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Presidential Paper

Doing it all Bass-Ackwards: The development of hierarchical factor structures from the top down ☆

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Abstract

A simple method is presented for examining the hierarchical structure of a set of variables, based on factor scores from rotated solutions involving one to many factors. The correlations among orthogonal factor scores from adjoining levels can be viewed as path coefficients in a hierarchical structure. The method is easily implemented using any of a wide variety of standard computer programs, and it has proved to be extremely useful in a number of diverse applications, some of which are here described.

Keywords: Factor analysis; Hierarchical factor structures; Lexical personality factors

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1. Introduction

Traditionally, structures that include the hierarchical arrangement of variables are developed from the bottom-up, starting with individual elements, which are then grouped into clusters, which in turn are then further grouped into larger categories of variables, until one reaches a highest level in which all of the variables are subsumed under the one most general attribute. For example, in hierarchical analyses of cognitive tests, individual test items are grouped to form sub-tests, which in turn are grouped to form total tests, which in turn are grouped to form highly specific factors, which in turn are grouped to form large group factors (such as fluid and crystallized intelligence), which in turn are the building blocks leading to a most general level (such as "g" for general intelligence).

There are two kinds of such bottom-up approaches to the development of hierarchical structures, one based on cluster analysis and the other on factor analysis. Perhaps the most popular of these are the various algorithms for constructing "tree" representations available in hierarchical cluster-analysis programs. However, although cluster analysis may be a useful method for analyzing the structure of objects (as labeled by nouns), it is not as useful for analyzing the structure of attributes (as labeled by adjectives). One reason is that attribute clusters may have complex relations with other such clusters, and these are not easily comprehended in the unidimensional arrangement of variables across the bottom of a tree diagram. Another reason is that negative relations among variables are not easily accommodated in conventional clustering algorithms.

In contrast, factor analysis permits one to examine the relations between any variable and each of many factors, and bipolarity is easily expressed in the signs of the factor loadings. When factors are rotated obliquely, the correlations among the factors can then be further analyzed, until one has reached a level when all of the factors are orthogonal or there is only one factor remaining. At that point, it is possible to use the procedure described by Schmid and Leiman (1957; see also Yung et al., 1999) to provide a hierarchical structure in which the factors at each level are completely unrelated to those of all levels above and below it. Indeed, the use of such orthogonalized hierarchical solutions has now become the received wisdom in analyses of cognitive abilities (e.g., Carroll, 1993). But, what exactly can one make of factors that are independent of all factors at other levels? How is one to think about a general ability that is unrelated to any of its constituent parts? For readers who may wonder about the usefulness of such purified factors, this article provides a more transparent alternative. Moreover, this top down technique permits investigators to develop hierarchical representations that encompass far more levels than the two- or three-level factor structures that are most frequently used to represent cognitive abilities.

2. A simple top-down procedure

In principal factors or principal components analyses, the first factor to be extracted is the largest one possible, and the next one is therefore smaller than the first. Each subsequent principal factor extracted is completely orthogonal to all of those extracted before it. That is, the first principal factor provides a measure of whatever is most in common to the variables that have been included in the analysis, and each subsequent factor is again as large as possible after the influence of all preceding factors has been partialed out.

A diagram depicting the top down arrangement of a set of principal factors is presented in Fig. 1. In this figure, like all of the others included later in this article, factors are represented as rectangles, whose width corresponds to the factor's size—that is, to the amount of variance accounted for by that factor, which is equal to the sum of its squared factor loadings. Included at the top level of each figure is the first unrotated principal factor or component (FUPC), which is larger than any of the other factors that are extracted subsequently. The second level in each figure depicts the two-factor solution, the third level depicts the three-factor solution, and so on. Factors are labeled by their size at each level; thus, the largest factor at the four-factor level is labeled 4/1 and the smallest factor at that level is labeled 4/4. In each figure, the correlations between the factor scores from the factors at adjacent levels are provided.

To readers accustomed to viewing tree representations, the diagram presented in Fig. 1, which is based on unrotated factors, will look peculiar because each new factor is unrelated to all of those extracted before it. (Indeed, it is more like an onion than like a tree, because as each factor is peeled away, there is a smaller, completely independent, layer lying below it.) Note that the first factor is the same at each level of the representation, and this is indicated by the correlations of 1.00 between their factor scores. And, then, after a second factor is extracted, that factor is the same at each lower level, and so on. The number of *possible* levels in such a representation is equal to the total number of variables. However, because one major goal of factor analysis is to simplify a large number of variables into a much smaller number of factors, one will normally stop the process of factor extraction long before that number is reached.

It is rare in psychology that investigators end their analyses after having extracted principal factors; instead, they normally rotate the factors to some criterion of "simple

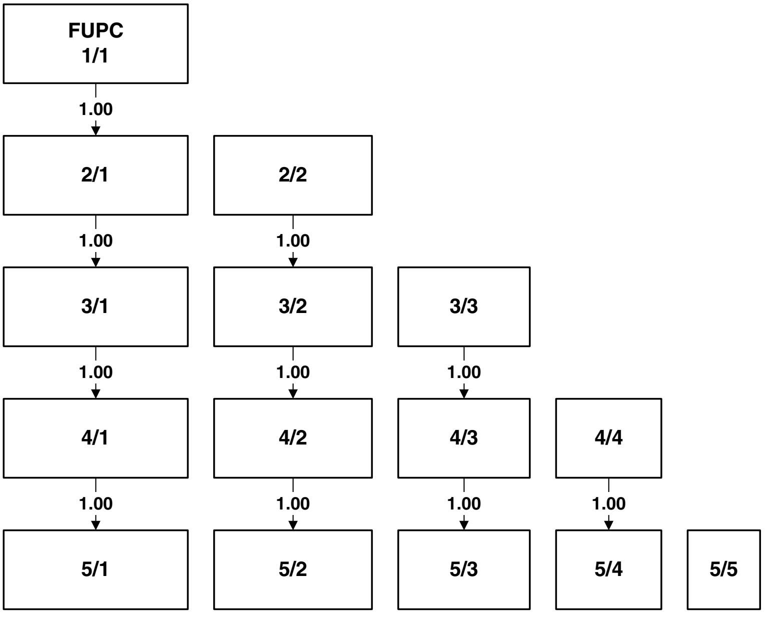


Fig. 1. Unrotated principal components derived from 1710 English personality-trait adjectives (FUPC, first unrotated principal component).

structure," such as varimax (orthogonal) or promax (oblique). These rotational procedures have been developed to provide structural representations in which, to the extent possible given the data, most variables will be related to only one factor, and most factors will have relatively few variables that are highly related to it. Because the variance of principal factors is always maximized as each factor is extracted (see Fig. 1), the process of factor rotation will inevitably spread some of the variance from the first factors onto later ones; for a non-technical description of the logic behind factor extraction and rotation, see Goldberg and Velicer (in press).

One important use of factor analysis is to discover the relations between the factors derived in one domain and other variables not included in the factor analysis. To obtain such relations, one might assess the standing of every individual in the subject sample on each of the factors, and then correlate their scores with the additional variables; such "factor scores" for all subjects are easily available in the major statistical computing packages (e.g., SPSS). Moreover, the factor scores derived from any particular number of factors can be correlated with the corresponding scores derived from some other number of factors. This is the basis of the particular procedure described in this article.

Specifically, one begins by extracting the first principal component from any data set, then extracting and rotating two components, then three components, then four, and five, and continuing the extraction and rotation process until one reaches a point where there is a component on which no variable has its highest factor loading. For each successive number of components, the factor scores are computed and saved; at the end, one can then intercorrelate the total set (one, plus two, plus three, plus four, and so on) of factor scores in one large correlational analysis. The correlations between the factor scores derived from analyses at each level with those at the level below it can then be used as path coefficients to construct a hierarchical representation, with the first unrotated factor at the top, followed by the factors derived when two factors are rotated, followed by the three rotated factors, and then the four-factor structures, and so on down successively lower levels of the hierarchical representation. In giving meaning to the factors arranged this way, it may be useful to think of them on a continuum of abstractness or generality, with the most abstract construct at the top level and the most specific constructs at the bottom level.

Because factor scores are the basic building blocks used to construct the hierarchical representation, I recommend the extraction of principal components rather than principal factors: in the former model, factor scores are directly computed, whereas in the latter model they must be estimated. However, because the resulting structures will be virtually identical using either of the two factor models, readers whose theoretical propensities favor principal factors can easily use them instead of components. See Goldberg and Velicer (in press) for a description of the differences between the two types of factor models, and for a rationale for the use of the components model.

3. Some illustrations from analyses of personality-descriptive terms

The principal components displayed in Fig. 1 are based on an analysis of self-descriptions to 1710 personality-related adjectives (Goldberg, 1982) reported by Ashton, Lee, and Goldberg (2004). In the article by Ashton et al. (2004), the hierarchy is extended to seven levels, but for simplicity only a truncated five-level version is displayed here. When compared to the size of the first principal component (set to 1.00), the relative sizes of the other four unrotated components are .93 (2), .72 (3), .60 (4), and .38 (5). Fig. 2 shows the

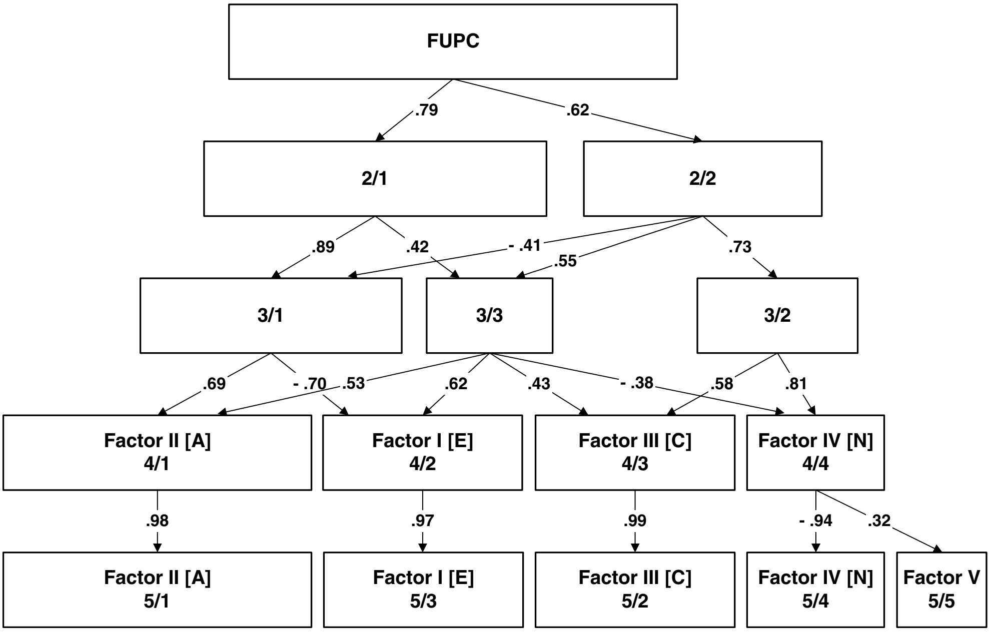


Fig. 2. Varimax-rotated components derived from 1710 English personality-trait adjectives (FUPC, first unrotated principal component; A, Agreeableness; E, Extraversion; C, Conscientiousness; N, Neuroticism; and Factor V, Intellect/Imagination/Openness).

hierarchical representation of these same data after varimax rotations at each level. In this figure and all others in this article, only path coefficients of .30 or stronger are provided.

Fig. 2 is useful in showing some of the ways in which factors can be reorganized at the top levels of a hierarchical representation. However, in this as in most other data sets, by the four-factor solution most factors appear in a form that stays much the same down through many levels below it. For example, by the four-factor level in Fig. 2 three of the Big-Five factors-Factor I (Extraversion), Factor II (Agreeableness), and Factor III (Conscientiousness)—have appeared in a form that remains unchanged through seven factors (with all path coefficients in the range from .95 to 1.00). At this four-factor level, the remaining two Big-Five factors (Emotional Stability and Intellect/Imagination) are fused, but they split apart at the fifth level and then remain virtually identical through seven factors.

Figs. 1 and 2 are both based on the largest set of person-descriptive adjectives that have ever been studied in this fashion. In such an extensive item pool, some of the terms may not be commonly used in contemporary discourse and thus might have been unfamiliar to some of the research participants; moreover, as described in Goldberg (1982), the 1710 terms include a sizeable number of negations (e.g., un-, non-, i-, and -less) which adds to the complexity of a self-rating task. In contrast, Fig. 3 provides a hierarchical representation for 435 of the most familiar trait-descriptive adjectives in American English; this figure from Goldberg and Somer (2000) is based on the analyses reported in Saucier and Goldberg (1996).

Fig. 3 tells a much more simple story than Fig. 2. In Fig. 3, we can see that the first unrotated principal component combines the four factors that are most highly related

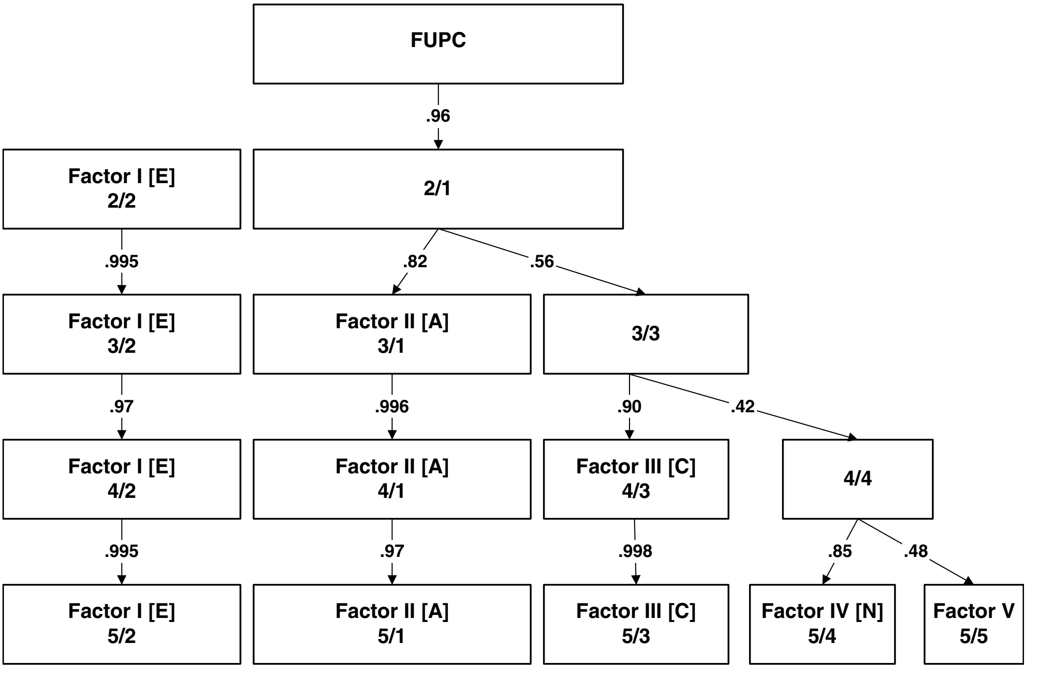


Fig. 3. Varimax-rotated components derived from 435 familiar English personality-trait adjectives (FUPC, first unrotated principal component; E, Extraversion; A, Agreeableness; C, Conscientiousness; N, Neuroticism; and Factor V, Intellect/Imagination/Openness).

to Evaluation (Factors II, III, IV, and V), and at the two-factor level the Big-Five factor that is the least evaluatively polarized (Factor I: Extraversion) appears in a form that stays virtually identical down through the fifth level. When three factors are varimax-rotated, both Factors I and II (Agreeableness) have peeled off in their final form. When four factors are rotated, Factors I, II, and III (Conscientiousness) are now available. And, finally, at the five-factor level all five of the factors have appeared in a kind of "classic" version of the Anglo-German Big-Five structure (Saucier & Goldberg, 2003).

The structural representation displayed in Fig. 3 is particularly useful in comparative analyses of personality terms across different languages (e.g., Goldberg & Somer, 2000). As an illustration, Fig. 4 provides a picture of the structure of 440 of the most familiar personality-trait terms in Turkish, an Altaic language (which includes such languages as Mongolian) that is linguistically quite distinct from the Indo-European tongues that have been studied most extensively. In contrast to the English structure, the first unrotated principal component in Turkish splits at the two-factor level into two broad composites, one of which combines Extraversion, Emotional Stability, and Intellect, and the other that combines Agreeableness and Conscientiousness. At the three-factor level, the former factor remains the same while the latter factor now splits into its two parts, both of which remain identical down through five levels. Interestingly, at the five-factor level the Turkish factors are quite similar to the Big Five in English.

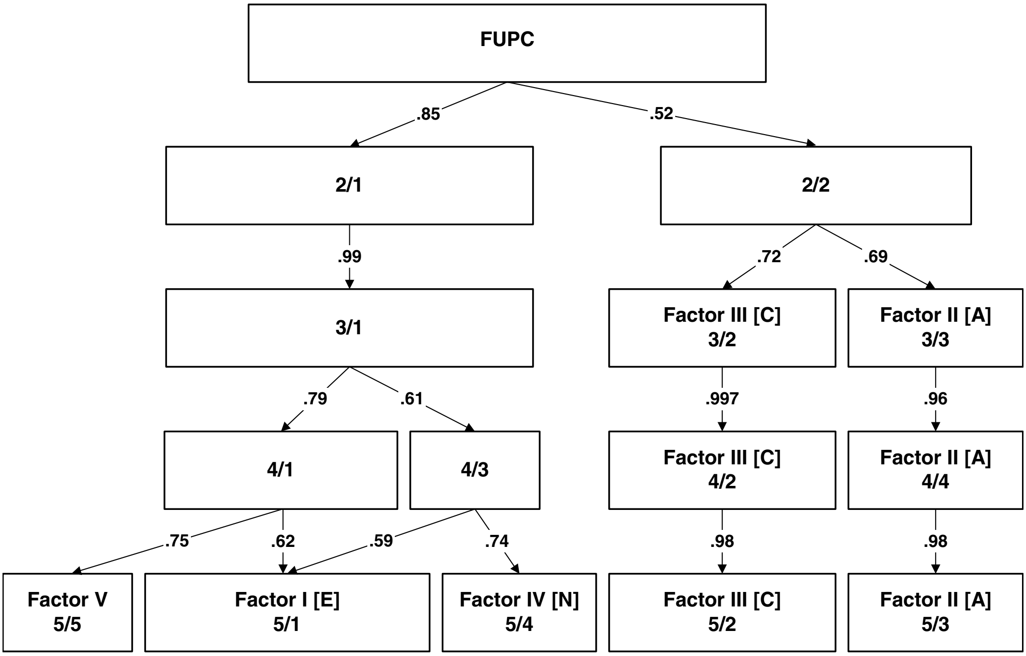


Fig. 4. Varimax-rotated components derived from 440 familiar Turkish personality-trait adjectives (FUPC, first unrotated principal component; E, Extraversion; A, Agreeableness; C, Conscientiousness; N, Neuroticism; and Factor V, Intellect/Imagination/Openness).

4. Some other illustrations

An appealing characteristic of these top down factor representations is that one need not commit oneself in advance to the optimal number of factors to extract and rotate. Instead, one can continue down into the hierarchy until one reaches a level at which no new interesting factors appear. One criterion for stopping the process is that no variables have their highest loadings on a factor, in which case one should surely stop at the level above that one. However, in analyses of very large variable sets (e.g., the 1710 English personality adjectives) one will quickly reach a level (usually between five and ten factors) when only a few variables load most highly on each factor, and thus the factors that incorporate those clusters of highly specific variance can normally be discarded. Sometimes, however, such lower-level factors point to important content that is poorly represented in the set of variables under study, and thus the analyses suggest that new variables reflecting that content be developed.

4.1. Self-reported dissociative experiences

Fig. 5 displays a hierarchical representation of the major symptoms reflecting the psychiatric state of dissociation. The analysis, from Goldberg (1999), is based on a 31-item revision of the Dissociative Experiences Scale (Bernstein & Putnam, 1986); the revised item pool, which included three additional symptoms and a more user-friendly item format, was

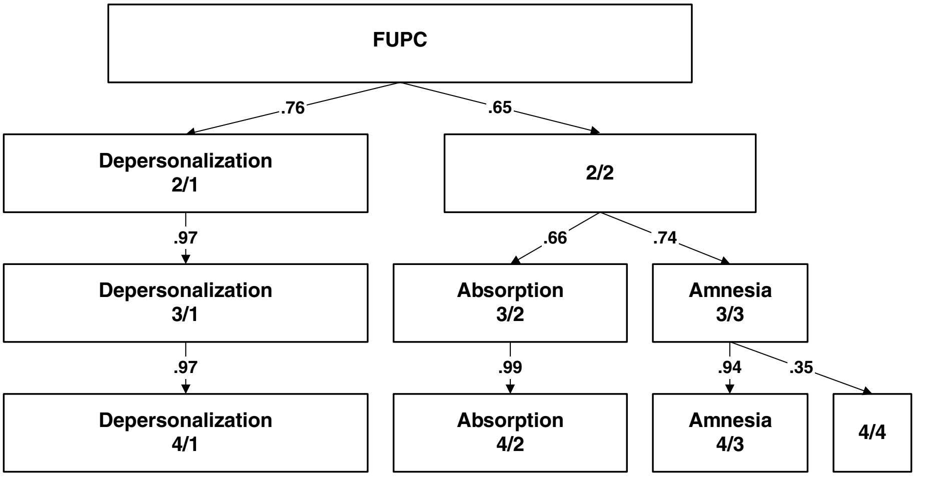


Fig. 5. Varimax-rotated components derived from 31 symptoms of dissociation (FUPC, first unrotated principal component, general dissociation).

administered to an adult community sample. This structure is particularly interesting because it permits future investigators to measure (a) total dissociation (as reflected in the first unrotated principal component), (b) two relatively equal-sized broad aspects of dissociative experiences, (c) the three components of dissociation that have traditionally been distinguished (typically labeled Depersonalization/Derealization, Absorption, and Amnesia), which appear at the three-factor level, and/or (d) to find additional symptoms associated with each of the two subcomponents of Amnesia so as to measure a more comprehensive four-factor representation of dissociative experiences. Our parallel as-yet-unpublished hierarchical analyses of the symptoms included in the Center for Epidemiologic Studies Depression Scale (CES-D: Radloff, 1977) also suggest that some important aspects of depressive experiences are not well represented in the original CES-D item pool.

4.2. Eating habits and food preferences

Fig. 6 provides the hierarchical structure of 48 dietary practices that had been included in three popular eating surveys, again administered to a large adult community sample (Goldberg & Strycker, 2002). Translating the relations displayed in Fig. 6 into words, one could say that a large undifferentiated factor reflecting a Generally Healthy Diet (the first unrotated principal component) subdivides into two mega-components reflecting the Avoidance of Fat (factor 2/1) and the Consumption of Fiber (2/2). The total fat factor (2/1) in turn subdivides into two components, reflecting the Avoidance of Meat-related Fats (3/1) and the Avoidance of Fats of Other Kinds (3/2). Finally, the latter fat factor (3/2) subdivides into components reflecting the Avoidance of Foods Flavored with Fat (4/2) and the Substitution of Low-Fat for High-fat Foods (4/3).

What is particularly interesting about this hierarchical structure is that the factors at different levels are differentially related to various personality and demographic variables, thus providing some suggestive leads for tailoring preventive health practices to different sorts of individuals (see Goldberg & Strycker, 2002). And, although the structure displayed in

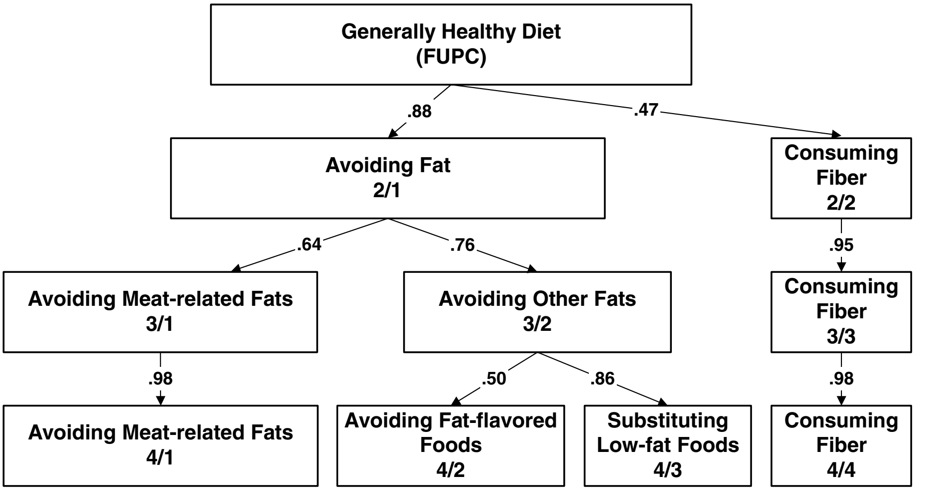


Fig. 6. Varimax-rotated components derived from 48 food preferences and dietary practices (FUPC, first unrotated principal component).

Fig. 6 was derived from a sample of research participants who are almost exclusively Caucasian and somewhat above average in their education and level of affluence, analyses of a similar set of dietary practices in a multi-ethnic Hawaiian sample (including particular foods that are commonly consumed in Hawaii but not on the mainland, such as poi) shows remarkable similarity between the two factor structures, suggesting that this representation may transcend at least some ethnic differences in the specific foods that individuals consume.

4.3. Characterizing the musical phenotype

Fig. 7 provides a hierarchical representation of 33 items from a recent survey of musical behaviors and experiences (Levitin et al., 2004). The original data from that study have been reanalyzed, resulting in the new path coefficients provided here. Also, I have substituted new labels for some of the music-related factors. At the seven-factor level, the components include content related to musical Complexity, Reproduction, Sensitivity, Musical theory and achievement, Listening habits, Positivity, and Emotions. As one can see in Fig. 7, the Reproduction factor splits off relatively early and stays virtually unchanged all the way down the hierarchy. What is particularly important about this representation is that factors at different levels turn out to differentiate between three samples of individuals with neurodevelopmental genetic disorders: Williams Syndrome, Autism, and Downs Syndrome. The differences on the music-related factors among these three types of disorders, and between each of them and a sample of normal controls, are discussed in Levitin et al. (2004).

5. Some caveats and conclusions

Although the illustrations in this article have come from studies conducted by the author or his former students, variations on these ideas have been proposed by others. One early example of a partial representation of this sort was provided by Zuckerman, Kuhlman, and Camac (1988). A more complete structural representation was included in

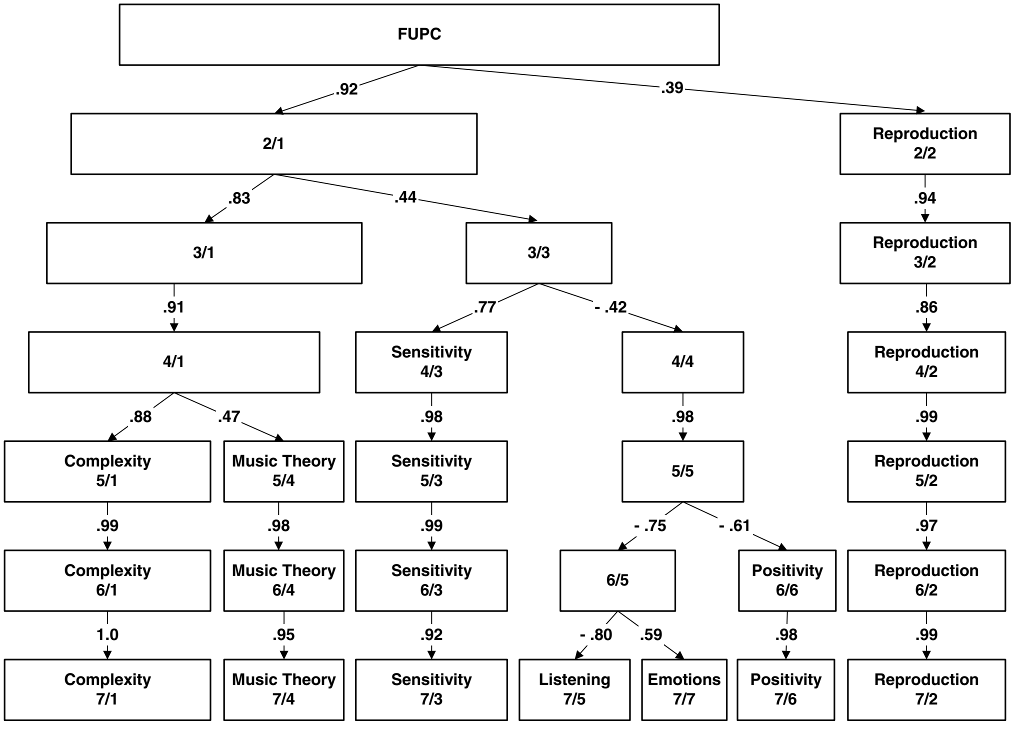


Fig. 7. Varimax-rotated components derived from 33 kinds of musical behaviors and experiences (FUPC, first unrotated principal component).

Ostendorf's (1990) now-classic account of his German lexical taxonomy project. And, one of the most influential uses of the method may have been Saucier's (1997) comprehensive analyses of the effects of variable selection on the factor structure of English person descriptors. Later articles by Di Blas and Forzi (1998) and Saucier (2000, 2003) provide additional examples of this top down procedure, as do the recent reports by Markon, Krueger, and Watson (2005), Mlačić and Ostendorf (2005), Roberts, Chernyshenko, Stark, and Goldberg (2005), Saucier, Georgiades, Tsaousis, and Goldberg (2005).

All of the factor representations displayed in the present article have been based on principal components analyses with orthogonal varimax rotations; as already noted, the corresponding structures based on principal factors would be virtually indistinguishable from those presented here. The author's preference for examining orthogonal factors at each hierarchical level, instead of using an oblique rotational algorithm such as promax, is not without its critics, and many readers may opt for the oblique alternative. However, orthogonal factor scores have the advantage of parsimony when used in multiple-regression analyses to predict any important criteria (Goldberg, 1993), and they encourage the development of factor markers that are maximally unrelated to each other (Saucier, 2002).

To many factor theorists, the structural representations included in this article are not truly "hierarchical," in the sense that this term is most often used in the methodological literature (e.g., Yung, Thissen, & McLeod, 1999). For those who define hierarchies in conventional ways, one might think of the present procedure in a metaphorical sense, perhaps construing this representation as akin to a flow-chart of factor emergence.

Consequently, one might think of these representations as "sequential" rather than hierarchical. Moreover, while the author has found it useful to speak of the correlations between factor scores at different levels as "path coefficients," strictly speaking they are akin to part-whole correlations, but again the non-traditional usage can be construed metaphorically.

In any case, it should always prove useful for investigators to analyze their data in diverse ways, and this certainly applies to the development of structural representations. The present article is meant to introduce readers to a new option, not as a replacement but as a supplement to all of the other techniques available. Some potential advantages of this procedure over its competitors include its wide range of applicability, its straightforward simplicity to implement, and its easy amenability to pictorial representations. Doubtless other techniques, including hierarchical clustering algorithms, and the Schmid–Leiman approach to factor orthogonalization, will prove to be even more useful in some scientific contexts.

References

Ashton, M. C., Lee, K., & Goldberg, L. R. (2004). A hierarchical analysis of 1,710 English personality-descriptive adjectives. *Journal of Personality and Social Psychology, 87*, 707–721.

Bernstein, E. M., & Putnam, F. W. (1986). Development, reliability, and validity of a dissociation scale. *Journal of Nervous and Mental Disease, 174*, 727–735.

Carroll, J. B. (1993). *Human cognitive abilities: A survey of factor-analytic studies*. New York: Cambridge University.

Di Blas, L., & Forzi, M. (1998). An alternative taxonomic study of personality-descriptive adjectives in the Italian language. *European Journal of Personality, 12*, 75–101.

Goldberg, L. R. (1982). From Ace to Zombie: Some explorations in the language of personality. In C. D. Spielberger & J. N. Butcher (Eds.), *Advances in personality assessment* (Vol. 1, pp. 203–234). Hillsdale, NJ: Erlbaum.

Goldberg, L. R. (1993). The structure of personality traits: Vertical and horizontal aspects. In D. C. Funder, R. D. Parke, C. Tomlinson-Keasey, & K. Widaman (Eds.), *Studying lives through time: Personality and development* (pp. 169–188). Washington, DC: American Psychological Association.

Goldberg, L. R. (1999). The Curious Experiences Survey, a revised version of the Dissociative Experiences Scale: Factor structure, reliability, and relations to demographic and personality variables. *Psychological Assessment, 11*, 134–145.

Goldberg, L. R., & Somer, O. (2000). The hierarchical structure of common Turkish person-descriptive adjectives. *European Journal of Personality, 14*, 497–531.

Goldberg, L. R., & Strycker, L. A. (2002). Personality traits and eating habits: The assessment of food preferences in a large community sample. *Personality and Individual Differences, 32*, 49–65.

Goldberg, L. R., & Velicer, W. F. (in press). Principles of exploratory factor analysis. In S. Strack (Ed.), *Differentiating normal and abnormal personality: Second edition*. New York, NY: Springer.

Levitin, D. J., Cole, K., Chiles, M., Lai, Z., Lincoln, A., & Bellugi, U. (2004). Characterizing the musical phenotype in individuals with Williams Syndrome. *Child Neuropsychology, 10*, 223–247.

Markon, K. E., Krueger, R. F., & Watson, D. (2005). Delineating the structure of normal and abnormal personality: An integrative hierarchical approach. *Journal of Personality and Social Psychology, 88*, 139–157.

Mlačić, B., & Ostendorf, F. (2005). Taxonomy and structure of Croatian personality-descriptive adjectives. *European Journal of Personality, 19*, 117–152.

Ostendorf, F. (1990). *Sprache und persönlichkeitsstruktur: Zur Validität des Fünf-Faktoren-Modells der Persönlichkeit* [Language and personality structure: Toward the validation of the Five-Factor model of personality]. Regensberg, Germany: S. Roderer Verlag.

Radloff, L. S. (1977). The CES-D Scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.

Roberts, B. W., Chernyshenko, O. S., Stark, S., & Goldberg, L. R. (2005). The structure of conscientiousness: An empirical investigation based on seven major personality questionnaires. *Personnel Psychology, 58*, 103–139.

Saucier, G. (1997). Effects of variable selection on the factor structure of person descriptors. *Journal of Personality and Social Psychology, 73*, 1296–1312.

Saucier, G. (2000). Isms and the structure of social attitudes. *Journal of Personality and Social Psychology, 78*, 366–385.

Saucier, G. (2002). Orthogonal markers for orthogonal factors: The case of the Big Five. *Journal of Research in Personality, 36*, 1–31.

Saucier, G. (2003). Factor structure of English-language personality type-nouns. *Journal of Personality and Social Psychology, 85*, 695–708.

Saucier, G., Georgiades, S., Tsaousis, I., & Goldberg, L. R. (2005). The factor structure of Greek personality adjectives. *Journal of Personality and Social Psychology, 88*, 856–875.

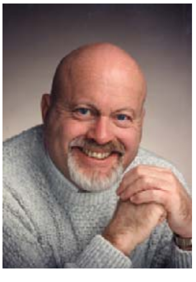
Saucier, G., & Goldberg, L. R. (1996). Evidence for the Big Five in analyses of familiar English personality adjectives. *European Journal of Personality, 10*, 61–77.

Saucier, G., & Goldberg, L. R. (2003). The structure of personality attributes. In M. R. Barrick & A. M. Ryan (Eds.), *Personality and work: Reconsidering the role of personality in organizations* (pp. 1–29). San Francisco, CA: Jossey-Bass.

Schmid, J., & Leiman, J. (1957). The development of hierarchical factor solutions. *Psychometrika, 22*, 53–61.

Yung, Y.-F., Thissen, D., & McLeod, L. D. (1999). On the relationship between the higher-order factor model and the hierarchical factor model. *Psychometrika, 64*, 113–128.

Zuckerman, M., Kuhlman, D. M., & Camac, C. (1988). What lies beyond E and N? Factor analyses of scales believed to measure basic dimensions of personality. *Journal of Personality and Social Psychology, 54*, 96–107.



Lewis R. Goldberg is a senior scientist at the Oregon Research Institute and an emeritus professor of psychology at the University of Oregon. A past president of the Society of Multivariate Experimental Psychology and the current president of the Association for Research in Personality, he has served on both the Cognition, Emotion, & Personality and the Personality & Cognition research review committees of the National Institute of Mental Health. His contributions to the scientific literature in personality and psychological assessment have included articles on judgment and decision-making, the comparative validity of different strategies of test construction, the measurement of situational vs. dispositional attributions in self and peer descriptions, the characteristics of personality traits and states, and the development of taxonomies of personality-descriptive terms in diverse languages. To provide public-domain measures of the most important personality attributes, he has developed an Internet-based scientific collaboratory, the International Personality Item Pool (IPIP: http://ipip.ori.org/). His current research interests are well described by the titles of the two NIH grants on which he serves as principal investigator: “Mapping Personality Trait Structure” and “Personality and Health—A Longitudinal Study.”