

Campbell D T & Fiske D W. Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychol. Bull.* 56:81-105, 1959.
[Northwestern University, Evanston, and University of Chicago, IL]

This paper advocates a step toward validating research results utilizing a matrix of intercorrelations among tests representing at least two traits, each measured by at least two methods. Measures of the same trait should correlate higher with each other than they do with measures of different traits involving separate methods. [The *SCI*® and the *SSCI*® indicate that this paper has been cited in over 1,880 publications, making it the most-cited paper ever published in this journal.]

Donald W. Fiske
Committee on Methodology
University of Chicago
Chicago, IL 60637
and
Donald T. Campbell
Social Relations
Lehigh University
Bethlehem, PA 18015

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Both of us had been involved in large-scale projects in which each of the main variables had several measures. But the intercorrelations showed that these fallible measures were not interchangeable, and not one of them could be taken as the operational definition of the variable. Also, correlations between measures of different traits by the same method (e.g., peer ratings) were regularly higher than those for measures of (purportedly) the same trait by different methods. We decided to demonstrate the pervasiveness of method variance and to urge the construal of each test as a trait-method unit. From several such units using fairly independent methods, one can obtain estimates of a trait that, though they may be good enough, are far from ideal.

Once the general idea had been conceived, we simply located published data that provid-

ed examples of the basic matrix (the complete table of intercorrelations among two or more traits or attributes, each measured by two or more methods). We did, however, have extended discussions about conceptualizing the problem and about the validity criteria proposed. We differed most on the matter of pertinent statistical analyses. Campbell felt that we should develop some statistical method for evaluating a multitrait-multimethod matrix. Fiske felt that it was unnecessary to do so: most of the essential information concerning the quality of the methods and the degree to which they converged in measuring a trait could be obtained by close examination of the matrix itself; also, he felt that these matrices should be used primarily to decide on next steps in test revision or concept reformulation. In the next 27 years, several methods for statistically analyzing the matrix have been proposed. The user should know, however, that they can lead to different conclusions about validities and that most of them have fundamental problems.^{1,2}

There are several reasons for the immediate acceptance and the wide application of the paper. One is that the *Zeitgeist* was ready for it. Another is that the basic conceptualization is very easy to understand and very obviously important. Also, the idea is quite general: the traits can be any set of variables to be differentiated, the methods can be discriminated in many ways, and other types of variates, such as occasions, can replace our two sets of categories.³

The two of us agree completely about the vital significance of the basic fact that, very generally, independent measures of behavioral variables show only limited convergence. We disagree on the methodological resolution of that problem. Fiske questions the conceptual fruitfulness of concepts that cannot be measured without considerable contamination from methods. Campbell argues that our concepts are really there in the outside world and that the challenge is to devise adequate instruments or operations for measuring them.

1. Campbell D T & O'Connell E J. Methods as diluting trait relationships rather than adding irrelevant systematic variance. (Brinberg D & Kidder L H, eds.) *Forms of validity in research*. San Francisco: Jossey-Bass, 1982. p. 93-111.
2. Wothke W. *The estimation of trait and method components in multitrait-multimethod measurement*. PhD dissertation, University of Chicago, 1984.
3. Fiske D W. Convergent-discriminant validation in measurements and research strategies. (Brinberg D & Kidder L H, eds.) *Forms of validity in research*. San Francisco: Jossey-Bass, 1982. p. 77-92.