illustrate the fact that the interpretation of a personality factor is hardly a mere matter of 'circular explanation'.[11]

Criticism 7. One criticism of lexical studies of personality structure is based on the idea that the factor structures obtained from these studies do not apply at the level of the individual (Caprara & Cervone, 2000). That is, intraindividual variation in personality might not be summarized by the same factors that account for interindividual variation.

Response. In fact, the lexical approach to personality structure makes no assumption about the equivalence of interindividual and intraindividual structures. It is entirely possible that factor analyses of personality ratings of a single individual, taken at many different points of time, would produce a structure that corresponds closely to the structure obtained in factor analyses of personality ratings of many individuals. On the other hand, these structures might be rather different, particularly if some personality constructs show substantial amounts of real within-person fluctuation or developmental change, whereas other personality constructs tend to be so nearly constant that common factor variance would be highly unreliable. (See Borkenau and Ostendorf, 1998, for a discussion of possible discrepancies between interindividual and intraindividual structures.)[12]

In a similar sense, we should note that the structure of intergroup personality variation—for example, factor analyses of variables' mean levels across participant samples of different nationalities—would not necessarily be the same as that obtained in interindividual analyses. It is possible that group differences would be quite strong on some constructs, and almost non-existent on others, with the result that factors defined by the latter would be difficult to discern. The lexical approach to personality structure is intended to find the major dimensions of personality variation *across individuals*, not within individuals or across groups.

Finally, we should add that although the factor structures obtained in lexical studies of personality structure do not necessarily characterize patterns of intraindividual variation, this does not mean that the dimensions themselves 'do not apply' to individuals. On the contrary, individuals' levels of these dimensions can be measured by self-report, peer report, or other methods, and this information can potentially be used to make predictions about individuals regarding a variety of criterion variables.

Criticism 8. Lexical studies of personality structure have also been criticized on the grounds that they omit some important factors of human psychological variation, including some aspects of psychopathology and some aspects of sexual behaviour.

Response. Recall that the aim of lexical studies of personality structure is to find the major dimensions of personality variation. As such, the obtained factors would be expected to account for much of the *common* variance in personality disorders and in sexuality-related traits, and this is in fact the case (see e.g. Costa & Widiger, 2002; Schmitt

[11]More broadly, we should also note that, however plausible the lexically derived personality factors may seem in retrospect, the fact remains that no one had successfully *predicted* the number and nature of these dimensions, or their rather widespread recovery across diverse languages.

[12]Note also that the search for *dimensions* underlying intraindividual variation in personality across time is not the same endeavour as the search for *types* revealing the intraindividual organization of personality, as discussed in Footnote 6. For a detailed treatment of the puzzle of personality types, see the March 2002 special issue of this journal (e.g. Asendorpf, 2002).

& Buss, 2000). However, because the lexical approach is intended to reveal *major dimensions*, it would not be expected to produce factors that represent either (a) categorical and rare conditions of psychopathology, or (b) narrow aspects of sexuality. The former constructs—such as 'thought disorder' or 'dissociation'—fall outside the domain of normal personality variation, and are not of primary interest to researchers who aim to identify the major *dimensions* of personality variation. Some sexuality-related constructs (e.g. paedophilia, necrophilia) would also fall within the former category, but even those that do not (e.g. erotophilia, sociosexuality) would be too narrow to define a *major* dimension of personality (and might in some cases incorporate non-personality-related sources of variance, such as physical attractiveness). As noted by Schmitt and Buss (2000), the several factors of human sexuality are domain specific rather than domain general, and thus lack the explanatory scope of the broader lexically derived personality factors. The above points do not, of course, diminish the importance of rare psychopathological conditions, or of dimensions of human sexuality.

Criticism 9. One criticism of the lexical approach to personality structure—or of the study of traits more generally—is that the obtained factors (and the many characteristics that define them) provide only rough averages of people's behaviours across many diverse situations, and do not capture the systematic person variance that is associated with these various situations (see e.g. Bandura, 1999; Shoda & Mischel, 2000).

Response. Although the factors and variables of lexical studies of personality do represent summaries of behaviour across the full range of trait-relevant situations,[13] this is not problematic from the perspective of trying to find the major dimensions of personality. In fact, the situation-generality of the variables used in lexical studies of personality structure presumably assists in the identification of broad dimensions of personality variation. This is because those variables tend to be more highly saturated with variance due to the broad dimensions than would be the case if the variables were more situation specific; therefore, those variables tend to have substantial loadings within the space defined by the major dimensions. (Note also that differences across situations in the mean levels of similar trait-relevant behaviours do not undermine the search for broad dimensions, as long as we refer to situations in which there is enough variation in those behaviours to allow meaningful estimates of the covariation among them.)

The above point does not mean that researchers who aim to find the major dimensions are somehow opposed to the more fine-grained assessment of personality variation. Contrary to the claim that proponents of 'trait theories' of personality treat the specific variance associated with the various exemplars of a given dimension as error variance (see, e.g., Mischel & Shoda, 1995, 1998; Shoda & Mischel, 2000), it has always been recognized that broad traits can be meaningfully divided according to their specific behavioural manifestations or their specific situational contexts. To give a simple example, a broad trait of fearfulness could be divided into such traits as fear of animals, fear of heights, and fear of social situations, and even the narrow trait of fear of animals could be further subdivided into such traits as fear of dogs, fear of snakes, and fear of spiders. As another example, consider the broad trait of risk-taking behaviour. Jackson, Hourany, and Vidmar (1972) found that this trait could be meaningfully divided into four correlated subtraits—ethical, financial, physical, and social risk-taking—each of which pertained to

[13]Here we use the word *trait* in the sense of a pattern of behaviour for which there is some cross-situational consistency in inter-individual variation. Again, the lexical hypothesis does not require the assumption of long-term stability or heritability for these consistencies.

a different situational context. Thus, the fact that individuals may differ systematically across situations in their relative tendencies to perform a certain kind of behaviour is entirely consistent with 'trait theories' and with lexically based models of personality structure.

Criticism 10. One criticism of the attempt to find major dimensions of personality via the lexical approach (or other approaches) is that the obtained dimensions merely represent 'global conglomerates' of narrower characteristics, and that the criterion validity of these conglomerates is due simply to the obvious overlap of certain narrow characteristics with the behaviours that are the criteria of interest. Bandura (1999, pp. 166–167) makes this case as follows:

> Efforts to understand the nature, origin, and predictiveness of scientific curiosity, for example, should not clutter the personal determinant with preferences for exotic foods. It is not that a general predisposition predicts behavior, but that a few of the behavioral descriptors in the conglomerate mixture may provide some overlap with the particular behavior being predicted to yield a correlate. Global conglomerates do not lend themselves to causal analyses because human experiences do not occur at the level of averaged behavioral conglomerates or life circumstances reduced to a nondescript average.

Response. First, it should be noted that most proponents of dimensional models of personality structure agree that criterion validity is often maximized by using rationally selected narrow characteristics that are most conceptually relevant to the criterion, rather than by relying exclusively upon the broad factors that subsume the narrower characteristics. In fact, some of these researchers have provided empirical demonstrations of this fact (e.g. Paunonen & Ashton, 2001).

It does not follow from the above fact, however, that the only reason for associations between personality dimensions and criterion variables is an obvious conceptual identity between a particular facet of a dimension and a given criterion. In fact, the *common* variance of the characteristics defining a factor is often substantially associated with a criterion. That is, even those narrow characteristics that are not obvious summaries of the behaviour to be predicted can show considerable correlations with that behaviour.

One example of this phenomenon can be taken from a study of personality and intelligence (Ashton, Lee, Vernon, & Jang, 2000). Ashton et al. (2000) found that a criterion of 'crystallized knowledge' (consisting of measures of general information and vocabulary) was predicted rather strongly ($r = 0.46$) by a personality measure of need for Understanding (i.e. intellectual curiosity). Given the conceptual overlap, it is not surprising that this personality trait was by far the strongest correlate of crystallized knowledge among the 20 Personality Research Form (PRF; Jackson, 1984) scales investigated in that study. However, the only two other traits that correlated above 0.20 with crystallized knowledge were need for Sentience and need for Autonomy, and these are two traits that show moderate loadings on the same Openness to Experience (or Intellect) factor that is strongly defined by need for Understanding. Importantly, the correlations involving Sentience and Autonomy emerged 'even though neither of these scales contains any items describing intellectual pursuits. This finding is difficult to explain except in terms of the moderate loadings of those scales on an Openness/Intellect factor' (Ashton et al., 2000, p. 206). That is, the relation of these diverse traits with the criterion is best explained by their partial saturation with the variance of a common construct, not by their individual content overlap with that criterion.

As another example, consider recent studies of the correlates of the proposed personality dimension known as Honesty–Humility, such as workplace delinquency (Lee, Ashton, & de Vries, in press) and sexual harassment proclivities (Lee, Gizzarone, & Ashton, 2003). Both of these criteria are best predicted by aspects of low Honesty–Humility that involve corrupt or exploitative tendencies, and hence might be seen as overlapping with the criterion. However, these criteria are also predicted significantly by aspects of low Honesty–Humility that involve insincerity and conceit, even though these traits have very little content overlap with the criteria of delinquency or sexual harassment. Thus, the best explanation for these relations is that all of these traits are saturated with the variance of a common construct that is manifested in the behaviour criterion.[14]

Criticism 11. Another criticism of the lexical approach to personality structure (or any other approach to personality structure) is that it does not provide any framework for understanding the processes that produce personality variation. Some critics (e.g. Westen, 1996, p. 401) have appeared to suggest that models of personality structure *in the sense of the factor structure of personality characteristics* are actually in competition with models of personality structure *in the sense of the processes that generate personality variation*: 'Personality structure refers, in this model, not to adjectives that covary, but to interacting cognitive, affective, and motivational processes that guide an individual's responses in various situations'. Other researchers have proposed models of the 'dynamic' structure of personality, describing the cognitive and affective processes that generate personality variation, which they contrast with models of the 'static' structure of personality as revealed by lexical studies of personality structure (Shoda & Mischel, 2000).

Response. As noted in the earlier sections of this paper, the aim of the lexical approach to personality structure is not to explain the processes the underlie personality variation, but rather to identify the major dimensions of personality variation. After these dimensions have been discovered, researchers can *then* turn to the problems of finding the causes, development, evolution, and consequences of each dimension (and also to the study of interactions among the dimensions). When researchers in the lexical tradition claim to be seeking the structure of personality, they are referring to the space defined by the major dimensions, and within which personality constructs are located; they are not referring to the mechanisms or processes that are responsible for variation in each dimension, even though these can also be called 'structures'. They believe that these attempts to investigate these causal structures can be undertaken much more efficiently once they have identified the dimensions that jointly define the factor structure of personality variation.

Criticism 12. Another criticism of the lexical approach to personality structure is that the obtained dimensions, having been derived entirely from exploratory methods, 'do not derive from or fit into any theoretical structure' (Eysenck, 1993, p. 1300). In contrast to the lexically derived structures, psychobiological models of personality structure (see e.g. Eysenck & Eysenck, 1985; Cloninger et al., 1993) do have a basis in theories that relate the dimensions to observed phenomena (e.g. psychoticism to latent inhibition; novelty seeking to dopamine levels).

Response. The ultimate test of any theory of personality variation is the extent to which it can explain and predict features of the structure of observed personality characteristics. If a given theory cannot account for all of the observed dimensions of personality

[14]Of course, relations such as these do not necessarily imply a *causal* influence of the personality dimension on a given external variable. The personality dimension might cause individual differences in that variable, but alternatively, the variable might be the cause of the personality variation, or both the external variable and the personality dimension might be caused by a third variable.

variation, it is incomplete; if it accounts for too many dimensions, it is unparsimonious. The strength of the lexical approach is that it provides, in a way that is neutral with regard to competing theories of personality, a means by which a representative sampling of personality variables may be obtained, thereby allowing the structure of observed personality characteristics to be identified. The obtained structure may then be used as the empirical standard against which competing theories of personality may be tested. Researchers who protest that the lexical approach must be flawed, given that it fails to produce the structure expected by their preferred theory, must be prepared to specify some alternative means by which a representative sampling of observed personality characteristics could be obtained entirely a priori: that is, without reference to any theory of personality variation.

We should note that, although the lexical approach is not itself associated with any *theory* of personality structure, there is no reason why researchers cannot use the results obtained in lexical studies of personality structure to develop theories that will explain and predict a variety of personality-related phenomena. For example, Ashton and Lee (2001) have speculated on the adaptive function of individual differences in the lexically derived personality factors, linking those factors with constructs from evolutionary biology. Similarly, McCrae and Costa (2003) have developed a Five-Factor Theory of personality, in which the major dimensions are proposed to have a biological (largely genetic) basis and to cause, in conjunction with a variety of other influences, an array of important life outcomes. This theory therefore makes assumptions that are not derived from the lexical approach to personality structure, but neither are these assumptions forbidden by the lexical approach.[15] The same can also be said of complementary theories, such as that proposed by Ashton and Lee, that focus on the adaptive function of personality rather than on its causes or development.

A criticism involving comparisons with the methods of other sciences

Criticism 13. Finally, lexical studies of personality structure are frequently subject to the criticism that the methods employed are different from those used in other sciences. This criticism invokes several of the other criticisms described above, including those regarding the reliance upon lay persons as observers and upon constructs used by lay persons. Consider the following examples of analogies that have been drawn between the lexical approach and the methods of other sciences:

> Work in other disciplines vividly illustrates that the language of naive observers can be highly discrepant from scientifically acceptable conceptions. . . . many observers agree that objects in motion possess an internalized force responsible for keeping them in motion. The language has encoded a name for this force: 'impetus.' Physicists, however, wisely have chosen not to include 'impetus' in their own taxonomy of physical forces (Shadel & Cervone, 1993, p. 1301).

> No one would imagine that an analysis of common English terms for parts of the body would provide an adequate basis for the study of anatomy . . . (McCrae and Costa, 1985, p. 711).

[15]Note that the Five-Factor Model is not an *approach* to the study of personality structure in competition with the lexical strategy; instead, it is a *model* of personality structure that was derived ultimately from the *results* of lexical studies of personality structure (see McCrae, 1989).

> . . . Nor would chemists expect that factor analysis of lay ratings of properties of physical objects would produce the Periodic Table of Elements, which took professional chemists centuries to develop and even more centuries to refine (Westen, 1996, p. 401).

Response. The problem with these criticisms is that they are based upon false analogies. For any of these analogies to be valid, they would need to apply to a scientific problem involving the following features: (1) a vast and unmanageable array of *variables* that are thought to be manifestations of a small set of major *dimensions* whose identity needs to be determined via factor analysis; (2) lack of any a priori rationale for selecting a set of variables to be factor-analysed (and notorious disagreement among 'experts' as to their variable selections); (3) a domain in which lay people routinely observe the variables—even if those people do not understand the causal bases of those variables—and routinely describe them using familiar adjectives.

Let us now consider the above analogies in terms of the above test. First, the question of whether or not the term 'impetus' refers to a real physical force is obviously not a problem of reducing many variables to a few dimensions. Moreover, the term 'impetus' refers to a presumed *cause* of the physical property of motion, and is therefore analogous *not* to the personality characteristics studied in the lexical approach (e.g. aggression), but to presumed *causes* of those characteristics (e.g. demonic possession). Similarly, the study of anatomy does not appear to involve any factor-analytic problem analogous to that of personality structure.

The most plausible of the above analogies—that involving the Periodic Table of Elements—can also be evaluated with this test. First, the 19th-century chemists who worked toward the Periodic Table were not trying to reduce a large number of variables to a small number of dimensions; instead, they wanted to classify elements into groups by using information regarding several variables (e.g. atomic weight, melting point, hardness, density, water solubility, conductivity, colour). Second, the chemists already knew which elements were to be classified and which properties would be useful for making such a classification; there was no dispute as to an 'optimal' selection of elements or of properties along which they should be measured. Third, many elements (or even their compounds) are not routinely observed by people, who do not normally observe many of the properties on which these elements differ, and who do not have a highly developed lexicon of adjectives for describing most of those properties. Thus, even though a 'factor analysis of lay ratings of the properties of physical objects' would obviously not produce a classification of elements such as the Periodic Table, this analogy is completely irrelevant.

It is difficult to imagine a problem in the natural sciences that would meet the above requirements for the use of a lexical approach. Perhaps the most plausible analogy is that involving the structure of local variation in climate. Here, we have a potentially complex set of variables—specifically, seasonal levels of temperature, rainfall, snowfall, humidity, storms, sunshine, fog, wind speed—that can presumably be reduced to a smaller set of major dimensions.[16] Moreover, people can observe these variables fairly accurately, and many languages have adjectives to describe places according to these features of their seasonal climates. However, this analogy is weakened by the fact that climatologists could probably select (and measure) a 'representative' set of variables without too much difficulty, and by the fact that seasonal climate is not described in nearly as much subtlety and detail as is personality variation. In fact, it is highly doubtful that *any* domain of

[16]Classifications of climate regions, such as Trewartha's modified Köppen system (Trewartha & Horn, 1980), mainly depend on the winter and summer levels of temperature and precipitation; see also the factor analysis reported by Walters (1999).

variation is nearly as well represented in language as is the domain of personality. This is a good reason why the lexical approach to personality structure is unique in science.

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