THE CENTRAL INTELLECTIVE FACTOR*

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The proof of the existence of "g" is more than a methodological problem and concerns the very core of psychological theory. The principles of noegenesis should be identified experimentally before a final opinion can be rendered about "g." Many general factors isolated in different studies are not necessarily "g." In the present study a second-order unrotated general factor has been identified by using Thurstone's method. It seems possible to identify this factor with "g." In the first order, factors that seem to represent the first and second principles of noegenesis have been found. The existence of synthetic and analytic activities and their interplay in intellectual performances is indicated. The relation of likeness is of great interest in explaining cognitive abilities and is isolated both as a first and second order factor. For the final identification of factors the search should be conducted beyond the elementary listing of tests. The dynamic aspects underlying factors are more meaningful than their simple description. The second order gives indications that allow for a better interpretation of fundamental psychological activities.

Introduction

Since Spearman defined "g" many factorial studies have been published in relation to intelligence. No satisfactory agreement has yet been reached on issues germane to the problem of the nature of intelligence, in spite of the different methods and tests tried. Some factorialists have often been satisfied with the simple enumeration of variables. Nevertheless, factor analysis has more to its credit than merely cataloguing factors.

Spearman's interest was to delimit and define "g" as a general factor best expressed by the principles of noegenesis† and by what

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†As described by Spearman the principles of noegenesis refer to: 1) "a person has more or less power to observe what goes on in his own mind," 2) "when a person has any two or more ideas (using this word to embrace any items of mental content, whether perceived or thought of), he has more or less power to bring to mind any relations that essentially hold between them," and 3) "when a person has in mind any idea together with a relation, he has more or less power to bring up into mind the correlative idea" (27). The theoretical postulation and a complete discussion of these three principles is found in The Nature of Intelligence and the Principles of Cognition (25).
he calls abstraction, adding that the analytic procedures “tend to load noegenetic processes with ‘g’” (30). His interest in other factors was secondary and he cautioned against those conditions that would disturb the tetrad criterion and make “g” disappear. Proof of the existence of “g” were given by Holzinger (17) and Brown (6), among others.

Some British psychologists and Spearman himself spoke of overlapping factors, and in this endeavor mainly the verbal and the space factors were accordingly defined (31, 32, 33, 13). “g” was interpreted as “general fund of energy,” will power, maturation, neural plasticity, condition in the blood, neural energy, chance, and so on (16, 27, 30).

In Thurstone’s theory the existence or non-existence of a general factor is not previously postulated. The main interest is to discover the number and properties of the factors that reproduce the given raw data, mainly the correlational matrix (38). As several experimental studies have shown, if there is a general factor it will become evident by using Thurstone’s method (4, 5, 15, 36, 39).

The early procedure of rotating the factors while keeping them orthogonal was modified by introducing oblique factors. These are linearly independent but statistically related. The study of the second order—that is the analysis of the correlations between the primaries—has been little explored up to the present. The statistical and methodological implications have been partially discussed (24, 36, 38), and probably it is in the second order where the interaction of primary factors is to be further clarified. Nevertheless, any second order findings should be carefully interpreted on account of our lack of experience and of the theoretical and methodological assumptions involved.

Thurstone (35, 36) described several primary factors and his pupils and associates in a series of different studies confirmed their existence and characteristics. Some of these factors have been lately split into several others, or their properties redefined, for instance the perceptual and the space factors, etc. (37).

It is customary to present the results obtained by Thurstone et al. as incompatible with those reached by Spearman and associates. Since our problem is related to this, we shall review some of the pertinent bibliography on the subject.

Blakey (4), using Thurstone’s method, reworked Brown and Stephenson’s data and found a verbal, a space, and a perceptual speed factor, plus another variable that may be interpreted as Spearman’s