Bousfield expected clustering index: Table of values

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In an attempt to facilitate the investigation of categorical clustering, this article presents tabled values for Bousfield's expected clustering index (Bousfield & Bousfield, 1966). The Bousfield expected clustering (BEC) formula from which the tabled values are derived is the following:

$$E(c) = \frac{\sum m_i^2}{n} - 1 \quad (1)$$

where (1) $E(c)$ is the expected clustering value; (2) m_i is the number of words recalled in a given verbal category; (3) n is the total number of words recalled in all categories. The table provides an expected clustering or "chance clustering" value for any experimental situation that involves up to 10 verbal categories and up to 10 words within any or all categories. It is also suggested that investigators consider the Hudson and Dunn (1969) approach in the use and interpretation of expected clustering values.

The table requires up to 10 terms, Groups 1-10, to locate an expected clustering value for a specific experimental situation. Group 1 is the number of recalled words in the verbal category with the most

recalled words. Group 2 is the number of recalled words in the second largest recalled category. Groups 3-10 are similarly determined, where Group 10 is the number of recalled words in the least recalled verbal category. Obviously, if there are only six categories, Groups 7-10 will be zero in all cases. Likewise, if there are only four categories, Groups 5-10 will be zero in all cases.

For illustration, consider the case of six categories: The S remembers 6 items in one category, 5 items in two more categories, and 4, 1, and 0 items in the last three categories, respectively. In this case, ordering is from highest to lowest: Group 1 = 6, Group 2 = 5, Group 3 = 5, Group 4 = 4, Group 5 = 1, Group 6 = 0. In addition, Groups 7-10 are also 0, since there were only six groups. The appropriate BEC value for these parameters is shown in Table 1, which provides a partial listing of the entire table.¹ Thus, when a S recalls 6, 5, 5, 4, 1, and 0 items, he may be expected to produce 3.905 categorical clusters by chance alone.

REFERENCES

- Bousfield, A. K., & Bousfield, W. A. Measurement of clustering and of sequential constancies repeated free recall. *Psychological Reports*, 1966, 19, 935-942.
Hudson, R. L., & Dunn, J. E. A major modification of the Bousfield (1966) measure of category clustering. *Behavior Research Methods & Instrumentation*, 1969, 1, 110-111.

NOTE

1. The program for generating the entire table as well as directions for altering the program for a less expensive table are available from the authors. In addition, printouts of the table are available up to Size 10 (categories) by 6 (items in each group).

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Table 1
Partial Listing of 10 (Number of Groups) by 6 (Number of Items in a Group) Table

Group										BEC
1	2	3	4	5	6	7	8	9	10	
6	5	5	3	3	3	3	3	3	1	3.029
6	5	5	3	3	3	3	3	3	2	3.000
6	5	5	3	3	3	3	3	3	3	3.027
6	5	5	4	0	0	0	0	0	0	4.100
6	5	5	4	1	0	0	0	0	0	3.905
6	5	5	4	1	1	0	0	0	0	3.727
6	5	5	4	1	1	1	0	0	0	3.565
6	5	5	4	1	1	1	1	0	0	3.417
6	5	5	4	1	1	1	1	1	0	3.280
6	5	5	4	1	1	1	1	1	1	3.154
6	5	5	4	2	0	0	0	0	0	3.818
6	5	5	4	2	1	0	0	0	0	3.652
6	5	5	4	2	1	1	0	0	0	3.500
6	5	5	4	2	1	1	1	0	0	3.360