A study of the one-year stability of the Michigan Free and Restricted Association Norms¹

WILLIAM L. GEKOSKI AND KLAUS F. RIEGEL

UNIVERSITY OF MICHIGAN

The stability of all 17 tasks of the Michigan Free and Restricted Association Norms has been tested over a period of a year. Wide differences in stability were observed between tasks but not between stimulus frequencies. Sex differences in stability were noted and comparisons made between one-week and one-year stability.

Word association norms are increasingly applied in studies of verbal behavior. For this reason, information on the stability of association is of importance. A previous study (Gekoski & Riegel, 1966) reported the stability of four tasks of the Michigan Restricted Association Norms (Riegel, 1965a, b). Over a one-week period, Superordinate responses were found to have the greatest stability, Free Associations to have somewhat less, Parts less still, and Following Words least of all. In the present study, Ss were retested after a one-year period. Individual and group analyses were performed to investigate the effect of task instruction, stimulus frequency, sex, and length of intertest interval upon stability. Such information is useful for determining the suitability of the Norms for various experimental purposes, as well as for defining reference points to which the distributional overlap of any two experimental groups may be compared, such as may be done for groups varying in age (Riegel, Riegel, Smith, & Quarterman, in press), in creativity (Riegel, Riegel, & Levine, 1966), or in proficiency of first and second language usage (Ramsey, Riegel, & Riegel, in press).

Method

Ss, 25 male and 25 female students enrolled at the University of Michigan, were given 33 stimuli selected from the Michigan Norms. There were 21 nouns, six verbs, and six adjectives. Eighteen were of high (AA) and 14 of low (<AA) frequency, according to the general count of Thorndike & Lorge (1944).

Free associations plus the 16 restricted association tasks of the Michigan Norms were employed. As shown in Table 1, five of the latter have been denoted as logical, six as infralogical (physical), and five as grammatical tasks. Ss responded to each stimulus under each task restriction. Stimuli and tasks were counterbalanced in the test booklets. The first testing was completed in conjunction with the collection of the Michigan Restricted Association Norms. Retesting occurred approximately one year after the initial testing. Further information concerning procedures and results are available in a Technical Report (Gekoski, 1965).

Analysis

The following measures were used in the analysis: intra-individual stability (II = percent of intra-individual agreement in responses between sessions averaged over Ss and stimuli); minimum group overlap (MGO = percent of identical words occurring in the response distributions of both sessions averaged over stimuli; the lower of the two percentages is always used in the evaluation); group overlaps (GO 1 = percent of words in the first distributions which also occurred in the second distributions averaged over stimuli; GO 2 = percent of words in the second distribution which also occurred in the first averaged over stimuli).

The following simplified example will clarify the three measures. If the word BLADE is given eight times in the first and five times in the second session as a Part to the Stimulus KNIFE, and the response HANDLE occurs three times in the first and four times in the second session, then minimum group overlap (MGO) is $5 + 3 = 8$; group overlap for Session 1 (GO 1) is $8 + 3 = 11$; and group overlap for Session 2 (GO 2) is $5 + 4 = 9$.

Results

For each task the various measures of stability are given in Table 1. Significant differences in stability were noted as a function of task instruction but not as a function of stimulus frequency. The amount of group overlap did not differ significantly as a

Table 1. Intra-Individual (II) and Inter-Individual (MGO, GO 1, GO 2) Stability in Percentages as Explained in Text

	II	MGO	GO 1	GO 2
Free Associations	28	54	67	74
Logical Tasks	30	63	74	74
Superordinates	31	66	75	77
Subordinates	20	50	64	62
Coordinates	28	66	76	77
Similar	35	68	79	79
Contrasts	38	66	78	77
Infralogical Tasks	23	56	67	68
Parts	24	56	67	70
Wholes	27	59	71	72
Locations	31	59	72	71
Precedings	25	59	69	69
Succeedings	16	50	62	62
Contemporaneities	17	52	60	66
Grammatical Tasks	19	48	58	58
Nouns	26	56	65	68
Verbs	29	57	66	68
Adjectives	17	48	59	59
Foregoing Words	13	40	49	49
Following Words	12	39	49	49

function of test session, thus suggesting that no dramatic growth, development, or restructuring of the associative networks had occurred during the year interval. On each measure of stability logical tasks were highest, infralogical and Free Associations were lower, and grammatical tasks were lowest. However, there was considerable overlap among these categories. Males showed significantly greater stability than females. Comparisons with data from the study of one-week stability showed slightly lower inter-individual stability for the one-year than for the one-week retest group; intra-individual stability was considerably lower for the one-year retest group. The latter findings are apparently an indication that each individual undergoes greater changes over a long period of time than does a large and relatively homogeneous group of Ss. The absolute magnitude of stability can be regarded as sufficient for most experimental applications. Information on differences in stability among tasks will prove useful in investigations presently underway of the relevance of various dimensions of meaning to the analysis of associative structure.

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Note

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