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STABILITY IN THE STRUCTURE OF EVALUATIVE RESPONSES TO ADVERTISING STIMULI

by

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ABSTRACT.

Advertisement pretesting literature and practice stresses the multidimensionality of the respondent's reaction to advertising messages, with an implicit interest for the structure of the response. The structure at the level of the individual message is not necessarily stable or consistent with the pattern uncovered at a higher level of aggregation. This paper is based on empirical data for print advertisements. Implications of variability in response patterns are discussed from the point of view of consumer behavior theory, of methodology and of advertising pretesting.

Marketing researchers and managers have accepted a multivariate approach to consumer response (1). The interest will often center on the mean response vector or profile and on the explanation of its systematic variations when different samples, treatments, situations, stimuli, etc., are involved (2). In such analyses, departure from the assumption of equality of covariance patterns, is only seen as slightly inconvenient for the purpose of statistical testing. Since the pattern of covariation or correlation of the response vector may vary, it is interesting to investigate the determinants of such variability and to trace the implications for management.

I. THEORETICAL CONSIDERATIONS.

The stability of the covariance or correlation pattern of a vector-variate becomes a potential issue when this variate is observed under

several modes[1]. The data then form a hypercube of variables by respondents by modes. Considering the simplest, 3-dimensional case, the interest will center on the response dimensions or on the modes, with the respondents treated as measurement replicates. Figure 1 illustrates the structure of such data for two response components (I, II) and six modes (A through F); the ellipses show the within-mode covariance pattern with replicated measurement, their centroïd is the mean response.

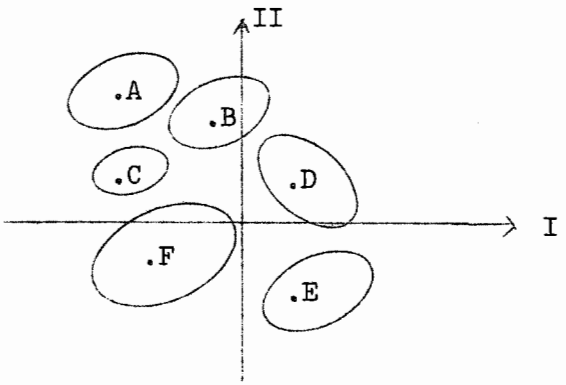

Figure 1.

The figure is illustrative of three questions to be dealt with in an analysis of the structure of response :

1. the pattern of correlations of traits within a mode may be distinct from the correlation pattern of the centroïds
2. the pattern of correlation of traits within one mode does not necessarily prevail within another mode
3. variations in response dispersion make for differences in covariance matrices from one mode to the next, even when the correlation matrix does not vary.

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1. In our study 24 print advertising messages (stimuli, modes) were evaluated on 18 evaluative scales (traits, items) by a sample of 25 respondents (replicates). This terminology will be used to refer to each of the dimensions of the 24 x 18 x 25 data cube.

These three issues relate to more fundamental questions of a theoretical and managerial nature :

1. Differences of the across- and within -structure of correlations.[1]
Many studies compress the respondent dimension of the data cube by averaging over respondents. The structure of consumer response is then derived from the data matrix of traits by modes containing average evaluation scores. Even if the within-structure of responses is consistent from one mode to the next, the structure underlying the average responses need not be similar, i.e. the process generating the average responses across modes does not reflect the process generating the responses within the mode. Such instances are not uncommon for the economist or psychological economist, who knows that the cross-sectional structure of a set of variables ("within") may differ from the aggregate time-series pattern ("across") (3).

Explanations of this inconsistency will start from the assumption that (a) the processes generating the structure within and across are analogous but one of them or both are partly masked or (b) that both processes are genuinely different.

Concerning the former, response dimensions which do not allow response heterogeneity within modes cannot show up in the within-structure. Also, some systematic factors may affect the observable population of modes (messages), such as biased sampling due to the researcher or to the advertisement screening and selection process (4). The modal means may regress systematically on exogenous variables which do not affect the within-pattern of response, e.g. the product category. The latter explanation means that different patterns will be found even after the removal of the aforementioned influences : the microcosm is not reflected in the macro-cosm, the time

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1. For brevity, the data matrix containing respondent evaluations of a single advertising message will be referred to as"within" and the matrix containing the sample average evaluations for the 24 messages as "across".

series is of a different nature all together, than the cross-section. This hypothesis of fundamentally different processes depending on the level of aggregation is less appealing and an example in the area of interest to us, i.e. the evaluation of advertising messages, cannot readily be given.

2. Differences in the within-structure of correlations from one mode to the next.

If one adopts a factor-analytical approach to the structure of responses within a mode, the differences might be of the following kinds : (a) the same variables load in the same direction on identical components, but these components vary in importance, (b) the same variables load on factors in the opposite direction, (c) the same variables load on different factors according to the mode. As mentioned above, some potential factors may be absent because the dispersion in their component variables is suppressed. If the response structure varies across messages, explanatory factors should (ceteris paribus) vary over messages as well and be found in their inherent characteristics or in the consumer's reaction to them.

3. Differences of the within-mode dispersion.

There is little question that the dispersion of a particular response varies from message to message, even though the traits intercorrelate in a consistent way. The causes for heterogeneity in the dispersions should again be sought, coeteris paribus in the variation of intrinsic message properties on in the respondent's reactions to the messages.

4. Theoretical and managerial implications.

The foregoing discussion bears most directly on the quest for the "structure underlying consumer response to (advertising) stimuli". The structure uncovered in the analysis across messages is not necesarily relevant since, a.o., the sample may be biased. Potentially valid discriminators between efficient and inefficient messages could vanish as a result.

On the other hand the structure found within a single message may be subject

to its own restrictions. Striving for completeness by studying the response structure found for each of a representative sample of stimuli may be difficult, in case the separate results are contradictory.
These difficulties could better be resolved if a theoretical model of the evaluative process were available (in the vein of the theoretical model of consumer behavior) specifying which variables to attend to and, subsequently, how best to measure their impact. In view of of the present state of consumer and advertising research, a "muddling through empiricism" is the best available substitute.

While the issue of variability in the dispersion of evaluative responses appears relatively less complex, it has not been treated systematically in the research literature. Larger dispersion in an evaluative judgment may be due either to systematic variation or to error variance. Systematic variation is necessary if a variable is to be valid in concurrent or predictive correlational research (5), while the dispersion affects the decision making process in screening advertisements.

II. METHODOLOGICAL CONSIDERATIONS.

The analysis of the stability of the response structure proceeds by applying various methods of analysis to association data. These associations consist mainly of covariances, correlations and higher ordinal distance metrics between either traits or messages. The interpretation is usually of a dimensional or taxonomic nature.

1. Analysis of covariance matrices.

The hypotheses of similarity of independent covariance matrices can be tested in a parametric way (6). Instead of such direct testing, the structure underlying two or several covariance matrices is amenable to comparison through confirmatory factor analysis (analysis of covariance structures). This method allows comparative testing of gradually more restrictive hypotheses imposed on the structure of one or of several covariance matrices (7,8).

Basing the analysis on covariance data has the drawback that the results are influenced by the dispersion of the measures as well as by the intensity and direction of their associations.

2. Analysis of correlation data.

Correlation data are not affected by measure dispersion[1]. Unfortunately, the complexity of parametric tests on correlation matrices precludes direct comparisons. Instead, one has to fows on the underlying structure.

Although strictly not applicable to correlation matrices, maximum likelihood factor analysis can accommodate them numerically. The same strategy for data analysis can be followed as for covariance matrices.

Three-mode Factor Analysis is suited for the reduction of data cubes, but rather complex and computationally involved (9).

3. Nonmetric configuration analysis and synthesis.

Nonmetric analysis is not confined to interval data and often results in a dimensionally more parsimonious structure. Measures of association between response dimensions or between messages can be input. In the first case a distance matrix for traits is obtained within each message and the systematic variation of this matrix across advertisements can be investigated, a.o. through configurational synthesis. In the second case, inter-message distances are computed directly from their response pattern.

These three approaches to the data have been discussed mainly in the framework of comparisons of within-message response pattern. They are equally suited for comparisons of the across-pattern with other patterns.

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1. At least if the dispersion is not an indication of error variance, hence of lower measure reliability and of attenuation in the correlations.

III. DATA.

The data consists of respondent evaluations of 24 advertisements on 18 three-point scales (table 1). Each message is evaluated by a sample of 25 subjects, with partially overlapping samples rating different messages. The advertisements were selected from a leading Belgian women's weekly and represent a variety of products, themes, appeals and formats. Each respondent was asked to rate 12 stimuli (scales within advertisements). Advertising stimuli and rating scales were rotaded systematically (10).

TABLE 1 : Evaluative scales (1 : agree, 2 : neutral, 3 : disagree).

1. eye catching message
2. visually pleasing message
3. new learning through message
4. interesting message
5. informative message
6. persuasive message
7. low credibility message
8. message by positively valued source
9. personally relevant message
10. curious disbelief through message
11. message easy to retain
12. message creates favorable attitude
13. clear, understandable message
14. message for usefull product
15. familiar message
16. message improves recognition
17. image-building message
18. behavioral impact of message.

IV. ANALYSIS.

1. Clustering of advertisements.

A distance metric for inter-stimuli differences in response pattern was obtained in three separate ways : (a) directly through the significance level of the test for equality of covariance matrices, (b) indirectly by computing distances between the correlation matrices for pairs of messages and (c) indirectly on the INDSCAL-weights from the computation of a joint

configuration for inter-trait similarities for the 24 messages[1]. The hierarchical clusering trees, when cut for a stable solution representing a good compromise between an exhaustive and parsimonious representation lead to the groupings in table 2.

TABLE 2 : Proposed clustering solutions for 24 advertisements for 3 distance metrics and associated centroïds in 3 dimensions.

Cluster elements	Distance metric : covariance test	correlation-matrix distances	INDSCAL-weights
cluster no			
1	8	8	7,10
2	14	6,14,22	9,14,18
3	13,23,24	7,11,18	12,20,23
4	1,5,6,9,12,15,16,19,21	5,13,21,24	6,8,11,22
5	2,3,4,7,10,11,17,18,20,22	3,9,10,15,17,20	2,16,17,19
6	———	1,2,4,12,16,19,23	1,3,4,5,13,15,21,24

Centroïd values on axis

cluster no	1	2	3	1	2	3	1	2	3
1	.21	-.01	-.19	-1.45	1.00	-1.06	.60	.23	.16
2	.02	-.20	.04	.37	.63	- .16	.21	.28	.21
3	.06	.08	.08	- .31	.70	.68	.51	.37	.33
4	.02	.00	.01	.40	-.36	- .94	.62	.12	.28
5	-.06	.00	- 02	- .46	-.2[illegible]	.34	.40	.56	.21
6	-	-	-	.41	- .38	.04	.36	.25	.44

The three taxonomies are clearly different, so that there is little point in attempting to improve on these solutions by means of non-hierarchical clustering programs. In addition, none of these clusterings can readily be explained by means of "objective" message characteristics such

1. The following procedures are used in the data analysis : DISTAN (computation of Euclidian inter-stimuli distances based on profile data, KYST (non-metric scaling of higher oridinal data - the TORSCA-program was used for the covariance similarity data), HICLUS (hierarchical clustering on a distance matric, compactness solution), INDSCAL (individual differences scaling), PREFMAP (unfolding analysis), SPSS (principal components factor analysis with Kaiser-extraction rule and varimax rotation).

as product, format or message strategy (see appendix). One concludes that (a) each approach to the data reflects some particular property of the response structure and (b) that the interpretation of the results should be sought in intervening variables rather than according to a stimulus-response paradigm.

2. Analysis of covariance data.

The pairwise covariance-distances between messages leads to a nonmetric multidimensional scaling of the 24 messages with stress value .154, .120, .097 and .079 in 3, resp. 4, 5 and 6 dimensions. In view of the gradual decrease in the stress function and of the rather high number of stimuli, the 3-dimensional solution was opted for here and in subsequent analyses[1]. The clustering solution in table 2 is rather not satisfactory in comparison with the groupings for other data inputs since both very small and very large clusters are formed. One may seek to interpret the configuration through external information. Since objective stimulus properties do not seem promising the average evaluative scores (which are independent of the covariances) can be used as variables of an intervening nature. Table 3 contains the correlations between the positioning coordinates of the messages, and their mean evaluation on the 18 traits on the one hand, their standard deviation on the other (in brackets).
There is a spurious dependence between the mean evaluation on a trait and its dispersion due to the limited number of steps on the scale; more extreme mean evaluations lead to lower dispersion. The correlation between mean evaluation and standard deviation of evaluations are shown in the last column of table 3. The nature of the difficulties needs further clarification. Our interest focuses on the covariance structure rather than on the mean value of the responses. The scales used on this research are such

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1. This 3-dimensional stress of .154 compares favorably with the reference value of 0.210 for 20 stimuli and the value of 0.235 for 26 stimuli given by Spence en Ogilvie (11).

that a dependence may be created between the mean evaluation and its standard deviation; differences in standard deviation which may have an effect on the positioning or clustering of the advertisements can therefore reflect differences in means rather than genuine differences in the homogeneity of responses. The data show, that the configuration of covariance matrices could be due largely to spurious effects. The "uncontaminated" information consists of the following correlations :

- for axis 1 : with the mean score on persuasiveness source evaluation, personal relevance, product evaluation, message familiarity and recognition; with the standard deviation on source evaluation, and attitude creation ;
- for axis 2 : with the standard deviation on visual pleasantness and on source evaluation;
- for axis 3 : with the mean evaluation on product evaluation and with the standard deviation on personal relevance, product evaluation and message familiarity.

The limited uncontaminated information allows us to identify axis one as the dimension which discriminates between the covariance pattern for messages deemed persuasive and personally relevant, which increase the awareness of a trusted advertiser, of a good product and of a familiar message (with homogeneous judgments concerning the source but heterogeneity concerning attitudinal effects on the one hand, and messages with opposite characeteristics on the other. This first dimension connotes familiarity and trust typical of reminder ads with variable persuasive effects. Axis 2 discriminates between messages which, may be perceived heterogeneously as far as the aesthetic appeal of the stimulus is concerned, but are homogeneously assessed in terms of their source, and stimuli which are homogeneously evaluated as, attractive or unattractive while the respondents agree on the qualities of the source. This could be expressed as "while some may like the ad and some not, most every one shares the same opinion concerning the advertiser. The third axis makes a distinction between ads

Table 3 : Simple correlations between mean evaluation and configuration coordinates or joint configuration weights for 24 advertisements.

		correlation data configuration			covariance data configuration			point mapping weights			mean-SD correlation
scale	axis	1	2	3	1	2	3	1	2	3	
1		.45[a]	-.14	-.05	-.11 (.10)	-.31 (.05)	.23 (.16)	-.51[b]	.37[a]	-.06	.58[b]
2		.47[a]	.00	-.14	-.05 (-.16)	-.33 (.42[a])	.13 (.04)	-.26	.22	-.07	.11
3		-.09	.00	-.27	.20 (-.36[a])	.28 (-.07)	-.34[a] (.21)	.70[c]	-.29	.16	-.69[c]
4		-.16	.09	.28	-.29 (.29)	.27 (.06)	-.15 (-.21)	.52[b]	.10	-.34[a]	-.20
5		-.23	-.06	.20	-.18 (-.35[a])	.27 (-.07)	-.02 (.03)	.44[a]	-.04	-.26	.74[c]
6		.32	.27	.24	-.37[a] (-.22)	-.07 (.26)	.30 (-.36[a])	.10	-.06	-.40[a]	-.37[a]
7		-.12	-.12	-.27	.15 (.26)	-.07 (-.06)	.00 (.20)	-.06	-.49[b]	.57[b]	.82[c]
8		.11	.25	.53[b]	-.63[c] (-.36[a])	.02 (-.47[b])	.03 (-.11)	-.37[a]	.25	-.50[b]	.15
9		.01	.12	.60[c]	-.67[c] (.02)	-.03 (.04)	-.14 (-.38[a])	-.44[a]	.44[a]	-.41[a]	.25
10		-.16	-.03	.26	-.42[a] (-.16)	.09 (.07)	.08 (.13)	.11	-.46[a]	.27	.85[c]
11		.43[a]	-.10	.03	-.04 (.06)	-.21 (-.01)	.18 (.31)	-.52[b]	.45[a]	-.20	.63[c]
12		-.04	.12	.36[a]	-.23 (.34[a])	.21 (.04)	-.14 (-.29)	.19	.34[a]	-.62[a]	-.03
13		-.02	.56[b]	.53[b]	-.61[c] (-.70[c])	-.33 (-.23)	.09 (.17)	-.27	-.14	-.57[b]	.91[c]
14		-.34[a]	.43[a]	.37[a]	-.35[a] (-.02)	.03 (-.18)	-.40[a] (-.59[c])	.14	.12	-.59[c]	.24
15		.26	-.18	.39[a]	-.38[a] (-.22)	-.03 (.04)	.32 (.53[b])	-.69[c]	.73[c]	-.33	.26
16		.24	-.06	.69[c]	-.71[c] (-.05)	.05 (.00)	.17 (.00)	-.58[b]	.56[b]	-.47[b]	.10
17		-.03	.19	.09	-.27 (.00)	-.06 (-.01)	-.04 (-.04)	.34[a]	-.12	-.31	-.15
18		.22	-.19	.09	-.12 (.22)	.35[a] (-.42[a])	.03 (-.26)	.15	.39[a]	-.21	-.73[c]

Significance level : a = $.01 < p \leq .05$; b = $.001 < p \leq .01$; c = $p \leq .001$

for unanimously (generally favorably) evaluated products which are known to some and unknown to others but are consistently rated in terms of their personal relevance, on the one hand, and ads with opposite characteristics on the other.

Since the analysis based on covariance data is subject to the spurious effects through the standard deviation of responses, we opt for further approaches which are not affected directly by the homogeneity of evaluative judgments.

3. Analysis of correlation data.

The 3-domensions nonmetric configuration of the advertisements on the basis of a correlation-matrix distance measure has stress .162. The correlations between advertisement coordinates and mean evaluations appear in table 3.
The first axis discriminates between memorable visual impact messages for less positively evaluated products and messages for favorably evaluated products which are less eye catching. The second axis discriminates clear, understandable messages for a favorably evaluated product from messages which are confused and for less desirable products. Axis 3 represents familiar messages judged personally relevant, persuasive and clear related to a good advertiser and a trusted product, the recognition of which is improved, at one end, and rather novel messages with less favorable evaluations and associations. The three axes therefore seem to relate to visual impact, clarity and trust/familiarity (though the second axis has no unique identifying correlations).

The configuration axes discriminate between hypothetical response patterns which do not necessarily appear under a pure form in our sample of messages. Rather, the common structure underlying the clusters formed with this correlation-distance metric should reveal the typical-reaction patterns. Maximum Likelihood Factor Analysis leading to a shared factor

solution for all messages belonging to a cluster was not feasible; due to the limited amount of measurement replication available. The average within-cluster correlation matrix for the clusters in table 2 was analyzed as a subterfuge; the number of factors extracted was set equal to the modal number of factors extracted for each message in the group separately.

Examining six factor loading matrices for their similarities and differences is a confusing exercise. Retaining only the loadings in excess of .39 in absolute value, the extent to which the same variables load together on a factor across the six analyses was examined by means of a binomial test. The null hypothesis tested is that the items which load in excess of .39 in absolute value on the same factor as a reference item are an equal probability sample of all the items. Rejection of this hypothesis means that two items are consistently associated with a factor across all six clusters.[1] The null hypothesis is rejected for the following pairs of items :

item 3 : with 4, 5, 17
item 4 : with 3, 5
item 5 : with 3, 4, 17.
item 6 : with 4
item 7 : with 10
item 8 : with 14
item 10: with 7
item 11: with 16
item 12: with 8
item 16: with 11
item 17: with 4
item 18: with 3

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1. Of the loadings in excess of .39 in absolute value, .96 % are positive in sign. Differences in factors across clusters due to the different direction in which the same traits load on the factor therefore occur infrequently.

Of these associations, those between the items 3, 4, 5 and eventually 17 or 18 come closest to representing a single factor which is replicated across all six clusters. This factor which connotes information transmission is rather important in each factor analysis. Of the remaining associations, only those between items 7 and 10 (credibility) and between items 11 and 16 (retention) are reciprocal. The first pair defines a factor which appears only twice in the six factor analyses and is either absent or part of a larger factor for other clusters. The second pair is usually part of larget factors of heterogeneous nature. The investigation of consistencies in factor structure across clusters shows that the heterogenity is relatively pronounced, as is further illustrated by the (tentative) description of the factors in table 4. Three main causes for the differences can be given : (a) the same factors are found in all or most clusters but not with sufficient strength to be able to identify them, (b) different factors prevail, in the sense that the same variable is part of response dimensions of a different nature depending on the clusters, (c) the same factors could potentially appear, but are not found due to the supression of the systematic variation of their component items in particular clusters. (Insert table 4 : Appendix).
The variability across clusters of the communality of an item relative to the communality of other items can help us distinguish among the latter explanations. Table 5 shows the average communality rank, its range and standard deviations over the six clusters for the 18 traits.

Table 5 allows us to categorize the items as those with consistently high communality (4, 5, 6, 8,11), those with consistently low communality (7, 9, 14, 16) and those with average but highly variable communality (1, 2, 3, 10, 12, 13, 15, 17, 18). The latter items are those mainly responsible for the heterogeneity in factor structure since they determine the presence or absence of a factor or since they may occur in various combinations to define new factors or to modify existing factors.

Table 5 : Statistics on the communality ranke of 18 traits in six factor analyses.

trait	average rank	range	standard deviation.
1	10.0	14	4.6
2	8.2	17	5.4
3	9.5	12	5.3
4	6.8	12	4.1
5	4.7	3	1.3
6	5.2	6.5	2.3
7	15.6	9	3.0
8	6.3	12	4.0
9	15.6	.5	1.8
10	7.8	16	6.0
11	5.8	8.5	3.3
12	10.2	13.5	4.3
13	12.2	13	5.0
14	11.5	11.5	3.6
15	11.5	15	5.0
16	10.9	9.5	3.3
17	10.2	13.5	4.7
18	8.2	15	4.4

The discussion of the factor solution per cluster should shed further light on this variability :

- Cluster 1 has a response structure which stands out as different. The centroïd values in table 2 show it to be extreme on the three configurational axes : strong visual impact, low clarity and high in trust/familiarity. The evaluation of the message is structures around six response dimensions (a) information transfer and (b) recognition (both of which seem to require established favorable dispositions) (c) visual communication with some persuasive effects and three further components of (d) familiarity, (e) credibility of image and (f) persuasion. These factors do not project pure concepts to this may be due to the idiosyncracies of this cluster containing only a single message. From the set of variable-communality traits, items 1, 2 and 3 have rather high communality and items 10, 12, and 13 rather low communality.[1]

1. High and low communality are defined as communality ranks 1 through 8 and 13 through 18 respectively.

- cluster 2 : These messages seem to operate through (a) visual stimulation of curiosity, (b) transfer of persuasive information, (c) visual-communication of information and (d) retention of the material. These reactions seem separate from the further dimensions of (e) trust, relevance and (f) messaage familiarity.
  The cluster centroïd of these messages lies away from the visual impact characteristic and shows rather low clarity and average familiarity. Items 1 and 15 rank high in communality, items 12, 13 and 18 rank low.

- cluster 3. The cluster centroïd places these messages rather high in visual impact, low in clarity and low in familiarity. The reaction pattern is characterized by lower dimensionality. Visual effects are dissociated in (a) clarity, pleasantness and (b) eye catchiness, while yielding is associated with (c) information transfer and (d) retention. Curious disbelief (e) comes as a separate dimension. Items 2, 10 and 17 rank high in communality, items 1, 3, 15 low.

- cluster 4. The cluster centroïd indicates low visual impact, high clarity and familiarity. The structure of the reaction pattern differentiates between (a) visual impact, (b) yielding and (c) information transfer, in the context of further independent reactions concerning (d) familiarity, relevance, (e) product or source evaluation and (d) curious disbelief. High-communality items are the traits 10, 12, 18 while 2, 13, 15 and 17 are low in communality.

- cluster 5. The cluser centroïd characterizes these messages as rather high on visual impact, clear and rather low in familiarity. The structure shows yielding to be related both to (a) visual impact and (b) retention with (c) information transfer and (d) credibility as separate communication process variables. Message familiarity (e) and product/source evaluation (f) are additional but separate reactions. High-communality items : 2, 12, 13, 18, low-communality items : 10, 15, 17.

- cluster 6. This largest cluster has a centroïd indicating low visual impact, clarity and intermediate familiarity. The structure of the reaction process seems to consist of elementary, isolated "building blocks" : (a) information transfer, (b) visual impact, (c) yielding, (d) credibility, (e) product evaluation and (f) familiarity. The high-communality items are : 3, 10, 13 and 17, the low-communality items are 1 and 2.

This rather lengthy discussion of the separate clusters is necessary in order to document the variability in response structure of interest to us. The factorial solutions within clusters should next be compared to the structure underlying the matrix of correlations between mean evaluation scores. Factor-analyzing the latter matrix leads to only four factors which can be labeled as

1. Information transfer/yielding (+3, +4, +5, +6, +12, +14, +17, +18)[1]
2. Familiarity, product and source evaluation (-3, +8, +9, +13, +14, +15, +16)
3. Visual impact retention and behavioral impact (+1, +2, +4, +18)
4. Credibility (+7, +10, -12, -15).

Computing distances between this correlation matrix and the within-message matrices, one may position the former in the space of the latter. This external analysis positions the correlation matrix of means with a significant fit both as point (r = 84) and as vector (r = 70). The point representation localizes the correlation matrix on means closest to cluster 5. The structure of the responses at this "aggregate" level appears more synthetic than the structure found at the level of the cluster and could be compatible with the response structure of a particular group of messages rather than represent the common denominator in reaction pattern.

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1. Items loading on the factor and direction of loadings in brackets,

3. Configurational Synthesis.

Starting from a trait-by-trait distance matrix for each message, a joint configuration for traits and a set of dimension weights for individual differences analysis is computed. The coordinates of the three-dimensional joint solution, as well as the comparable configuration obtained from the mean evaluations are shown in table 6.

Table 6 : Joint configuration for 18 traits in 3 dimensions (24 messages).

	JOINT CONFIGURATION AXES			MEAN-EVALUATION CONFIGURATION AXES		
trait	1	2	3	1	2	3
1	.12	-.11	.14	-.06	.01	.38
2	.08	-.06	.05	.24	-.12	.71
3	-.52	-.08	-.37	1.06	-.40	-.37
4	-.28	.02	.14	.20	-.13	-.43
5	-.32	.07	.13	.05	-.21	-.40
6	-.22	-.07	.15	.47	-.03	-.08
7	.14	.33	-.74	-.05	-.52	.18
8	.10	.02	.03	-.15	.32	-.02
9	.11	-.30	-.19	.27	.28	.003
10	.24	.50	-.23	-.77	-.35	.03
11	.24	-.11	.15	-.28	.09	.39
12	-.11	-.11	.09	.14	.05	-.17
13	.30	.45	.17	-1.25	-.05	.10
14	.04	.01	.08	.04	.23	-.41
15	.31	-.42	-.00	-.04	.85	.31
16	.19	-.04	.19	-.33	.18	.05
17	-.15	.18	.21	-.21	-.20	-.13
18	-.25	-.29	.02	.67	-.01	-.16

The joint configuration solution is most restrictive since it allows only uniform stretching or shrinking of its axes to accommodate the idiosyncracies in the response pattern for a single message. The rather low mean square correlation coefficient of.43 is an indication of the restrictiveness of individual differences analysis for this data. The identification of the axes in the joint configuration is difficult, especially for the

second and third dimension. The first dimension is characterized by transmission of novel and persuasive information on the one extreme and by familiarity, ease of understanding and retention on the other. The second axis represents familiarity, relevance and behavioral impact on one end, disbelief on the other. The third axis is characterized by disbelief and new learning at one extreme and by a complex set of variables expressing visual impact, a information, persuasion and retention in the other direction. Higher weights on each of these axes indicate that the reaction pattern is more clearly structured along that dimension or explained by the underlying concept. These concepts seem to be (a) transmission of new and persuasive information vs. known information and messages, (b) familiar, relevant and efficient messages vs. disbeleif and (c) disbelief of novel information vs. simple, interesting, persuasive and novel messages.

The cluster solution in table 2 shows the average weights for the messages pertaining to each cluster. These weights can be investigated through their correlations with the mean evaluation scores in table 3. Higher weights on axis 1 are seen to correlate with the evaluation of messages as eye catching, low in information transfer, easy to retain, familiar, relevant, pertaining to a good source and not image-building. Stronger weights on axis two are related to evaluations of lower credibility, low familiarity and retention, low relevance, limited attitudinal and behavioral effects. Messages emphasizing axis 3 tend to be evaluated as interesting and persuasive, credible and relevant pertaining to a good source and product, clear and improving recognition.

The joint interpretation of the configuration axes and of the determinants of the associated weights is difficult. This may be due to the aforementioned restrictiveness of the individual differences model; separate INDSCAL-runs for each cluster of messages would be more appropriate.

The configuration for the distance metric derived from mean evaluation scores is different from the joint configuration computed on the basis of the individual advertisements. The identification of the axes is not easy. Looking at the first dimension we have on the one side new learning, behavioral impact and on the other side clear, understandable message and curious disbelief. The second dimension can be identified as new, unknown vs. trust/familiarity. The third dimension is characterized by informative at one extreme and by visual impact in the other direction.

The mean-square correlation coefficient of .67 for two configurations is not particularly high. The joint configuration stresses the three dimensions relatively equally (.41, .56, .38), while the mean-evaluation configuration weighs them unevenly (.63, .06, .29) and almost excludes the second axis.

V. DISCUSSION.

The result of our study can hardly be called conclusive. Since no clear hypotheses were formulated at the outset, the purpose was to investigate a problem area, so that the questions could be formulated more clearly. This will be done with regard to the outcome of the analyzed data, with regard to theoretical and methodological issues and with regard to advertising pretesting practice.

1. Conclusions from the analysis.

Three approaches to the organization and analysis of the data were compared in this paper. These approaches lead to quite heterogeneous taxonomies or dimensional interpretations of the result. The differences are due partly to the input data (covariances, correlations, distances) and partly to be model imposed on the data. The analysis starting from covariance data is impaired by spurious end-of-scale effects. Yet, the most discriminating characteristic for the covariance patterns is that

of familiarity. This confirms the expectation that the structure of response to familiar stimuli is different from that to stimuli presenting some form of novelty (12). There is some indication that the dispersion of evaluative responses contributes to the heterogeneity in response patterns next to the intensity and direction of associations.

The clustering based on correlation-matrix distances does not find a straightforward explanation in terms of objective stimulus factors. This finding, though not tested statistically holds for the three approaches to the data. It stresses the point, also made elsewhere, that mediating reactions should be attended to in advertising research (13). The configuration of correlation matrices allows us to identify two discriminating axes clearly : visual impact and trust/familiarity, the latter reinforcing the covariance-data results. Factor-analyzing the aggregate correlation matrix leads to a factorial structure both more simple and different from the factor structure revealed at the level of clusters of advertisements. Negative factor loadings occur more frequently in the "aggregate" factor analysis, while they are rare at the cluster level. Comparing the factor-analysis results across cluster, one finds the "informationtransmission" factor replicated as an important dimension across all clusters. The remaining factors are somewhat to very different from cluster to cluster.

The heterogeneity is confirmed by the individual differences analysis, which seems to impose too much homogeneity on the response pattern appropriate to each message. The dimensions of the joint configuration of traits are not easily interpreted, though the first dimension combines the concepts of familiarity and of information transmission which appear in one form or another throughout the analysis.

2. Theoretical and methodological considerations.

The study of the underlying dimensions of consumer response to advertising stimuli is important in its own right and for better pretesting practice. This study is directed mainly at an investigation of the intensity and direction of associations between response dimensions. The dispersion of evaluative responses is an element of the reaction pattern which should be included in the study objects. There are two basic approaches to studying the structure of multidimensional responses to multiple objects : averaging the data a priori and examining the associations at the aggregate level, or estimate a joint structure for the disaggregated data. The latter analysis seems too restrictive, so that it has to be carried out for several homogeneous groups of stimuli. This last solution is more in line with the inherent variability and predominance of interaction effects in "real life" consumer behavior. (14)
The aggregate-data results and the grouped-individual-data results reveal different structures for the multidimensional reaction pattern : the number of underlying dimensions and their nature vary. Unless one attributes these differences to spurious causes (such as the supression of some response factor at the aggregate level or at the level of the cluster), fundamental questions are raised concerning the structure of the reaction process.

The methodological approach adopted with the correlation-data seems most promising for this problem. Maximum Likelihood Confirmatory Factor Analysis appears to be the indicated mode for data analysis and hypothesis-testing, provided that a sufficient sample size is available.

3. Considerations for advertising pretesting.

The consumer-jury method of pretesting consists of having respondents evaluate advertising messages on rating scales. It is often dismissed as a pretest method of low validity, a.o. because of the alien

role of judge imposed on the respondents (15). Still, the method has an appeal because of its ease, degree of structuration and explicit multi-dimensional nature. For actual applications of the consumer-jury method, the number and context of the rating scales has to be defined with regard to the diagnostic and predictive validity of the evaluations. Our analysis points out that the number of evaluative dimensions needs to be larger than the number usually uncovered by factor-analyzing aggregate results. The scales to be used, or at least their relative weight should probably differ depending on the type of message and communication context. A multiple trait-multiple message validation exercise may prove unrewarding unless the messages are confined to homogeneous groupings. Finally, the dispersion of the evaluative responses has received too little attention in comparison to the mean evaluation.

APPENDIX : Main Characteristics of Advertising Stimuli.

message number	product	colour	more than 50 words of body copy	message strategy
1	household cleaner	yes	no	demonstration/demonstration by analogy
2	household cleaner	yes	yes	demonstration/newness
3	vegetable cutter	yes	no	product presentation/demonstration
4	glassware	no	yes	product presentation
5	yoghurtmaker	yes	yes	presentation/demonstration
6	household cleaner	yes	no	demonstration
7	toilet soap	yes	no	imagery
8	toilet soap	yes	yes	testimonial
9	haircould cutter	no	yes	demonstration
10	socks	yes	no	presentation
11	underwear	yes	no	presentation
12	carried vegetables	yes	yes	testimonial/reason-why
13	dishwasher	yes	yes	reason-why
14	dishwasher	no	yes	informative
15	water	yes	yes	reason why/imagery
16	chocolate spread	yes	yes	presentation/characterization
17	household cleaner	yes	yes	presentation
18	syrup spread	yes	yes	presentation
19	batteries	no	yes	benefit demonstration/fear
20	bananas	yes	no	brand name identification
21	detergent	no	yes	reason why/informative
22	detergent	yes	no	anonymous testimonial
23	detergent	yes	no	demonstration
24	frozen vegetables	yes	yes	presentation

Table 4 : Tentative Interpretation of Factors per Cluster (item number and sign of loading in excess of .39 absolute value in brackets).

CLUSTER 1.

F11 VISUAL IMPACT retention and attitude creation (+1,+2,-3,+11,+12)
F12 INFORMATION TRANSFER for a brand to which one is favorably disposed (+3,+4,+5,+14,+18)
F13 FAMILIARITY and personal relevance (+8,+9,+12,+15)
F14 RECOGNITION of relevant message and favorably evaluated brand (+9,+14,+16)
F15 CREDIBLE IMAGE (-7,+17).
F16 PERSUASION without curious disbelief (+6,-10)

CLUSTER 2.

F21 INFORMATION TRANSFER and yielding (+3,+4,+5,+6,+17,+18)
F22 VISUALLY PLEASANT-CLEAR message leading to curiosity thoughts (+2,+10, +13,+14)
F23 RETENTION (+11,+14,+16)
F24 RELEVANCE/TRUST (+8,+9)
F25 VISUAL INFORMATION (+1,+5)
F26 MESSAGE FAMILIARITY (+15)

CLUSTER 3.

F31 INFORMATION TRANSFER and yielding (+3,+4,+5,+12,+17,+18)
F32 RETENTION and yielding (+11,+12,+16,+18)
F33 VISUAL CLARITY, pleasantness (+2,+13,+17)
F34 VISUAL IMPACT with familiarity and trust (+1,+2,+4,+6,+8,+14,+15,+17)
F35 CURIOUS BISBELIEF (+10)

CLUSTER 4.

F41 VISUAL IMPACT and retention of clear message (+1,+11,+13,+17)
F42 FAMILIARITY RELEVANCE (+9,+11,+15,+16,+18)
F43 PRODUCT/SOURCE EVALUATION (+8,+14)
F44 YIELDING (+4,+6,+12,+18)
F45 INFORMATION TRANSFER (+3,+4,+5)
F46 CURIOUS DISBELIEF (+10)

CLUSTER 5.

F51 RETENTION/YIELDING (+6,+11,+16,+18)
F52 INFORMATION TRANSFER (+3,+4,+5,+6,+17)
F53 MESSAGE FAMILIARITY (-3,+13,+15,+16)
F54 VISUAL IMPACT and yielding (+1,+2,+12)
F55 PRODUCT/SOURCE EVALUATION (+8,+14)
F56 CREDIBILITY (+7,+10)

CLUSTER 6.

F61 INFORMATION TRANSFER (+3,+4,+5,+17)
F62 VISUAL IMPACT, retention (+1,+11)
F63 YIELDING (+4,+6,+12,+18)
F64 CREDIBILITY (+7,+10)
F65 PRODUCT EVALUATION (+13,+14)
F66 MESSAGE FAMILIARITY (+15)

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