THE FORCED-FREE DISTINCTION IN Q TECHNIQUE: A NOTE ON UNUSED CATEGORIES IN THE Q SORT CONTINUUM

Charles E. Cottle
University of Wisconsin

Bruce McKeown
Seattle Pacific University

A few questions persist concerning the shape of the response distribution in Q-technique studies. Brown (1971) has shown that the shape of the response distribution has no effect in factor-analytic terms upon the results of Q studies. To demonstrate this, he constructed a number of distributions for a hypothetical sorting and then recorded the statement ranks of each item while maintaining to the greatest extent possible the same rank order of the items for each distribution. The last distribution was completely random to the first. The results appeared conclusive after factor analyzing the data. Each Q sort, regardless of distribution shape, loaded highly on the first factor (.93 or above) with the exception of the last which, being random to the first Q sort, loaded not at all on the first factor but on the second with the rounded figure of 1.00. These findings indicate that no important statistical information is lost in Q studies when response distribution patterns deviate from a normal curve. Hence, unstructured free-choice distributions are just as valid for factor analysis

Operant Subjectivity, 1980(Jan), *3*(2), 58-63.

as are forced-choice quasi-normal distributions. This finding accords a great deal of flexibility to both researcher and respondent insofar as Q technique is relatively free of obtrusiveness on this score.

While Brown's paper is technically correct, a question arises concerning the practicality of his findings. His concluding remarks bear out this possibility:

> Under free-sort conditions, *S*s may not use all of the categories along the Q-sort continuum, and some may not employ the entire range. Such discrepancies will, to some extent, alter the factor structure in any given study, and additional investigation may be necessary to establish limiting circumstances. (p. 286)

Sherif and Sherif (1967) state that their studies in social judgment theory reveal that subjects with greater ego-involvement invested in an issue will use fewer categories of judgment to describe phenomena than subjects with lesser ego-involvement. In light of this observation, Brown's warning seems pertinent if one intends to use Q sorts completed under free-sort conditions. This paper reports the results of an exercise designed as a first step toward the "additional investigation" called for.

Our first step was in part to replicate Brown's study by constructing identical distributions; furthermore, we added seven distributions in which available categories were not used. These distributions are presented in Table 1 and a visual presentation of each response surface, which dramatizes the distributions, is shown in Figure 1. Distributions *A* through *I* constitute the partial replication of the Brown study. Distribution *Q* is completely random to *A* and should not correlate with any of the other distributions.

The data were intercorrelated and factor analyzed using the principal components method with unity in

TABLE 1
Q Sorts With Varying Distributions
($N = 45$)

Distribution	-4	-3	-2	-1	0	+1	+2	+3	+4	Mean	SD
A	2	3	5	8	9	8	5	3	2	0.0	1.97
B	5	5	5	5	5	5	5	5	5	0.0	2.58
C	9	7	4	2	1	2	4	7	9	0.0	3.16
D	2	5	10	5	1	5	10	5	2	0.0	2.33
E	1	2	10	2	15	2	10	2	1	0.0	1.84
F	2	8	2	8	5	8	2	8	2	0.0	2.31
G	1	1	15	1	9	1	15	1	1	0.0	1.96
H	1	2	3	4	5	6	7	8	9	1.3	2.21
I	9	8	7	6	5	4	3	2	1	-1.3	2.21
J	9	7	6	0	1	0	6	7	9	0.0	3.20
K	9	13	0	0	1	0	0	13	9	0.0	3.41
L	16	0	0	0	13	0	0	0	16	0.0	3.37
M	0	0	17	1	9	1	17	0	0	0.0	1.75
N	1	2	3	4	5	6	0	7	17	1.7	2.43
O	17	7	0	6	5	4	3	2	1	-1.7	2.43
P	23	0	0	0	0	0	0	0	22	-0.1	4.00
*Q**	2	3	5	8	9	8	5	3	2	0.0	1.97

*Random to *A*

the diagonal. The rotated factor matrix is displayed in Table 2. The most obvious conclusion to be drawn from Table 2 is that for the distributions used in this study, only the last (*Q*), which was random to the first, merited a second factor. As expected, distributions *A* through *I* loaded on the first factor. Distributions *J* through *P* also are found on the first factor providing evidence that a great deal of leeway is possible when dealing with free-choice distributions. Even dichotomous distributions are acceptable, as shown by distribution *P*.[1] These findings

[1]Although it may not be intuitively obvious, the correlation (r) generated between *P* and any of the other distributions approximates r_{pb} (point biserial), which is a special case of Pearson's r (see McNemar, 1969: 218).

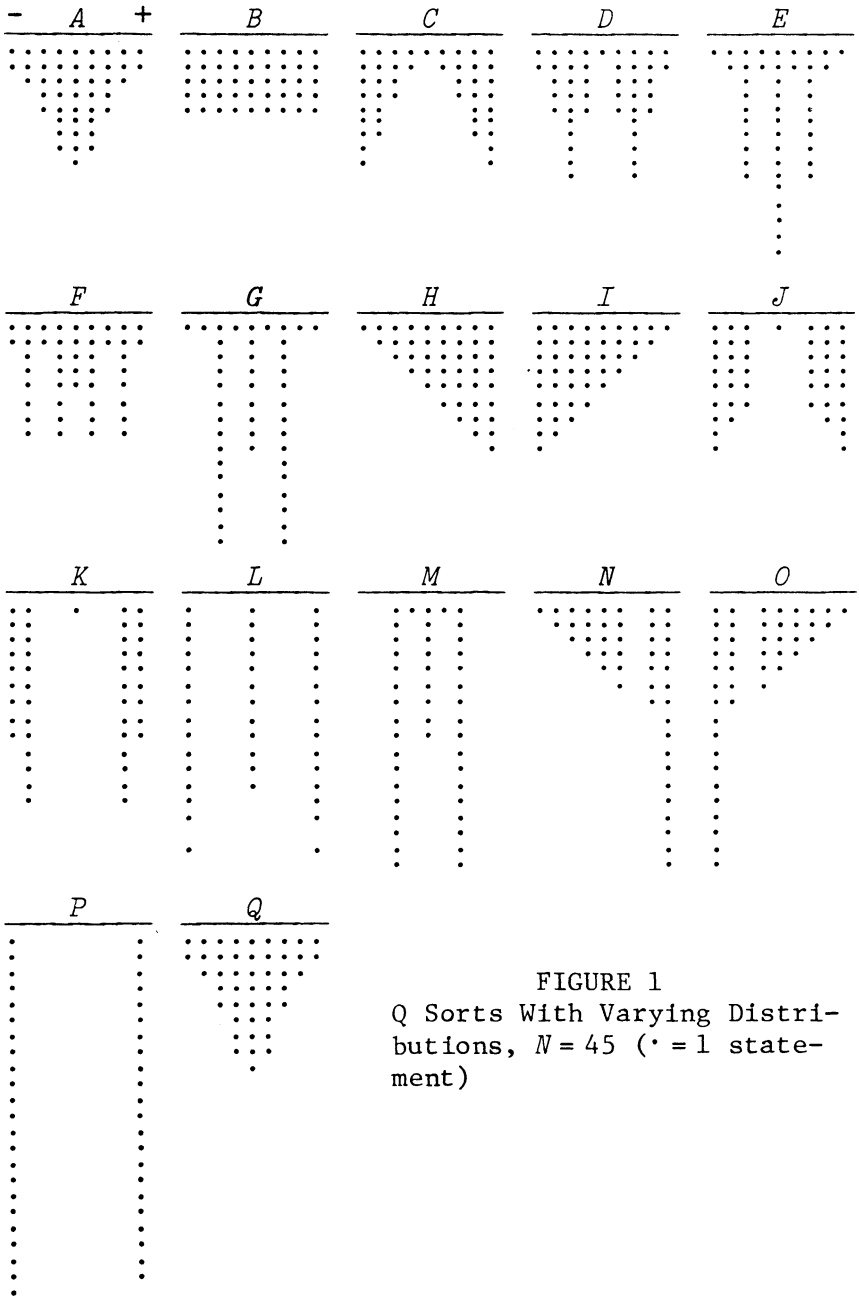

FIGURE 1
Q Sorts With Varying Distributions, $N = 45$ (· = 1 statement)

suggest that one should not reject Q sorts simply on the basis of the shape of the response surface. In fact, some of the most interesting subjects for intensive analysis just might be those deviating from a response distribution approaching a normal curve.

TABLE 2
Rotated Factor Matrix

Distribution	Factors I	Factors II	Distribution	Factors I	Factors II
A	.959	-.021	*J*	.984	.003
B	.975	-.010	*K*	.959	.014
C	.985	.004	*L*	.948	.015
D	.988	.008	*M*	.965	.019
E	.909	-.066	*N*	.946	.034
F	.974	-.009	*O*	.918	-.028
G	.971	.013	*P*	.915	.057
H	.956	.018			
I	.960	-.027	*Q*	.004	.998

To conclude, two points seem pertinent. First, we have drawn our conclusions within a factor analytic framework, and although the varying distributions of the Q sorts do not appear to affect factor structure, intercorrelations between Q sorts are affected by changes in distribution shape. We are not concerned with that problem here, however. Second, we must underscore the point that Q, as an alternative to traditional (R) methodology, is more than a technique. Whereas we have studied a technical aspect and its implications for the conduct of Q-technique research (e.g., one might use a questionnaire format in order to facilitate data gathering) and the substantive issue raised by Sherif and Sherif, we are reminded of Stephenson's (1953) proclamation that "the concern is with more than the simple operations called 'Q-technique.' Rather, it is with a comprehensive approach to the study of behavior, where man is at issue as a total thinking and behaving being" (p. 7). Thus, the technical components (our present concern) should not overshadow the validity of the total methodology.

Charles E. Cottle, Department of Political Science, University of Wisconsin-Whitewater, Whitewater, WI 53190
Bruce McKeown, School of Social and Behavioral Sciences, Seattle Pacific University, Seattle, WA 98119

REFERENCES

Brown, S.R. The forced-free distinction in Q-technique. *Journal of Educational Measurement*, 1971, *8*, 283-287.
McNemar, Q. *Psychological statistics*. New York: Wiley, 1969.
Sherif, C.W. & M. Sherif. *Attitude, ego-involvement and change*. New York: Wiley, 1967.
Stephenson, W. *The study of behavior*. Chicago: University of Chicago Press, 1953.

Operant behavior...is the primary concern in Q methodology, that is, an achieved objectivity free from categories imposed by the scientist; the behavior belongs to the Q-sorter and his concrete situations. (Stephenson)