Hill Interaction Matrix (HIM) scoring and analysis programs

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The Hill Interaction Matrix (HIM) is designed for quantitative evaluation of interactions within therapy groups (Hill, 1965, 1967, 1969a, c, 1971, Note 1, Note 2), as well as within other types of group settings (Gutzmer & Hill, 1973; Hill, 1969b, 1973). Each interaction is scored for style and content. Style is subdivided analytically into four ordinal categories of increasing therapeutic value, that is, conventional, assertive, speculative, and confrontive. Similarly, content is subdivided into general topic, group, personal, and relationship. When cross-tabulated, these categories generate a 4 by 4 matrix. In this matrix, columns specify types of content, rows delineate different styles of interaction, and cells represent simultaneous measures of content and style. Interactions scored in the lower right of the matrix are considered more therapeutic than those scored in the upper left. This technique of evaluating interactions has been shown to be valid and reliable (Hill, 1965; Sisson, 1971).

HIM Computer Programs 1, 2, 3A, 3B, and 3C score and analyze verbal interactions according to the Hill procedure. In general, HIM Program 1 organizes input data into matrix displays; HIM Program 2 computes derivative indices and scores; HIM Programs 3A, 3B, and 3C calculate alternate measures of the therapeutic effort expended by group participants. Each program is designed to evaluate groups of any size and to score a maximum of 15 sessions or group meetings. The programs are written in FORTRAN IV. Although the programs have been implemented on an IBM 370/168, conversion to other systems should require minimal reprogramming.

HIM Program 1

Input. Input consists of one data card per participant for each group meeting, up to a maximum of 15 meetings. For each group member or therapist, data cards must be in session sequence, and the number of cards per person must equal the number of sessions specified on the program control card. Each data card contains an individual's identification number, a therapist or member designation, a session number, and the 16

HIM cell frequencies. Special codes "098" and "099" indicate missing values.

Output. For each therapist and member in the group, the following information is printed by single session, by 5-session cluster, and by 15-session cluster: 16 cell frequencies in matrix format; marginal frequencies, average cell frequencies, and marginal percentages; total frequency, overall average cell frequency, and total percentage; a risk ratio and an intragroup ratio (Hill, 1965). Identical output is printed for clusters of group participants as follows: master table (entire group), members' table (all members), therapists' table (all therapists). The program also generates three optional tapes. The risk and intragroup ratios are written on Unit 8, together with appropriate individual and session identifiers. Output from Units 15 and 16 is required input for HIM Program 2. The tape from Unit 15 is also required input for HIM Programs 3A, 3B, and 3C.

Storage. On an IBM 370/168, the storage requirement is 112K bytes.

Running Time. With a test data set of 12 group participants, running time on an IBM 370/168 is approximately 3.80 sec.

HIM Program 2

Input. Output on Units 15 and 16 from HIM Program 1 serves as input to this program.

Output. For each therapist and member in the group, values for the following 12 variables are printed by session: Hill work (W) (Hill, 1965), percent W, percent contribution to W; directly oriented interactions (DOI), percent DOI, percent contribution to DOI; indirectly oriented interactions (IOI), percent IOI, percent contribution to IOI; nonoriented statements (NOS), percent NOS, percent contribution to NOS. (DOI, IOI, and NOS are described by Yalom, Houts, Newell, & Rand, 1967.) Values for these variables are also reported by session for the aggregate of all members and for the aggregate of all therapists. For each member, the variable individual percent minus members' percent is displayed by session for all HIM style and content categories. For the entire group, the following information is printed by session: therapist/member interaction ratio in percentage and frequency terms; therapists' participation in percentage and frequency terms. For the entire group, for all therapists combined, and for all members combined, the following variables are printed by session: average time per interaction, normed on the number of potential interactants; average time per interaction, normed on the number of actual interactants. The time variables are based on a 30-min measurement interval. The program also generates one optional tape on Unit 8. The 12 W, DOI, IOI, and NOS variables are written on this unit with individual and session identifiers.

Storage. On an IBM 370/168, the storage requirement is 80K bytes.

Running Time. With a test data set of 12 group participants, running time on an IBM 370/168 is approximately 1.95 sec.

HIM Programs 3A, 3B, and 3C

HIM Programs 3A, 3B, and 3C compute different types of work scores. In Programs 3A and 3B, the work score equals the sum of weighted frequencies or weighted proportions, respectively, for the 16 HIM cells. In Program 3C, the work score equals the proportion of speculative and confrontive interactions. Since the three programs utilize the same input and generate output in the same format, the following description applies to each of them.

Input. Output on Unit 15 from HIM Program 1 serves as input to these programs. Unit 17 must be assigned as a temporary storage area which is deleted at the end of the run.

Output. For each therapist and member in the group, the work score is displayed by session; the mean work score is reported by 5-session cluster and by 15-session cluster. For the entire group, for all therapists combined, and for all members combined, the total work score and the mean work score are calculated by session. The mean work score is also computed by 5-session and by 15-session cluster for the therapist and member aggregates. Standard deviation, standard error, and sample size are presented with each mean work score.

Storage. On an IBM 370/168, the storage requirement is 60K bytes.

Running Time. With a test data set of 12 group participants, running time on an IBM 370/168 is approximately 1.18 sec.

Availability

Write to Dr. Sam Silbergeld, Mental Health Study Center, National Institute of Mental Health, 2340 University Boulevard East, Adelphi, Maryland 20783. For each program, a source deck, including a user's guide, is available at no cost. This contains a listing,

sample output, program JCL, deck setup, and format specifications. Since the source decks for the five programs contain more than 3,300 cards, the requestor is asked to provide a tape on which the source programs can be written (nine track, 800 or 1,600 bits/in. only). If such a tape cannot be read on the requestor's system, arrangements will be made to provide the source programs on cards.

REFERENCE NOTES

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