

ANNUAL TECHNICAL REPORT

Basic Studies on Individual and Group Behavior

UNIVERSITY OF MINNESOTA

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The research program covered by this technical report includes three specific projects each of which is separately reported below. This report covers the period 15 February 1953 through 15 February 1954.

A. RESEARCH ON GROUP STRUCTURE AND FUNCTION AS RELATED TO THE
PERSONALITY CHARACTERISTICS AND INTERESTS OF GROUP MEMBERS.

I. Abstract of Progress since Annual Report, February 15, 1953

During the past year we have continued our investigation of factors related to the success of group operation, with some emphasis on personality as indicated by the Minnesota Multiphasic Personality Inventory. Since the available sociological and psychological literature did not disclose much that was useful for our purposes, from either a theoretical or an operational standpoint, a good deal of the work necessarily has been of an exploratory nature.

We have concluded some, but not all, phases of the analysis of the data on student organizations (39 groups with a total N of 513); we have completed the gathering of data on 40 groups (shifts) of Minneapolis firemen (total N of 286); and we are in the process of analyzing the latter set of data. Insofar as possible, the two sets of data are parallel, facilitating comparability and increasing the likelihood of valid generalization. The nature of the data on the student groups is indicated in the Annual Technical Report of a year ago.

With regard to the student groups, 146 Pearsonian correlations were calculated among our major non-MMPI variables, in order to test our provisional hypotheses and to gain a conception of their interrelations as a basis for explanatory models to be tested on further data. These correlations, presented in the status report of 15 May 1953, were calculated separately for 'Task' and 'No-Task' groups, and on the basis of both individuals' scores and group means. Eleven variables were involved, as follows:

- PS - personal satisfaction, a Guttman-type scale; group scores are means of ranks of individual members;
- EE - estimate of effectiveness by members, a Guttman-type scale;
- F - formalization, a Guttman-type scale based on responses of members;
- Exp - expansiveness, a sociometric index (see February 1953 annual report for definition);
- Cs - cohesiveness, a sociometric index (see last annual report);
- Cr - coherence, a sociometric index (see last annual report);
- SS - sociometric status within the group, the ratio of the number of sociometric friendship choices received by an individual to the highest number received by an individual in the group; the highest SS score in each group is thus 1.00;

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- SP - social participation score on the Chapin Social Participation schedule;
- LF - a score of general favorableness toward the organization leader, based on the mean of responses to 27 items about leadership behavior;
- TG - the number of months that an individual had been a member of the group when he filled in the questionnaire;
- TS - an estimate by the member of the time he spends per month in group activities.

On the basis of the correlations, the construction of a number of predictive regression equations was attempted on the group level, with modest success for the 23 Task groups and no appreciable success for the 16 No-Task groups, the small size of N constituting the main limiting factor. For Task groups, the multiple r for the prediction of the group mean of PS from SP mean and Expansiveness was .739, while the multiple r for the prediction of EE from the same two variables was .704.

Since the assumption of linearity involved in correlation and regression equations may often be invalid with socio-psychological data, a number of simple "low-order" models, involving only several variables, have been devised as a stepping stone to more complex and inclusive theoretical models. An example is:

SS, PS, and TG show low intercorrelations. It was reasoned that among those persons of relatively low TG for a given group: (1) SS would tend to be low, and (2) PS would not be related to SS. On the other hand, among those of relatively high TG: (3) PS should be related positively to SS. On the basis of a decision that it would be realistic to test the hypotheses only for individuals who were definitely high or low in SS, definitions were set up which selected about 40% of all the members of the groups. Using high and low dichotomies for PS and TG, the three hypotheses were supported by the data, as shown in Table 1. In words, the

TABLE 1. RELATIONS AMONG SS, PS, AND TG, OF HIGH OR LOW STATUS MEMBERS OF 39 STUDENT ORGANIZATIONS

<u>Personal Satisfaction</u>	<u>High TG</u>		<u>Low TG</u>	
	<u>Low SS</u>	<u>High SS</u>	<u>Low SS</u>	<u>High SS</u>
High PS	26	37	20	3
Low PS	60	23	28	2

(χ^2 for High TG: 14.23;
p less than .01)

data tend to show that among those who are "old-timers" in a group, a measure of a member's interpersonal status within the group is positively related to his relative satisfaction with the group, while no such relation obtains among newcomers, who are generally low in such status.

Such "low-order" analyses increase our confidence in the validity of our measures, provide a means of circumventing the problem of the small number of groups, and avoid the linearity assumption of over-all correlations.

A follow-up of student-organization members a year after they served as subjects showed that those who had stayed in the groups a second year had scored higher in personal satisfaction, favorableness of attitude toward the leader, and socio-metric status than those who dropped out of the groups (reported in status report of 15 May 1953).

During the Spring, complete plans were laid to study, during the summer, groups of mothers who cooperatively care for their children under the sponsorship of social workers, and adolescent boys' athletic teams. Data-collection began, but the groups turned out to be too nebulous to be sources of adequate data. An attempt to test workers in a knitting mill was also abortive because of conflict with work schedules. Fortunately, another set of groups, better for our purposes, was located--the firemen of Minneapolis.

Data were gathered from both shifts at each of the 20 Minneapolis fire stations. About 95% of the firemen on duty on the test days responded to the MMPI and the questionnaire, under supervision of the research staff. In addition, the most recent civil service rating for each fireman was secured, and a chiefs' questionnaire, in which the chiefs rated the effectiveness of each shift and each shift captain and ranked a list of factors making for group effectiveness, was filled in by the departmental chief, four deputy chiefs, and the 12 district chiefs. The firemen questionnaire was as similar as feasible to the student questionnaire, with the addition of two measures developed by Bullock at Ohio State University: a measure of "social factors in job success", and a measure of "job satisfaction".

Major advantages which we believe the firemen possess as study subjects are:

1. They form small tight-knit groups (station shifts), among whom group effects and factors can reasonably be posited as operating;
2. Two realistic criteria, operating in an important way in the real world, are available: (a) the group effectiveness ratings by the supervisors; and (b) the annual civil-service ratings of individual firemen;
3. They proved to be accessible and cooperative, and control could be exercised in administration of data devices;
4. From the standpoint of sociological theory, they can be fairly definitely "placed" in a bureaucratic cell of urban social structure, with the attendant possibility of realistically generalizing;
5. From the standpoint of practical application of findings by the military, the firemen represent one of the most closely analogous situations to the military situation to be found among civilians: e.g., living together; constant close interaction; part of a large bureaucracy; a one-sex occupational group; intermittent waiting around and then hurrying into a hazardous crisis situation as an occupational pattern; action on a small-group basis, with need for interdependence.

Since the MMPI is a series of individual measures, group statistics (means and variances) based on these measures should possess certain characteristics in order to be considered meaningful. If such means and variances can be shown to vary in a non-random fashion between groups, they can be regarded as group measures in their own right, apart from their individual constituents. Accordingly, the MMPI group statistics of the nine clinical scales, of social introversion (Si), and of K, a suppressor variable, for both the student groups and the firemen groups, were subjected to tests of homoscedasticity (Bartlett's test with Hartley's χ^2 approximation) and analysis of variance of means. Of the 44 tests thus run, 9 were significant at 5% or less, as follows:

Analysis of Variance of Means:

Students:	Hy (1%), Si (1%)
Firemen :	K (1%), Si (2.5%)

Homogeneity of Variances:

Students:	D (1%), Pt (1%)
Firemen :	D (3%), Pt (4%), Hs (5%).

The significance of Si, D, and Pt for both sets of data tends to increase confidence that these results are not spurious. The homogeneity of variance tests also represent a check on a necessary assumption for the analysis of variance.

On the basis of the above results, five hypotheses concerning the effectiveness of the firemen groups were formulated and tested in terms of two separate criteria of effectiveness. The first criterion was the group mean of the individual civil service (CS) ratings; in these tests, the groups were dichotomized by MMPI characteristic (high or low), CS means for each half of the dichotomy were calculated, and differences tested for significance. The second criterion was the average group efficiency (GE) rating made by the chiefs for each group; in these tests, the groups were split into effectiveness quartiles, and the means and variances on the MMPI scales of persons in the most and least effective quartiles were compared.

The hypotheses are:

1. Groups with low variance on D tend to be more effective than groups with high D variance.
2. Groups with high variance on Pt tend to be more effective than groups with low Pt variance.
3. Groups with low variance on Hs tend to be more effective than groups with high Hs variance.
4. Groups with low mean Si scores tend to be more effective than groups with high mean Si scores.
5. Groups with "medium" mean K scores tend to be more effective than groups with either high or low mean K scores.

Results for the firemen were as follows:

Hypothesis	CS Criterion	GE Criterion
1.	Data confirms; $p < .02$	Data confirms; $.02 < p < .05$
2.	Tendency confirms; non-significant; $p \sim .10$	Data confirms; $p < .01$
3.	Tendency <u>contrary</u> ; non-significant	Tendency confirms; non-significant
4.	Tendency <u>contrary</u> ; non-significant	Tendency confirms; non-significant
5.	Data confirms; $p < .035$	(Not tested)

As a check on the appropriateness of the analysis of variance and homoscedasticity tests as selectors of promising variables, the means and variances of each of the other MMPI scales were also tested for relationship to effectiveness by the GE criterion. None of these was significant, which strengthens the validity of our procedural steps. In addition, it is instructive to note that the degree of support given the hypotheses by the data appears to be positively related to the level of significance of these selection tests.

Combinations of the variables in the hypotheses were tested without appreciable effects on levels of significance. Apparently the increase in discrimination was nullified by loss of degrees of freedom. However, further analysis along this line may be fruitful.

Statistical analysis of relations between MMPI scales and other variables, such as effectiveness, is hindered by the difficulties involved in handling more

than one scale at a time. As one attempt to discern whether MMPI "patterns" are discriminatory, we have developed a method of punching paired comparisons of individual MMPI scores on Keysort cards, and have made a number of preliminary runs (method reported in status report of 15 November 1953).

The ratings of group efficiency (GE) were made independently by the departmental chief and four deputy chiefs. As a measure of the reliability of these ratings, a correlation ratio was calculated, with the 40 groups as the dependent variable and the ratings as the independent variable with 5 observations on each group. The correlation ratio ~~etc~~ equalled .72. Analysis of variance tests of the means of the civil service ratings (CS) of the 40 shifts were performed, with a probability of about .005 for both on-duty and off-duty firemen, which is interpreted to mean that persons of similar CS ratings do tend to be found in the same groups, or that the shift groupings are meaningful for this variable.

Work with the variables of job satisfaction (JS), social factors in job success (SF), and firemen's evaluation of their shift leader (LE) has begun. It appears that none of these is significantly related to the group efficiency measure (GE), but that low JS variance and high LE variance may be related to GE (5% level).

Several technical reports, giving details of results to date, are in the process of preparation. These are: 1) presentation of the MMPI data on student organizations, including a frame of reference for viewing such data, the several modes of analysis employed, and some of the comparisons with the firemen MMPI's; 2) methodological comments on the virtues and limitations of the Guttman scalogram technique, based on our experiences; 3) a theoretical model of the operation of small groups, with particular reference to effectiveness, based on a physical analogy.

II. Personnel

Mr. Frank Atelsek, Research Assistant, graduate student
Dr. F. Stuart Chapin, Professor of Sociology (until June 15, 1953)
Miss Bertha Davis, Research Assistant, graduate student (until September 15, 1953)
Dr. Elio D. Monachesi, Professor of Sociology
Miss Clarice N. Olien, clerk, undergraduate student
Mrs. Ann G. Olmsted, Research Fellow (June 15-August 15, 1953)
Mr. Donald W. Olmsted, Research Fellow (except June 15-August 15, 1953)
Dr. Arnold M. Rose, Professor of Sociology
Mr. Philip C. Sagi, Research Assistant, graduate student

B. RESEARCH STUDIES ON THE ROLE OF LANGUAGE IN BEHAVIOR.

These studies have continued to center around three groups of related experiments which have yielded data from as many levels of investigation. The first of these has stressed the verbal behavior of the individual in a laboratory setting. Here an initial exploration into the role of associative factors in verbal behavior has been extended to a point where it is dealing with a wider range of behavior and more complex cases of contextual influences. The second group has been concerned with formal characteristics of speech in clinical, "two-man", situations. One sub-project in this group is now being concluded and another has completed the gathering and transcribing of protocols. Research in the third group, dealing with

the reception of connected discourse by social groups, continued during most of the year and was brought to completion during the final quarter of 1953. The summaries below deal in turn with the activities of each of these groups during the past year. The six technical reports submitted since the last annual report have provided details for only part of the work accomplished; the summaries, therefore, make reference to much material for which full reports must still be prepared.

I. Associative and Contextual Effects in Verbal Behavior
(Investigators: Wallace A. Russell and James J. Jenkins)

The last year has seen an expansion as well as a continuation of research on the effects of verbal context. Early experiments had established that simple word association could effect the order in which word lists were recalled, and had indicated that the magnitude of this effect was related to the strength of the particular associations involved. Efforts to establish a functional relationship between association strength and degree of clustering were complicated, however, by the lack of a sensitive index of association strength. Recent studies have apparently been able to remove this difficulty to a rather marked degree, and consequently it has been possible to advance further the studies of associative clustering during recall. In addition, the investigation of the influence of associative factors upon other aspects of behavior, such as perception and learning, has begun and the techniques for gradually encompassing more complex cases of contextual effects have been dealt with in an exploratory fashion.

The problem of finding an adequate index of verbal association strength had provided the impetus for two previous studies. The results of these had suggested that the absolute frequency of occurrence of a response word in the norms for the Kent-Rosanoff word association test might prove to be a satisfactory index. Other evidence, however, had indicated that the Schellenberg norms for this test were no longer precisely applicable to present day experimental subjects. It seemed advisable, then, to design an experiment which would utilize norms gathered from the current population of students. A further study, then, undertook to determine the functional relationship between the strength of verbal associations, as indicated by the frequency of a given response in new norms for the Kent-Rosanoff word association test, and the tendency for the associated words to appear together during the recall of randomized word lists. One hundred and seventeen adult subjects were required to recall incompletely learned word lists which consisted of randomized stimulus and response words from the Kent-Rosanoff test. The amount of associative clustering (i.e. the number of associated pairs which appeared together during recall) was determined for groups in which the independently estimated strength of the verbal association was systematically varied. These estimations were obtained by the following technique: (1) new normative data for the Kent-Rosanoff test were obtained by administering the test to 1026 college students; (2) the percent of the total group giving each response to each stimulus was determined and used as an estimate of the cultural strength of the associations involved.

Four word lists which differed in the average strengths of the component associative pairs were compiled and each was administered to a separate sub-group. In Group 1 (N = 30) the mean association strength was 68.6; in Group 2 (N = 31) it was 46.4; in Group 3 (N = 29), 29.1; and in Group 4 (N = 27), 12.8. The results indicated that the amount of associative clustering was an increasing monotonic function of association strength. An analysis of variance performed on a square root transformation of the index of clustering yielded an F significant beyond the .01 level. With one exception, differences between adjacent groups were

significant beyond the .05 level. This continuous relationship between cultural response frequency and associative clustering provided quantitative confirmation for the last of our major hypotheses concerning associative clustering.

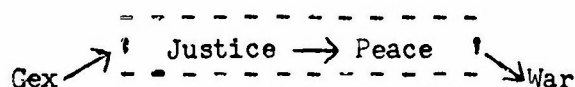
It is interesting to note that the new norms for the Kent-Rosanoff test have had an impact far beyond expectations. They were gathered primarily to facilitate other research, but have proved to be of intrinsic significance in several ways. It was soon recognized that the differences between the new norms and the 20-year old Schellenberg norms offered grounds for a valuable comparative study. Other normative data from still older studies conducted at Minnesota are also available for such a comparison, and work now being conducted without expense to the Office of Naval Research will make possible a comparison with norms for fifth grade school children and high school juniors as well. While well-known generalizations about age-differences in word associations have been made, they have never been tested on data free from the possibility of error due to general cultural changes with time.

The use of association norms as a technique for mapping verbal association chains seems also to have considerable promise. It has been necessary in other experimentation, for example, to go beyond the simple Kent-Rosanoff situation and to gather samples of associations to the response words of the original norms. As this process is continued it becomes possible to map "chains" of associations based solely on the statistical probabilities of each word in the chain producing the next. It has been shown (e.g. see experiment on learning below) that these statistically postulated associative chains can significantly effect behavior. It has also been shown experimentally that associations which are culturally frequent also tend to be the ones which are given most frequently when the stimulus words are presented many times to a single subject. These evidences all support the usefulness of this technique as a method of independently approximating an individual's association "network". To date, of course, it has not been possible to reconstruct more than the simplest of such nets. Data on associations to different parts of speech, different tense forms, etc., are completely unavailable at this time. But even at this gross stage of research it has been possible to observe how such chains may terminate in a reciprocal pair of words - where each elicits the other - and how many chains may converge upon a single focal word, etc. These signs of patterning and orderliness in the verbal repertory may have considerable influence upon future research.

While much of the work reported has had to do with the effects of associative factors upon recall, it has been recognized that this is only one aspect of behavior which may be influenced by these variables. William C'Neil in Technical Report No. 4, The Effect of Verbal Association in Tachistoscopic Recognition, showed that word recognition could be facilitated if an associated word is displayed in the pre-exposure field. This facilitation was found to occur in the forward (S-R) direction and, paradoxically, in the reverse (R-S) direction as well. That is, when a response word was displayed in the pre-exposure field there was facilitated recognition of its stimulus word. In a subsequent experiment an effort was made to preclude the possibility that the response word might actually tend to elicit its associate as a simple S-R association. Pairs were selected in which the forward (S-R) order was known to be frequent and the reverse (R-S) order was known to be very infrequent, or non-existent, in free association situations. Even in this study there was evidence of facilitated recognition of the stimulus words. This phenomenon of reverse facilitation has been difficult to explain in a systematic manner. Efforts are being made to determine whether this effect appears in other situations and certain explanatory hypotheses are being explored.

Technical Report No. 6, Visual Duration Threshold as Function of Word Frequency: a Replication, continued the studies of tachistoscopic recognition of verbal symbols and confirmed findings which had indicated a high negative correlation between duration threshold and the logarithm of the presentation frequency.

Positive findings for recall and perception made the investigation of associative factors in learning a logical next step. As has been noted, an elaboration of the free association norms has in some cases made it possible to construct chains of verbal associations. In order to determine if such statistically constructed chains could influence paired associate learning, nonsense syllables were first paired with certain stimulus words from the Kent-Rosanoff test. After each subject had learned these pairings, a second list was presented in which it was necessary to learn new responses to the same nonsense syllables used in the first list. Half of the new responses were the final members of associative chains of which the Kent-Rosanoff stimulus words were the initial members. Thus if an implicit verbal chaining effect was present, there should have been some initial tendency for the nonsense syllables to elicit the final member of the chain, and thus facilitate the learning of such words in the second list. For example, if the nonsense syllable Gex in the first list was paired with the word Justice, it was assumed that in the second list the following implicit chain would exist if the syllable Gex was now paired with War.



The results confirmed the hypothesis by showing significantly more rapid learning of pairs connected by such implicit chains than of pairs not so linked. Appropriate controls were used to eliminate the possibility of differences due to simple word frequency or direct associations which could short-circuit the chain. The effects of these implicit verbal processes may well extend beyond paired associate learning situations to more complex learning or problem solving.

These studies of the effects of simple word associations upon recall, perception and learning have all dealt with perhaps the simplest case of a contextual influence. Investigations now in progress are attempting to deal with more complex cases which build upon this base. A single stimulus word may elicit not one, but a whole series of responses. The tendency for such a series to be made up of clusters of related words has been observed. Efforts are being made to determine such clusters reliably, and to discover relationships between responses so produced and the transitional probability data obtained in the simpler word association case. In still another case, it is possible to employ a series of stimulus words and to determine the effect of such a series upon the verbal response of a subject. If discrete words are used, the establishment of response sets in free association may be studied. If grammatical sentences are used, a very close approximation to a normal contextual environment results. The study of thematic determinants of responses in such a situation is being included in on-going research.

II. Syntactical Features of Speech as Diagnostic and Prognostic Indices

A. Dynamic Changes in Formal Features of Speech Emitted in an Unstructured Situation

(Investigators: Paul E. Meehl, Kenneth MacCorquodale)

As was indicated in previous reports, the core conception underlying the present study was as follows: certain formal (syntactical) features of speech emitted freely under a therapeutic regime minimizing differential reinforcement and other audience effects might be expected to reflect short-term temporal fluctuations in the patient's psychological state. Previous investigations of a cross-sectional character, utilizing the methods of differential psychology ("R-technique") had yielded encouraging results. Among the most promising formal variables was the relative proportion of verbs and adjectives (work by Busemann, Boder, Balken and Massermann, Hays, Sloan and Gelleman, and by Sanford) occurring in a speech sample. The present study therefore commenced with an analysis of verb and adjective rate in the protocol, but with an intra-individual time-variation approach rather than one of differential psychology ("P-technique"). The appropriate first step, that of ascertaining scorer reliability and of increasing it by sharpening of criteria, was carried out and resulted in satisfactorily high scorer consistency as shown by either correlational methods or discrepancy distributions (see previous reports).

Since the last interim report time-series for the entire set of 24-hour interviews have been plotted for verbs (two methods of scoring) and for adjectives, the entire material has been divided into blocks of varying sizes ranging from a smallest unit of a single sentence averaging about 20 words through five steps of block size to a maximum block size of 32 sentences approximating an average of 650 words per block. Autocorrelation coefficients (unit displacement) have been calculated for each of the four counts for all of the block sizes. These coefficients ranged from .14 to .49 with a median of .26. An alternative test of "temporal orderliness" was made by using the sign-sequence test devised by Wallis, the latter failing to indicate significant departure from randomness.

These results were quite unexpected and, needless to say, disappointing. They indicate that the temporal orderliness of changes in strength of these two verbal classes, at least for relatively short-term intervals, is not sufficient to justify exploration of correlates. That is, if there is almost no detectable lawfulness in time-changes of verb and adjective strength, it does not seem likely that either or both in combination could be used as a valid measure for any short-term state of the organism such as was envisaged at the study's inception. In the light of the earlier (positive) results with the differential approach, these findings are somewhat mysterious. One thinks perhaps of a model in which the individuals are urns, characterized by individual parameters (e.g. proportion of black marbles = predicate adjectives). Sufficiently large samples will yield a trustworthy estimate of the black marble parameter of each urn, but if we plot the curve ("number of black marbles") for successive drawings from each urn, no appreciable orderliness is manifest. The therapist's estimate, post-therapy letters from the client and his wife, certain objective steps he had taken in work and social life, and marked post-therapy psychometric changes all agreed in showing significant change. During the process of therapy the client experienced the usual "ups and downs" of morale, tension, anxiety, and symptoms. We simply have no explanation of the lack of lawfulness exhibited by our data.

Two additional analyses are currently underway. First, we are making certain statistical corrections involving the matter of variable sentence length. Secondly, normalizing transformations are being made, although the extreme anormality of the distributions for small block size cannot account for the lack of order observed.

In the event that these further analyses yield nothing markedly different from the results to date, as we expect they will not, it is proposed to terminate the sub-project at this time and chalk it up to "painful but unavoidable experience". The very considerable amounts of time and energy required for this kind of word-count research do not seem to be justified when the paucity of our results is compared with the positive findings of other sub-projects.

B. Verbal Behavior as a Function of Induced Set Toward the Listener
(Investigator: Ephraim Rosen)

As described in the 1953 Annual Report, the basic hypothesis of this study is that characteristics of the verbal behavior of an individual vary with the set induced in him toward the listener. The current study induces a "like" set and a "dislike" set toward the listener in two different groups of subjects. The set is manipulated by control of the behavior of the listener and by instructions to the subject. A questionnaire is used to check on success of this induction.

Protocol gathering is now complete. Since the last annual report, the following progress has been made:

1. Sixteen more protocols have been recorded. The total is now 58. All have been transcribed; 23 have been coded.
2. Reliability checks have been run between two coders on 12 of the interviews, separately for each variable. Reliability r 's run from .72 to .99, with a median of .90.
3. On the 23 coded cases (12 in "like" condition, 11 in "dislike" condition) 22 variables have been tested for significance. Six show significance ($P < .05$); two are borderline ($.05 < P < .20$); fourteen are insignificant ($P > .35$). It is planned to code the other 35 interviews, and test the eight significant and borderline variables on all 58 cases.

The variables which show significant or near-significant differences between the two groups are ratio of "content" words to "structural" words, total words, total verbs, verb-adjective ratio, number of concrete nouns, ratio of concrete to abstract nouns, ratio of self-references to other references, and type-token ratio. Pending substantiation of the significance of these variables on the larger sample, it is too soon to look for a theoretical explanation of the results.

III. Conditions Affecting Reception of Controversial Statements
(Investigator: Howard Gilkinson)

Two additional studies have been carried out since February, 1953. The first of these was concerned with the effects on listeners of quoting authorities in an argumentative speech. A twenty minute speech was prepared favoring the proposition, "The North Atlantic Treaty Nations should form a Federal Union". Twenty percent of the speech was quoted material from well-known persons. Two forms of the speech

were prepared: an "authority" form in which the names and identifications of these persons were given, and a "non-authority" form in which the names and identifications were deleted. The quoted material remained in the second speech, but it was presented as unquoted material. The speeches were presented to college students and three criterion measures were secured from them: shift of opinion, retention, and ratings for convincingness. Subjects hearing the two forms were matched on initial attitude and college grade average. Slight trends favoring the authority form appeared on all three criteria, but none of them was statistically significant.

The second study was concerned with the effects on listeners of the order in which arguments are presented. Two argumentative speeches were prepared, one supporting the proposition, "A young man subject to military service should defer marriage until that service is completed", the other supporting the proposition, "The voting age should be lowered to eighteen". Each speech contained three arguments which varied in length according to the importance assigned to them by a group of college students. Two forms of each speech were prepared: a "climax" form in which the least important argument was presented first and the most important argument was presented last, and an "anti-climax" form in which the order of presentation of arguments was reversed. The speeches were presented to college students and three criterion measures were taken: shift of opinion, retention, and ratings for convincingness. Subjects hearing the two forms were matched for initial attitude and college grade average, and the reactions of the two groups were compared on the main propositions and on each of the supporting arguments. Two group comparisons were made, one using University of Minnesota students on the Minneapolis campus and one using students on the Agricultural College campus. No striking trends emerged, but when the results of these studies were combined with those from an earlier investigation by Sponberg, a small but fairly consistent advantage appeared for the anti-climax form in respect to retention.

During the summer and fall technical reports were written, and articles written for publication. The latter are three in number, and cover all the research done in the Department of Speech and Theatre Arts for CNR. One was submitted to the Quarterly Journal of Speech, and two to Speech Monographs. One of the latter appeared in Volume 20, November, 1953. This series of investigations was terminated September 15, 1953.

C. RESEARCH IN COHESIVE AND DISRUPTIVE TENDENCIES IN COALITION-TYPE GROUPS

I. General Purpose

This research has been concerned with the problem of the stability of coalition-type groups. Since only one coalition-type group has been studied, the problem reduces to the study of variations among the component groups in their tendency to remain members of the larger group to which they all belong.

II. Abstract of Progress since Annual Report, February 15, 1953

A. General Accomplishments

Completion of Annual Technical Report No. 1, which is also a manuscript ready for submission to one of the journals for publication: this report is entitled, "Perceived Control and Interdependence as Related to Member Attitude toward a Coalition-type Group."

A manuscript of the exploratory study of the French Cabinet, which also includes a theoretical discussion of coalitions in general: this manuscript was written by Mr. Robert Holt and needs some editorial revisions before it will be suitable for submission as a Technical Report.

Two additional questionnaires have been given and analyzed for the purpose of following up some leads of the previous year's work and to assist in the interpretation of the data. One of the questionnaires was given to the new crop of representatives to the coalition-type group, the IFC. This questionnaire used the nomination technique to identify the strong supporters of the IFC and included various measures of the role behavior of the representative. The other questionnaire was administered to the graduate student residential counselors of the fraternities to obtain their ratings of the skill and status of the representative.

B. Variables Related to Support of the Coalition by Member-Groups

The relation between the degree of control of a member-group in the coalition and its perception of benefit from the coalition has been well established in our study. The fraternities that perceive benefit in the coalition tend to have positions of leadership in the council and have more active and skilled members representing them. These findings have been established by the use of official records, the nomination technique earlier mentioned, and the counselor ratings used in conjunction with the original questionnaire administered to the fraternity members.

The hypothesis relating perception of interdependence and perception of benefit has received some support from this study, but an important modification in the hypothesis has been made which the data support even more. The original statement of the hypothesis was as follows: given a collection of groups having a certain minimum of interests in common, those groups who perceive that they are similarly affected when the environment causes other groups to benefit or harm will be most likely to perceive benefit from the existing coalition. This hypothesis, restricted to the perception of interdependent harm from an outside authority, was supported by the data. However, the above stated hypothesis probably does not hold when the component group perceives that the coalition cannot achieve the specific purposes of collective action. This means that under "free" conditions, perception of interdependence can lead to attempts by the component group to withdraw from the coalition.

Mention should be made of two hypotheses which do not receive confirmation from this study. One was that the more a component group had the resources to independently cope with an outside threat the less would it perceive benefit from the coalition. If anything, the opposite holds true in our study. The larger, more prestigious fraternities tend to be the strongest supporters of IFC. We still cling to the hypothesis concerning strength of resources but believe it needs special conditions to be effective.

The other hypothesis was that the greater the involvement of the members of a component group in their own group, the more would they perceive benefit if they also perceived interdependence. The rationale for this hypothesis is that concern for the group's welfare would heighten any relationship between a determinant of group cohesiveness and the perception of benefit. This hypothesis was confirmed when one measure of "organizational involvement" was used, but was not confirmed when another such measure was used. The concept of "organizational involvement" is apparently not unidimensional and the operations to measure it will need to be more complex than was originally thought.

C. The French Cabinet Study and its Theoretical Outcomes

The French cabinets were chosen for this exploratory study primarily because of their great variation in stability and the consequent opportunity to make a comparative study with that of the IFC. During the period under consideration (the First Legislature of the Fourth Republic, January 1947 until June 1951) there were nine cabinets and several abortive attempts to form cabinets. There were no general elections during this period and all of the cabinets faced about the same problems and were supported by about the same parties. Yet one of these cabinets lasted over a year; another less than a day. The major problem of this study was to determine some of the factors which affected this variation in the longevity of the cabinets. No attempt was made, of course, to present an exhaustive review of the reasons for unstable governments in France. This would require a thorough study of French society, its cleavages and schisms, and of the social base of the various parties represented in the National Assembly. Our interest was focused on the problem of stability, given the antagonistic groups in the Assembly and the social matrix within which French political institutions operate.

The findings indicate that two major factors determined stability in the cabinets studied. The first and most important was the perception by the participating groups of a situation which threatened their existence and which could be alleviated by cooperating in a coalition. The republican government of the Fourth Republic was threatened both from the left and the right and the parties which made up the government felt that they had to remain in a coalition in spite of their many dogmatic and doctrinal differences or they would be destroyed. By and large the cabinets were the most stable when the Gaullists or Communists made dramatic displays of strength, and threatened at almost any moment to destroy the Fourth Republic. What newspapers referred to as the "shrewd and adroit political maneuverings" which saved certain coalitions from what appeared to be inevitable collapse was usually simply an effective reminder to the parties of the possible disastrous consequences of a governmental crisis at that particular time.

A second important factor which affected the stability of the cabinets was the amount of benefit a particular group perceived from membership in the coalition. Five of the nine cabinets studied collapsed because the Socialists withdrew their support. The major reason for this disruptive behavior on the part of the Socialists appeared to be their failure to perceive benefit from participating in the coalition. The First Legislature was marked by a general decline of Socialist influence in the cabinet as evidenced by a steady erosion of the socialist economic measures adopted shortly after the war. As they had less influence and perceived less benefit from the coalition, the Socialists became "less-cohesive members" of the coalitions.

The empirical studies that will be reported in Technical Reports No. 1 and 2 indicated a need for further conceptual development of the factors affecting stability in a coalition. These will be discussed in Technical Report No. 3. The factors could be broken down into three main groups. The first of these factors are those which affect the "degree to which a coalition is a coalition". One of the distinguishing characteristics of a coalition is that it is made up of various competing or conflicting groups. Any factors which affect the amount of conflict should also affect the stability of the coalition.

The second group of factors are those which affect "cohesive membership". Since coalitions can collapse because of the withdrawal of only one group, it is

important to identify some of the variables which determine this kind of behavior. A group's tendency to remain in a coalition ("cohesive membership") varies directly with its perception of net benefits accruing from coalition membership, it is hypothesized. It is important to recognize that benefits deriving from membership may be of two kinds. One of the major reasons for the existence of most coalitions is the preservation of the very competing system or institutional structure of which the participating members are a part. The component members will perceive benefits from the coalition when they feel that it is necessary to the preservation of the system and is doing an effective job in this regard. Theoretically, total perceived benefits (the sum of the benefits of all the component members) of this type are almost limitless. It is conceivable in a severe crisis situation, no policy other than coalition would be conceivable. Other things being equal, the greater these total perceived benefits, the greater the stability of the coalition.

The second kind of perceived benefit that a component member can enjoy lies in the realm in which the groups are competing. It is possible that a participating member could use the coalition as an instrument for carrying out its own policies. Since the component members are competitors, an increase of one member's benefits of this type may be a relative decrease to the others. Thus it seems appropriate to look at total benefits of this type as a constant. The important question raised in this regard then concerns not the magnitude but the distribution of perceived benefits which will best promote stability.

A large group of other factors which affect the stability of a coalition but which cannot at this time be discussed are taken up in Technical Report No. 3.

III. Future Plans

A field experiment is being designed to test the more refined hypothesis relating interdependence and perceived benefit. At the same time it is believed that the time spent in the theoretical development of problems of coalition formation and stability will be rewarding. Thus, a manuscript is being prepared primarily concerned with concepts and theory in this area.

IV. Personnel

Ben Willerman, Associate Professor of Psychology, Principal Investigator
David Lewit, graduate student in psychology, quarter-time Research
Assistant
Richard Emerson, graduate student in sociology, no longer officially
connected with the project
Robert Holt, graduate student in political science at Princeton, no
longer connected with the project