FACTOR-ANALYTIC STUDY OF THE MAITLAND GRAVES DESIGN JUDGMENT TEST

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Summary.—A factor-analysis was carried out of the 90 items of the Maitland Graves Design Judgment Test based on responses from 172 young males. Five factors were found, of which only four could be interpreted.

The Design Judgment Test (Graves, 1948) consists of 90 sets of two or three non-representative designs; for each set S has to select the preferred design. Expert judgments provide the "right" choice in each case, against which S's choice is evaluated. The test is claimed to measure "certain components of aptitude for the appreciation or production of art structure by evaluating the degree to which a subject perceives and responds to the basic principles of aesthetic order—unity, dominance, variety, balance, continuity, symmetry, proportion, and rhythm." Reliabilities are reasonable, and some evidence of validity is available, but no internal analysis of the 90 sets of designs appears to have been carried out to see how many different principles of judgment may be at work or whether one single factor may be running through the whole test.

One hundred and seventy-two male industrial apprentices 16 to 18 yr. of age were administered the test, and the 90 scores intercorrelated (product-moment). In the case of triads, the correct choice was contrasted with either incorrect choice. The matrix[1] of intercorrelations was factor-analyzed by principal components methods, and the first five factors rotated to oblique simple structure by means of the Promax programme (Hendrickson & White, 1964). The first factor had a sizeable number of high factor loadings: 13 items have correlations exceeding .50 with this factor. (Item numbers 8, 21, 28, 29, 47, 48, 50, 51, 57, 59, 61, 69, 72). The interpretation of this factor is reasonably obvious from the high-loading items; these are all concerned with symmetry, or rather with asymmetry, as symmetrical designs are scored "wrong" by the key. Altogether 36 items have correlations of .30 or above with this factor, with another 9 exceeding .20.

Factor 2 has its main correlations with Items 80 to 90, i.e., a set of 10 three-dimensional designs which differ very markedly from all the other designs. Two items (83 and 86) do not have reasonable loadings, and as might be expected by chance, one or two of the other 80 items have loadings which rise above .30, but the identification of this factor as "three-dimensional" is probably not in doubt. Factor 3 is equally clear; main correlations here are with Items 1, 12, 26, 40, 55, and 74, and these are all very complex designs, with large numbers of

straight and curved lines; no simple answers in terms of symmetry are possible in connection with these designs.

Factor 4 seems to involve designs which are irregular and unbalanced but much less complex than those which go to make up Factor 3; included in this factor are Designs 8, 18, 21, 25, 27, 30, 32, 42, 44, 47, 51, 54, 66, 78, and 79. Several of these designs also have correlations with Factor 1, e.g., 8, 21, 42, 47, and 51; in these cases inspection suggests that these designs in fact incorporate features from both factors. Such a judgment, of course, involves considerable subjectivity, and our naming of these factors is not to be taken as anything but suggestive; inspection of the designs with high loadings will make our meaning more precise.

Factor 5 is difficult to interpret. Three items have positive correlations (6, 7, 36) and 6 have negative correlations (11, 33, 45, 77, 88, 90). The 3 items with positive correlations seem to be similar in that they call for a preference for balance against imbalance, but this interpretation does not explain the nature of the bond that unites the other 6 items and sets them off as compared with the positive 3. It might be best to leave this factor uninterpreted.

As might have been expected, Factors 1 and 4 show the greatest departure from orthogonality. A second-order analysis was carried out and gave rise to two factors which were almost entirely orthogonal. The first of these was clearly a combination of primary Factors 1 and 4, with the highest loadings on Items 8, 42, 44, 47, 48, 51, 59, 61, and 66. Factor 2 loads highest on items characterising primary Factors 5 and 3 and is still difficult to interpret. Items with high loadings from Factor 5 are 33, 45, and 77 (negative) and 36 (positive). Other high positive correlations come from the leading items in primary Factor 3, i.e., Items 1, 12, 26, 40, 55, and 74.

It is interesting to note that the E.P.I. (Eysenck & Eysenck, 1964) was given to these Ss; the N, E, and L scores were used as Items 91 to 93 of the analysis. No suggestive correlations were observed with the first of the two higher-order factors, but N correlated .37 with the second factor, and L correlated −.34. These correlations suggest some relation between aesthetic judgment and personality but defy further interpretation.

This finding, like all the others, must of course be seen in the context of the present sample of Ss; it is likely that different factors might emerge if more highly educated Ss were employed. Nevertheless, the data do suggest that the 90 items of this test measure different abilities, so that it may not be entirely justifiable to throw all the scores together into one total score. Further work along these lines may suggest a more rational scoring method and may also throw some light on the factors underlying aesthetic judgments of this type.

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