

Psychological Bulletin

A REVIEW OF THE RELATIONSHIPS BETWEEN PERSONALITY AND PERFORMANCE IN SMALL GROUPS¹

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A wide range of practical and theoretical interests have found expression in the study of small groups. As the major bibliographic sources (Hare, Borgatta, & Bales, 1955; McGrath, 1957; Strodbeck & Hare, 1957) amply attest, small group research has proceeded along numerous independent lines. One interest, however, has been dominant for more than 50 years. While phrased in various ways, the relationship between the personality characteristics of the individual and his performance in the group has remained a central concern.

There have been at least three conceptual approaches to this problem. One approach considers the individual as having various needs and as being motivated to satisfy some of these needs through interaction with others; the point of interest is the relation between the individual's personality and his goal-directed behavior in groups. In another view, the individual is conceived of as a stimulus, or set of stimuli, for the other members of the group, and the

relation between the individual's personality and the way in which he is perceived and judged by his peers assumes primary importance. In the third approach, the group is conceptualized as a system confronted with various problems, external and internal, and attention shifts to the processes whereby particular individuals volunteer or are selected to occupy various positions and perform various roles necessary for the solution of the problems. Although these three approaches have generated many nonoverlapping research questions, they have produced a body of data which may be considered meaningfully as a whole.

This review attempts to summarize the present state of knowledge about the relationship of an individual's personality to his behavior or status in groups. Although the independent effects of varying the nature of the sample and history or size of the group upon the performance of individuals are not considered, an effort is made to determine the effect of such situational factors on the relationships observed between personality and performance.

While the purpose of this review is to provide an adequate and accurate description of the present state of knowledge in the field, its intent is to stimulate research rather than to make a final summary. It is thought

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that an organized presentation of the findings to date may help to clarify relationships which have been overlooked or misunderstood. Moreover, it is hoped that this summary may be used as a target and a taking-off point for future research, thus encouraging publication and helping to make knowledge in this field more cumulative.

Selection of the Studies

The studies selected for detailed examination meet the following five criteria: (a) the sample was drawn from a population of high school age or older; (b) the groups studied were face-to-face groups; (c) some assessment was made of the individual's personality; (d) some assessment was made of the individual's behavior or status in the group; and (e) the results were either in correlational form or made use of a control group, i.e., studies testing only leaders or only social isolates are not considered. The only exception to (b) occurs in those studies of conformity in which the individual believes he is interacting with other individuals, whereas, in fact, the experimenter has controlled the interaction through tape recordings or false statements about the actual behavior of the others in the group.

This review covers the available literature from 1900 through October, 1957. The bibliography was collected by searching the most relevant journals and published abstracts, by following the network of references from article to article, and by obtaining as much unpublished research as possible. In addition, the earlier reviews (Bass, 1954; Borgatta, 1954; Gibb, 1950, 1954; Jenkins, 1947; Roseborough, 1953; Smith & Krueger, 1933; Stogdill, 1948) which emphasize leadership or popu-

larity to the exclusion of other aspects of performance covered here have been useful. No claim is made to completeness, but no sources of known relevance have been deliberately overlooked.

The Personality Variables

The studies which meet the criteria for selection used over 500 different measures of personality. However, less than a quarter of these measures appear in more than one study. As a commentary on the level of integration within the field, this fact needs little amplification. There is a noticeable failure throughout these studies to resolve methodological issues in a consistent fashion.

Clearly, it is not feasible to present each separate personality variable and its correlates. Some organization of the measures was called for. But what organization? The field of personality assessment is test rich and integration poor. The 500 measures all have labels, to be sure, but they are as divergent as oral sadism, the F scale, spatial ability, adventurous cyclothymia, hypochondriasis, and total number of vista responses. Yet all of these measures have been used to predict something about an individual's performance in groups. In addition, there are innumerable adjectives used for ratings and self-descriptions. The situation required a set of personality factors small enough to remain manageable and pure enough to be meaningful, and then empirical grounds on which to classify as many of the variables as possible into the selected set of factors.

To arrive at a useful set of personality dimensions, the empirical work in the field of personality assessment, particularly the work of French (1953), Cattell (1946, 1956, 1957) and

Eysenck (1953) was examined. With one exception, the seven dimensions or factors chosen are those frequently isolated in the study of personality by factor analytic techniques, although two emerge only as second-order factors in some reports. A brief description of each personality factor is presented here.

Intelligence. This factor includes all the diverse and specific mental abilities. Sixty-nine of the 500 different variables included in the research reviewed are measures of this factor; of these sixty-nine measures 45 are derived from questionnaire and objective tests, 24 from adjective ratings. The four most frequently used measures of intelligence are: school or college grades, American Council of Education (ACE) Psychological Exam, Cattell's Sixteen Personality Factor Questionnaire (16 P.F.) Factor B, and total number of responses on the Rorschach.

Adjustment. The positive end of this dimension has been called adjustment, ego strength, and normality, while the negative end has been called maladjustment, emotionality, neuroticism, psychoticism, and anxiety. Seventy-one objective test and questionnaire variables and 60 adjectives are considered as measures of this factor. The most frequently used measures of this factor are derived from standard personality inventories: Minnesota Multiphasic Personality Inventory (MMPI), Guilford-Zimmerman, Bernreuter, and 16 P.F.

Extroversion-introversion. Eysenck (1953) presents the fullest discussion of this dimension, although the need to integrate as many variables as possible led to the use of a broader definition. Extroversion-introversion as used in this review, more closely resembles one of Cattell's (Cattell,

Saunders & Stice, 1951) second-order factors from the 16 P.F., which pulls together the dimensions of sociability, surgency, and cyclothymia vs. schizothymia. Frequently-used measures of this factor are: the Bernreuter F-2 scale (self-sufficiency), MMPI Hypomania scale, ratings on "sociable," and the relevant scales from the 16 P.F. (Cattell, 1956) and Guilford-Zimmerman (French, 1953). A total of 38 questionnaire and objective test variables and 61 adjective ratings were used in the studies reviewed.

Dominance. The positive end of the dimension is described by dominance or ascendancy, the negative end by submissiveness or helplessness. Seventeen objective test and questionnaire variables and twelve adjective-ratings which have been found to measure dominance were employed in these studies.

Masculinity-femininity. This factor measures the extent to which an individual's interests or preferences resemble those common to his own or the opposite sex. Of the 14 questionnaire and objective test variables and six ratings, the ones most frequently used in these studies are the masculinity-femininity scales from the MMPI, Guilford-Zimmerman, and Goodenough Speed of Association Test.

Conservatism. The positive end of this dimension is defined by conservatism, conventionalism, or authoritarianism, the negative end by radicalism. In the studies review, the measures of this factor include 36 questionnaire and objective test variables and 11 adjective-ratings. By far the most frequently used are the F scale and factor Q₁ from the 16 P.F.

Interpersonal sensitivity. This factor has not been found in factor ana-

lytic studies of personality, and some authors have questioned whether it is proper to speak of empathy and insight as characteristics of the individual. However, it is included in this review because it has been related to an individual's status in groups a sufficient number of times to merit separate treatment. For the most part, the measures describe an individual's ability to guess (a) his own status in a group, (b) the status hierarchy of the entire group, as determined by the pooled estimates of the members, or (c) the opinions and attitudes of the other group members.

One hundred and fifty variables out of the total of over 500 could not reasonably be classified into any one of the seven factors. Some of these 150 variables fall into other known factors or clusters, but the number of additional results which could be included by considering them is too small to justify the consequent complexity of the presentation. The majority of the excluded variables, however, come from projective tests; in such cases, both the titles and the known correlations with other personality measures combined to mystify this reviewer as to what meaning they might have outside the language system of the particular technique. Many projective test variables do not fall into stable and identifiable clusters or factors; further, the level of description used in projective tests makes it difficult to bridge the gap between the seven aspects of personality examined in this review and the various projective measures. Except for the measures of interpersonal sensitivity, the distribution of variables into factors was determined by the empirical evidence for the measure's validity. Where no validity data were found for a measure, a calculated risk was taken in assigning it

to a factor if the title and operation closely resembled the set of variables already chosen on empirical grounds as measures of the factor; this process accounted for no more than 50 of the variables classified.

The Status and Behavior Variables

In contrast to personality variables, measures of an individual's status and behavior in groups fall easily into a small number of classes. On the basis of both operations and labels the following six dependent variables were selected: (a) leadership, (b) popularity, (c) total activity rate, (d) task activity, (e) social-emotional activity, and (f) conformity. Leadership and popularity are considered to be status variables; the remaining four are considered to be behavior variables.

Leadership has been measured in four ways: by having an observer rate the individual's attained leadership, by having an individual's peers rate him, by using an individual's formal selection for office as the criterion of leadership, or by having the individual rate himself. The only measures included in the discussion of leadership which do not bear that label are a few measures on the individual's productivity and effectiveness. Popularity has been measured by having an individual's peers rate him on such dimensions as the extent to which they like him, find him acceptable as a friend, would choose him for leisure time activities, or perceive him to be popular.

The remaining dependent variables are based upon actual observations of the individual's behavior in the group. Activity rate has been measured in terms of either the number of acts initiated or the number of seconds spent talking. The distinction between task activity and social-

emotional activity is made by Bales (1950). He distinguishes between task acts, relevant to the external-adaptive problems of the group (suggestions, opinions, orientations, and task questions), and social-emotional acts, relevant to the internal-integrative problems of the group (agreeing and disagreeing, showing tension release and tension, showing solidarity and antagonism). Measures of behavior other than those employing the Bales categories were matched as carefully as possible to the Bales categories and classified on that basis. Conforming behavior includes all measures of an individual's tendency to yield to the opinions or pressures of the group.

The review thus covers seven aspects of personality and six aspects of behavior and status. If the data were available in sufficient quantity, we would be able to examine 42 different relationships between personality and behavior or status.

Method of Presentation

One final issue, the most appropriate unit of research, must be discussed before the presentation of the findings. The problem arises from the fact that a single study may contain, for example, more than one measure of leadership and more than one measure of intelligence. On the one hand, we might consider the study as the unit, examining only the over-all trend of the many results. On the other hand, we might consider each result as the unit, examining the findings from a study in as much detail as possible.

The advantage of using a whole study as the unit is that units are then independent, and, therefore, statistical tests of the significance of the trends are possible. Another approach is to consider as the separate

unit each result, that is, each correlation or measure of difference between groups. This can lead to overrepresentation of a particular sample and a particular set of measures in the total summary of research to date. Moreover, it is not possible to use statistical tests to evaluate trends based on more than one result per study, since using the same subjects and then using independent or dependent variables which are highly correlated with each other would violate the assumption of independence which underlies statistical tests.

If each relationship had been investigated in a sufficient number of studies to permit statistical tests in most cases, we would have chosen studies as the units. Because such is not the case, we have chosen the result as the unit of research, but it is recognized that, for the above-mentioned reasons, any trends based on separate results must remain as descriptive indications of the findings to date. Where the number of studies is sufficient to provide an opportunity to use statistical tests, the tests will be made.

There are a number of advantages, however, to using the results as units. Over 1400 results are examined in this review. The far greater number of results may compensate for the disadvantages of this approach by offering greater stability to the trends.

The association between a personality variable and a status or behavior variable is reported in one of eight forms: (a) positive and significant, (b) positive and not significant, (c) positive but no report of significance, (d) negative and significant, (e) negative and not significant, (f) negative but no report of significance, (g) zero correlation, and (h) not significant but no report of direction. Throughout this review a

positive finding refers to the association between the positive ends of the personality and performance variables as described earlier, not to the confirmation of an hypothesis. The .05 level is accepted as the criterion of significance.

Each relationship for which five or more results are available and which has been investigated in more than one study is examined in detail. Three summary statistics are used throughout to describe the findings for each relationship. First, the over-all direction of the results is shown by the percentage of results which are positive; this is calculated by dividing the number of positive results (*a*, *b*, and *c* above) by the number of results which indicate direction (the total number minus *g* and *h*). Second, the over-all direction of the results is further shown by the percentage of significant results which are positive; this is calculated by dividing the number of results which are significantly positive (*a*) by the total number of significant results (*a* and *d*). Third, as a way of examining the significance of the results underlying the trends, the percentage of the total number of results which are significantly positive or negative, depending on the direction of the trend, is shown. If the trend is positive, this is calculated by dividing the number of significantly positive results (*a*) by the total number of results minus the number which are positive but untested (*c*); if the trend is negative, this is calculated by dividing the number of significantly negative results (*d*) by the total number of results minus the number which are negative but untested (*f*).

There appears to be a general belief that many inconclusive and negative findings are filed away into obscurity, doomed never to enter the

professional literature. To the extent that this bias exists in the area reviewed, the trends are misleading. This reviewer has succeeded in obtaining some unpublished data and doctoral dissertations in an effort to counterbalance the alleged distortion in the published materials. However, it may be noted that the unpublished data included here are in almost perfect agreement with the data in the journals and monographs. This seems to suggest that considerations other than the conclusiveness of the results operate to determine which results will be published.

Leadership

Viewed historically, the study of leadership has stimulated more than its share of controversy. The trait approach to leadership, the view that leadership is an attribute of the individual, has received the harshest treatment throughout the years. To have spoken of an individual as possessing a measurable quantity of leadership was perhaps an unfortunate choice of words. The clear implication of such a statement is that since leadership is specific to the individual, it will remain constant for the individual regardless of the situation in which he finds himself. Investigations of the actual consistency with which an individual maintains leadership status in different groups and under varying conditions have yielded results sufficiently equivocal to permit a new bifurcation of the field. On the one hand, the trait approach has been modified to imply that an individual's achieved leadership status is a function of his personality. On the other hand, sufficient evidence has been accumulated to give impetus to the situational approach to leadership, which maintains that leadership is an emergent

phenomenon, created through the interaction of individuals (leaders and followers), and that the selection and stability of any leadership pattern is a function of the task, composition, and culture of the group. From all this work has emerged some such summary formulation as that an individual's leadership status in groups is a joint function of his personality and the particular group setting. There is an interesting parallel here to the controversy over the role of heredity and environment in determining behavior; the initial criticisms and intensity gave way to concessions that each factor sets limits for the operation of the other, and researchers turned to studying the relative importance of and the interaction between the two major factors.

Table 1 presents a summary of the relationships between seven aspects of personality and leadership. Shown there are the number of relevant studies, the number of results contained in those studies, the distribution of results into the various forms in which they are reported, and the three summary statistics. The re-

sults are reported in eight forms: the positive and negative associations may be significant (Sig.), not significant (N.S.), or untested (Unt.); the remaining two forms, zero correlation (zero) and not significant but no direction reported (?N.S.) are combined in the table. The base numbers for the summary percentages are enclosed in parentheses below the percentages. The base number for the percentage of results which are positive (*i*) is the total number of results which indicate direction; the base number for the percentage of significant results which are positive (*j*) is the total number of significant results; the base number for the percentage of results which are both significant and in the direction of the over-all trend (*k*) is the total number of results minus the positive but untested (*c*) or negative but untested (*f*) results, depending on the direction of the trend. A separate section covers each relationship between an aspect of personality and leadership.

Intelligence. Twenty-eight of the studies reviewed (Arbous & Maree, 1951; Bass, 1951b; Bass & Coates, 1952; Bass, McGehee, Hawkins,

TABLE 1
THE RELATIONSHIP BETWEEN PERSONALITY FACTORS AND LEADERSHIP

Personality Factors	No. of Studies	No. of Results	Positive			Negative			Zero ?N.S. (g, h)	Positive		% Sig. & in Dir. of Trend (k)
			Sig. (a)	N.S. (b)	Unt. (c)	Sig. (d)	N.S. (e)	Unt. (f)		% (i)	% of Sig. (j)	
Intelligence	28	196	91	68	14	1	22	0	0	88 (196)	99 (92)	50 (182)
Adjustment	22	164	50	55	14	2	28	0	15	80 (149)	96 (52)	33 (150)
Extroversion	22	119	37	38	6	6	23	3	6	72 (113)	85 (43)	33 (113)
Dominance	12	39	15	9	3	6	4	0	2	73 (37)	71 (21)	42 (36)
Masculinity	9	70	11	37	0	1	19	0	2	71 (68)	92 (12)	16 (68)
Conservatism	17	62	3	18	0	17	21	3	0	38 (62)	15 (20)	29 (59)
Sensitivity	15	101	15	55	3	1	25	0	2	74 (99)	94 (16)	15 (98)

Young, & Gebel, 1953; Bass & Wurster, 1953a; Bass, Wurster, Doll, & Clair, 1953; Borgatta, 1953; Carter & Nixon, 1949; Cattell & Stice, 1954; Cobb, 1952; Cowley, 1931; Dunkerly, 1940; Flemming, 1935; French, 1951; Gibb, 1949a; Gordon, 1952; Gowan, 1955; Green, 1950; Howell, 1942; Hunter & Jordan, 1939; McCuen, 1929; Richardson & Hanawalt, 1943; Riggs, 1953; Slater, 1955a; Stolper, 1953; Sward, 1933; Wurster & Bass, 1953; Zeleny, 1939) have investigated the association between an individual's intelligence and his leadership status in one or more groups. These studies contain 196 results, 173 (or 88%) of which indicate a positive relationship between intelligence and leadership. Furthermore, 91 (or 99%) of the 92 significant results are in the positive direction. Omitting those results which are positive but untested for significance, exactly half of the remaining 182 results are both positive and significant at the .05 level. Considering independent studies as the units of research, the positive association between intelligence and leadership is found to be highly significant ($p < .01$) by the sign test. However, the magnitude of the relationship is less impressive; no correlation reported exceeds .50, and the median r is roughly .25.

There is some indication that verbal intelligence is a better predictor of leadership than such non-verbal factors as memory and numerical ability. Grades are not strongly related to leadership in college social groups, although this fact may reflect competition between scholastic and social activities for the student's time and energy.

There would seem to be little doubt that higher intelligence is associated with the attainment of leadership in small groups. That the null

hypothesis may be emphatically rejected should not obscure the fact that the magnitude of the relationship is not high.

Adjustment. The 22 studies (Bass, McGehee et al., 1953; Bass, Wurster et al., 1953; Borgatta, 1953; Carter & Nixon, 1949; Cattell & Stice, 1954; Cowley, 1931; Dexter & Stein, 1955; Dunkerly, 1940; Flemming, 1935; French, 1951; Gibb, 1949a; Gordon, 1952; Gowan, 1955; Holtzman, 1952; Hunter & Jordan, 1939; Richardson & Hanawalt, 1943, 1944, 1952; Slater, 1955a; Stolper, 1953; Williamson & Hoyt, 1952; Zeleny, 1939) relating the personal adjustment of the individual to his leadership status yield 164 results. The trend of the results is clearly positive, as indicated by the fact that 80% of the results are in the positive direction. If only the 52 significant results are considered, the proportion of positive results rises to 96%. One third of the results are both positive and significant. The over-all trend within every study but one is positive, and the sign test indicates that the null hypothesis of no association may be rejected at the .01 level. No single variable measuring adjustment is correlated with leadership over .53, and the median correlation appears to lie close to .15.

Four studies using the Bernreuter (Gowan, 1955; Richardson & Hanawalt, 1943, 1944, 1952) and one using the 16 P.F. (Cattell & Stice, 1954) present the most striking evidence of this positive association but the various techniques for measuring adjustment (questionnaires, objective tests, and ratings) are about equally productive of positive results. While no single measure of adjustment can be expected to be an efficient predictor of leadership, there is strong evidence to indicate a positive

relationship between an individual's adjustment and the leadership status he is likely to attain.

Extroversion-introversion. Twenty-two studies (Bass, McGehee et al., 1953; Bass, Wurster et al., 1953; Borgatta, 1953; Carter & Nixon, 1949; Cattell & Stice, 1954; Cowley, 1931; Dexter & Stein, 1955; Dunckerly, 1940; Flemming, 1935; French, 1951; Gordon, 1952; Gowan, 1955; Hunter & Jordan, 1939; Moore, 1935; Richardson & Hanawalt, 1943, 1952; Slater, 1955a; Stolper, 1953; Sward, 1933; Williamson & Hoyt, 1952; Zeleny, 1939) have investigated the association between extroversion and leadership; 72% of the results are positive, and 85% of the 43 significant results are positive. The non-chance character of this association is suggested by the fact that 33% of the results are both significant and positive. Finally, the sign test on the over-all trends for the independent studies reveals that the positive association is significant at the .01 level.

No single measure of extroversion is consistently related to leadership, with the possible exception of the relevant Guilford-Zimmerman scales. The median correlation is roughly .15, and the highest correlation reported is .42. Those individuals who tend to be selected as leaders are more sociable and outgoing, although the process of inferring such a characterization from the titles of the personality scales is a tenuous matter at best.

Dominance. Twelve studies (Bass, McGehee et al., 1953; Bass, Wurster et al., 1953; Borgatta, 1953; Carter & Nixon, 1949; Cattell & Stice, 1954; Cobb, 1952; Cowley, 1931; Dexter & Stein, 1955; Gordon, 1952; Moore, 1935; Stolper, 1953; Zeleny, 1939) have investigated whether domi-

nance, as measured by personality scales, is associated with an individual's leadership status; 73% of the results are positive, and 71% of the 21 significant results are positive. The significance of the positive association is suggested by the fact that 42% of the results are both positive and significant. No correlation reported exceeds .42, and the median correlation is roughly .20.

The two measures of dominance which yield the best evidence for a positive relationship between dominance and leadership are the Ascendence and Dominance scales from the Guilford-Zimmerman and 16 P.F., respectively. Particularly unsuccessful, however, have been the attempts to use Allport's Ascendence-Submission Test. Although the trend is not very strong, these data suggest that dominant or ascendent individuals have a greater chance of being designated leader.

Masculinity-femininity. There is a slight positive association between masculinity and leadership status; 71% of the results are positive. Although 92% of the 12 significant results are positive, significant results are found in only two of the nine studies. No single measure of masculinity relates to leadership in a consistently positive direction, and the correlations are uniformly low (Bass, Wurster et al., 1953; Bell, 1952; Carter & Nixon, 1949; Cobb, 1952; Dexter & Stein, 1955; Gordon, 1952; Slater, 1955a; Stolper, 1953; Zeleny, 1939).

Conservatism. Only one measure of this factor displays any consistency in its association with leadership. The California F scale, a measure of authoritarian trends within the personality, has been used 10 times in the prediction of leadership. In each case, high-F, or authoritarian, indi-

viduals were found to be rated lower on leadership than nonauthoritarian individuals. In general, there is a negative association between conservatism and leadership. This is especially evident within the significant results, 17 out of 20 being in the negative direction (Bass & Coates, 1952; Bass, McGehee et al., 1953; Bass, Wurster et al., 1953; Carter & Nixon, 1949; Cattell & Stice, 1954; Cowley, 1931; Flemming, 1935; French, 1951; Hays, 1953; Haythorn, Couch, Haefner, Langham, & Carter, 1956a; Hollander, 1954; Hunter & Jordan, 1939; Martin, Gross, & Darley, 1952; Masling, Greer, & Gilmore, 1955; Slater, 1955a, 1955b; Stolper, 1953).

Interpersonal sensitivity. Few areas covered by this review contain so much research which builds upon prior results as this one. Unfortunately, few are so plagued by difficulties and contradictory evidence. The over-all trend of the results is positive; in 74% of the cases leaders are found to be more accurate in estimating various aspects of the opinions of other group members than nonleaders. More impressive is the fact that 15 out of the 16 significant results indicate greater insight among leaders. Although two of the relevant studies report a zero correlation between interpersonal sensitivity and leadership, the trends of the results in the remaining 13 studies are positive. It would appear that while most researchers have been unable to obtain positive results which are statistically significant, they have obtained positive results with impressive consistency (Bell, 1952; Bell & Hall, 1954; Campbell, 1953; Chowdhry, 1948; Chowdhry & Newcomb, 1952; Gage & Exline, 1953; Green, 1948; Greer, Galanter, & Nordlie, 1954; Hites & Campbell, 1950; Nord-

lie, 1954; Smith, Jaffe, & Livingston, 1955; Sprunger, 1949; Stolper, 1953; Trapp, 1955; Zeleny, 1939).

According to Campbell (1955) one part of these results is open to a serious methodological criticism. When interpersonal sensitivity is measured in terms of an individual's accuracy in guessing how his peers will rate him on leadership, the correlation between interpersonal sensitivity and leadership is spuriously positive. If accuracy is measured by the discrepancy between an individual's actual leadership status and his guessed leadership status, and if, further, there is a tendency for most individuals to guess that they will be rated as having fairly high status, then the higher the actual status, the less the discrepancy and the higher the apparent interpersonal sensitivity. Thus, the positive correlation between actual leadership status and this accuracy score is a statistical artifact. The cogency of Campbell's criticism may be reflected in the fact that 14 of the 17 correlations reported between actual leadership status and accuracy about one's own leadership status are positive. Since the proportion of these questionable results which are positive (82%) is higher than the proportion of results remaining (70%) when these are eliminated, the validity of Campbell's criticism is at least suggested.

There are a number of problems of interpretation in this area of research. Gage and Cronbach (1955) have written a penetrating analysis of the difficulties in measuring interpersonal sensitivity. Among other things, they point out the importance of controlling the contribution of the individual's actual similarity to others in measuring his empathic ability. To conclude that the leader is more aware of group opinion is a different

matter than to conclude that his opinion is more similar to the average opinion. More rigorous examination of the components of interpersonal sensitivity and their various associations with leadership remains a task for future research.

A second problem arises when one attempts to specify which of the many items of group opinion leaders may be expected to estimate more accurately than nonleaders. According to Chowdhry and Newcomb (Chowdhry, 1948; Chowdhry & Newcomb, 1952) the item cannot be too irrelevant to the group under study or the leader will not have adequate data on which to base his estimate. On the other hand, according to Newcomb (1954) the item cannot be too relevant or everyone will know the opinion of everyone else, and the difference will disappear. Chowdhry and Newcomb are proposing a range of relevance within which accuracy in estimating group opinion will be positively related to leadership status. In the absence of an objective definition of relevance, this proposition, for all its attractiveness on the common sense level, has remained an *ad hoc* instrument to be wielded against conflicting results. An examination of five studies (Campbell, 1953; Gage & Exline, 1953; Greer et al., 1954; Hites & Campbell, 1950; Trapp, 1955) subsequent to Chowdhry and Newcomb's reveals a low positive relationship between leadership and accuracy, but fluctuations in the magnitude of the association cannot be related to the relevance of the items because no valid scale of relevance can be applied across studies.

One additional fact emerges from the research in this area. Group members believe that their leaders are more aware of their opinions and feelings than the nonleaders of the

group (Campbell, 1953; Sprunger, 1949; Zeleny, 1939). In summary, there appears to be a low but clearly positive relationship between interpersonal sensitivity and leadership. However, methodological and conceptual problems remain which can be resolved only by future research.

Techniques of measurement. Leadership status has been measured in at least four ways: by observer ratings, by peer ratings, by criterion measures, and by self-ratings. The latter technique has been used only once in these studies, but for the three remaining techniques it is possible to ask whether different results are obtained when different techniques are used.

Peer ratings and criterion measures rest upon the estimates of an individual's peers. Peer ratings are essentially descriptions of an individual's present leadership status, whereas criterion measures reflect the group's selection for future leadership. The peer ratings are assessments of the informal leadership structure, whereas criterion measures reflect the formal leadership structure. Numerous studies have noted that there is seldom complete correspondence between the designations which emerge from these two approaches. Observer ratings measure the present informal leadership structure of the group, but the evaluation is made by someone outside the group, in most cases by someone not personally involved in the future of the group, and, therefore, the observer is not implicitly locating himself on the status hierarchy by the act of rating. Finally, the observer is a member of a unique species of judging humanity, a social scientist, with special training and perhaps even special criteria of leadership.

In the cases of intelligence, ad-

justment, and extroversion vs. leadership, the number of results is large enough to permit detailed analysis of the relationships in terms of the different measuring techniques employed. Table 2 shows the percentage of results which are positive when the three techniques of measuring leadership are related to the personality factors of intelligence, adjustment, and extroversion. The base numbers are shown in parentheses.

The relationship between intelligence and leadership appears to be quite independent of the techniques of measuring leadership. On the other hand, there is a striking difference between the way adjustment and extroversion are related to leadership as the technique of measurement varies. Adjustment is positively related to peer ratings on leadership in 97% of the cases, while it is positively related to criterion measures in only 76% of the cases. Extroversion is not related to peer ratings at all, but it is consistently related to criterion measures. It appears that an individual's adjustment is more important in determining his infor-

mal leadership status (peer ratings) than his formal leadership status (criterion measures). In contrast, extroverted individuals are no more likely than introverted individuals to be rated as informal leaders by their peers, but they are quite likely to be selected as the formal leader for the future. Finally, scanning the third column of the table, it may be noted that intelligence is more consistently related to observer ratings than either adjustment or extroversion.

It does appear that different aspects of an individual's status are being measured by these techniques, and that these different aspects are not uniformly related to his personality. This crude division of the operations into peer ratings, criterion measures, and observer ratings suggests at least two dimensions of possible relevance. It may be important to differentiate between descriptions of present or informal leadership and choices for future or formal leadership; to rate on leadership and to select for leadership may engage quite different standards on the part of the group member. Secondly, it may be critical to know more about who is doing the judging, about the judge's training and his involvement in the group and in the outcome of the rating process itself.

Summary. A number of relationships between an individual's personality and his leadership status in groups appear to be well established. The positive relationships of intelligence, adjustment, and extroversion to leadership are highly significant. In addition, dominance, masculinity, and interpersonal sensitivity are found to be positively related to leadership, while conservatism is found to be negatively related to leadership. Finally, evidence has been presented to indicate that the

TABLE 2
THE RELATIONSHIP BETWEEN PERSONALITY
FACTORS AND LEADERSHIP USING THREE
DIFFERENT TECHNIQUES OF MEAS-
URING LEADERSHIP

	Percentage of Results Positive		
	Peer Ratings	Criterion Measures	Observer Ratings
Intelligence	91 (66)	85 (40)	89 (69)
Adjustment	97 (31)	76 (87)	76 (41)
Extroversion	50 (30)	86 (58)	70 (35)

TABLE 3
THE RELATIONSHIP BETWEEN PERSONALITY FACTORS AND POPULARITY

Personality Factors	No. of Studies	No. of Results	Positive			Negative			Zero, N.S. (g, h)	Positive		% Sig. & in Dir. of Trend (k)
			Sig. (a)	N.S. (b)	Unt. (c)	Sig. (d)	N.S. (e)	Unt. (f)		% (i)	% of Sig. (j)	
Intelligence	13	38	6	23	0	1	6	0	2	81 (36)	86 (7)	17 (36)
Adjustment	18	78	15	34	5	0	19	0	5	74 (73)	100 (15)	21 (73)
Extroversion	13	46	9	13	9	1	5	0	9	84 (37)	90 (10)	24 (37)
Dominance	6	9	0	5	0	2	1	0	1	63 (8)	0 (2)	0 (9)
Masculinity	4	8	0	5	0	0	3	0	0	63 (8)	— (0)	0 (8)
Conservatism	11	18	3	7	1	2	2	0	3	73 (15)	60 (5)	18 (17)
Sensitivity	11	38	6	16	0	1	13	0	2	61 (36)	86 (7)	16 (38)

relationship between personality factors and leadership varies with the technique of measuring leadership.

Popularity

The personality determinants of individual popularity have received less attention than the determinants of leadership. At the same time, however, the importance of personality factors has been more or less assumed, and the situational approach to popularity is not well developed. While less is known about the actual consistency with which an individual maintains his popularity in different groups and across changing conditions, there is reason to believe that popularity, no less than leadership, may be profitably examined in terms of both personality and situational factors.

Table 3 presents a summary of the relationships between seven aspects of personality and an individual's popularity in groups. Since this table is constructed in a manner parallel to Table 1, no detailed explanation of its form will be given.

Intelligence. Thirteen studies (Bass, Wurster et al., 1953; Bonney,

Hoblit, & Dreyer, 1953; Borgatta, 1953; Burks, 1937; Cronbach, 1950; Fiedler, Doyle, Jones, & Hutchins, 1957; French & Menth, 1948; Kelly, 1957; Mill, 1953; Reilly, 1947; Riggs, 1953; Shapiro, 1953; Slater, 1955a) have related an individual's intelligence to his popularity. An examination of the 38 results shows that 81% are positive and 86% of the seven significant results are positive; 17% of the results are both positive and significant. The maximum correlation obtained is .37, and the median correlation is no higher than .10.

College grades are more strongly related to popularity than any other measure of intelligence. In contrast, it may be remembered that grades were less strongly related to leadership than other measures of intelligence. In general, there appears to be a tendency for intelligent individuals to be more popular.

Adjustment. All of the 15 significant results relating an individual's personal adjustment to his popularity are in the positive direction, but when the insignificant and untested results are included, the proportion falls to

74%. Although several of the correlations reported are over .50, the median is close to .10 (Bass, Wurster et al., 1953; Bonney et al., 1953; Borgatta, 1953; Burks, 1938; Cattell, 1934; Cohen, 1954; Cronbach, 1950; Fiedler et al., 1957; French & Menesh, 1948; Guthrie, 1956; Kelly, 1957; Martin et al., 1952; Mill, 1952, 1953; Shapiro, 1953; Slater, 1955a; Tagiuri, 1952).

No single measure of adjustment is convincingly related to popularity, with one exception (Guthrie, 1956), an opinion survey designed to measure "satisfactory personal habits." There is some indication in these data that more popular persons are better adjusted.

Extroversion. When the separate results within each study are pooled and the trend over independent studies is assessed, it is found that 11 of the 12 trends are in the positive direction. Further indication that extroversion is positively associated with popularity comes from the 46 separate results; 84% of the results and 90% of the significant results are positive.

The scales measuring extroversion on the 16 P.F. are better predictors of popularity than the corresponding scales on the Guilford-Zimmerman, and ratings on extroversion are more highly related to popularity than either. The highly chosen, popular individual emerges from these studies as a sociable, surgent, and emotionally labile person (Bass, Wurster et al., 1953; Bonney et al., 1953; Borgatta, 1953; Burks, 1938; Cattell, 1934; Cronbach, 1950; French & Menesh, 1948; Kelly, 1957; Lemann & Solomon, 1952; Mill, 1952, 1953; Shapiro, 1953; Slater, 1955a).

Dominance. On the basis of nine contradictory results little can be said about the relationship between

dominance and popularity. The trend is positive, but the two significant results are negative (Bass, Wurster et al., 1953; Bonney et al., 1953; Borgatta, 1953; Kelly, 1957; Lemann & Solomon, 1952; Shapiro, 1953).

Masculinity-femininity. None of the attempts to relate masculinity to popularity have yielded significant results, and the trend, though positive, is weak (Bass & Wurster, 1953a; Mill, 1953; Shapiro, 1953; Slater, 1955a).

Conservatism. Conservatism is positively associated with popularity in 73% of the results. More popular individuals tend to be more conservative, conventional, or authoritarian (Bass, Wurster et al., 1953; Bonney et al., 1953; French & Menesh, 1948; Hays, 1953; Kelly, 1957; Martin et al., 1952; Masling et al., 1955; Rohde, 1951; Shapiro, 1953; Slater, 1955a).

Interpersonal sensitivity. The relationship between empathy or interpersonal sensitivity and popularity has been investigated in 11 studies (Ausubel, 1955; Ausubel & Schiff, 1955; Gage & Exline, 1953; Greer et al., 1954; Lemann & Solomon, 1952; Nordlie, 1954; Norman, 1953; Singer, 1951; Taylor, 1956; Trapp, 1955; Van Zelst, 1953), but the criticisms applied to the studies of empathy and leadership are equally relevant to this body of research. Although 61% of the results are positive, this summary statistic must be examined more carefully.

If Campbell's (1955) criticism is valid, it is improper to relate an individual's popularity to his awareness of that popularity, using the latter as the measure of interpersonal sensitivity. Since the accuracy score is based in part on the person's actual status, this produces spuriously posi-

tive correlations. Eliminating the results to which Campbell's criticism would be directed, the proportion of positive results among those remaining is only slightly over 50%. Until the possibility can be discounted that a number of spurious results are embedded in this body of data, the direction of this relationship cannot be estimated with safety.

Summary. Extroversion, intelligence, adjustment, and conservatism are found to be positively related to popularity. The research to date, for various reasons, provides no definite answer to the question of how dominance, masculinity, and interpersonal sensitivity are related to popularity.

Total Activity Rate

Only three aspects of personality have been related to total activity rate a sufficient number of times to warrant their inclusion in this review. Table 4 presents a summary of the relationships of intelligence, adjustment, and extroversion to the individual's total activity.

Intelligence. The relationship between intelligence and activity rate could hardly be clearer. All 36 results are positive, and one-third of the results are significant. The median correlation is between .15 and .20, the highest correlation re-

ported is .34. The data leave little doubt that the relationship between intelligence and total amount of participation, although of low magnitude, is positive (Bass, 1951b; Bass, Wurster et al., 1953; Borgatta, 1953; Brown, 1950; Slater, 1955a; Zeleny, 1939).

Adjustment. Roughly three-quarters of the total number of results indicate a positive relationship between adjustment and total activity rate, but few of the results reach significance. With particular consistency, adjustment as measured by the MMPI is positively related to the total amount of an individual's participation (Bass, Wurster et al., 1953; Borgatta, 1953; Brown, 1950; Cervin, 1956, 1957; Slater, 1955a).

Extroversion. Measures of extroversion are positively related to total activity rate in 11 (or 79%) of the 14 results; all four significant results are positive. Two studies (Brown, 1950; Slater, 1955a) report a positive correlation between the Hypomania scale of the MMPI which indicates greater maladjustment among high participants. Since other research (French, 1953) has shown that the Hypomania scale measures both extroversion and maladjustment, these results at least suggest that extroversion may be more strongly related to total activity rate than adjustment (Bass, Wurster et al., 1953; Bor-

TABLE 4
THE RELATIONSHIP BETWEEN PERSONALITY FACTORS AND TOTAL ACTIVITY RATE

Personality Factors	No. of Studies	No. of Results	Positive			Negative			Zero, ?N.S. (g, h)	Positive		% Sig. & in Dir. of Trend (k)
			Sig. (a)	N.S. (b)	Unt. (c)	Sig. (d)	N.S. (e)	Unt. (f)		% (i)	% of Sig. (j)	
Intelligence	6	36	12	24	0	0	0	0	0	100 (36)	100 (12)	33 (36)
Adjustment	6	42	3	28	0	1	10	0	0	74 (42)	75 (4)	7 (42)
Extroversion	5	14	4	7	0	0	3	0	0	79 (14)	100 (4)	29 (14)

gatta, 1953; Brown, 1950; Slater, 1955a; Zeleny, 1939).

Summary. Of the three personality measures used with any frequency, intelligence stands out as the personality characteristic most conclusively related to activity rate. Extroversion and adjustment also seem to bear a positive relationship to activity rate.

Task Activity

Task activity includes measures of the frequency with which an individual gives suggestions, opinions, and orientations and asks questions. It is necessary, therefore, to differentiate between task contribution and task questions. Unfortunately, personality variables have not been related to the frequency of asking questions a sufficient number of times to be included here. Therefore, this section deals exclusively with task contributions.

There is room for doubt, however, whether task activity deserves to be treated independently of total activity, since correlations as high as .93 between the number of task contributions and the total number of acts initiated have been reported (Borgatta, 1953). This is hardly surprising in view of the fact that in some studies two-thirds or more of the total number of acts are task contributions. There is no question that the operation for determining the number of task contributions is distinct from the operation for measuring total activity. The issue is whether, in the light of the high correlation between these two measures, results based upon task contributions are not actually misleading. The implication is that one category of behavior, task activity, is meaningfully related to some personality variable. But if task activity plus

nontask activity is related to the personality characteristic in a nearly identical fashion, what is the value of the categorization? Total activity rate accounts for both relationships more parsimoniously.

Two researchers, Borgatta (1953) and Slater (1955a) were aware of such difficulties. Arguing that an individual's task-relevant behavior should be considered independently of his total activity rate, they measured task activity by taking the percentage of his total activity which fell within the task contribution area. It is possible to use their data to examine the relationship between personality characteristics and task activity, controlling for total activity rate. In fact, the best argument for including a separate section in this review devoted to task activity is that Borgatta and Slater's percentage data raise a separate issue. Their data provide an estimate of the relation between an individual's personality characteristics and the extent to which he concentrates his activity in the task contribution area.

Table 5 presents a summary of the results relating personality to task activity. In the three relationships of intelligence, adjustment, and masculinity to task activity the results based upon percentages are shown beneath the results based upon the raw numbers of task contributions.

Intelligence. Whereas 80% of the results relating intelligence to the raw number of task contributions are in the positive direction, only 23% of the results relating intelligence to the percentage of task contributions are positive. Apparently, the finding based upon raw numbers is highly dependent on the correlation between the raw number of task contributions and the total amount of activity. As

TABLE 5

THE RELATIONSHIP BETWEEN PERSONALITY FACTORS AND TASK ACTIVITY

Personality Factors	No. of Studies	No. of Results	Positive			Negative			Zero, ?N.S. (g, h)	Positive		% Sig. & in Dir. of Trend (k)
			Sig. (a)	N.S. (b)	Unt. (c)	Sig. (d)	N.S. (e)	Unt. (f)		% (i)	% of Sig. (j)	
Intelligence raw	4	45	13	23	0	1	8	0	0	80 (45)	93 (14)	29 (45)
%	2	13	0	3	0	0	10	0	0	23 (13)	— (0)	0 (13)
Adjustment raw	4	19	7	10	0	0	2	0	0	89 (19)	100 (7)	37 (19)
%	2	20	1	7	0	0	12	0	0	40 (20)	100 (1)	0 (20)
Extroversion	4	19	6	9	0	0	3	0	1	83 (18)	100 (6)	32 (19)
Dominance	3	8	3	3	0	0	2	0	0	75 (8)	100 (3)	38 (8)
Masculinity raw	1	21	5	12	0	2	2	0	0	81 (21)	71 (7)	24 (21)
%	1	3	0	1	0	0	2	0	0	33 (3)	— (0)	0 (3)
Conservatism	4	12	3	3	0	2	2	0	2	60 (10)	60 (5)	30 (10)

noted above, the higher the individual's intelligence, the more likely he is to be a high participator. Since the total number of acts initiated and the number of task contributions initiated are almost perfectly correlated, a positive association between intelligence and the raw number of task contributions could have been predicted. However, the negative relationship between intelligence and concentration of activity in the task area was unexpected; 10 out of 13 correlations are in the negative direction. It appears that although intelligent individuals talk more than less intelligent individuals, they concentrate less of their total activity in the area of task contributions (Borgatta, 1953; Carter & Nixon, 1949; Cattell & Stice, 1954; Miller, 1939; Slater, 1955a).

Adjustment. The relationship between personal adjustment and task activity depends upon the contribution of total activity rate to the results. When the raw number of task

contributions is employed, the relationship is positive; when task activity is measured in terms of the percentage of total activity, the relationship fails to hold. Actually, the trend of the results is slightly negative, but the only significant result is positive. When the factor of total activity rate is controlled, the strong positive relationship between adjustment and task activity is reduced to a low negative relationship (Borgatta, 1953; Carter & Nixon, 1949; Cattell & Stice, 1954; Miller, 1939; Slater, 1955a).

Extroversion. Extroversion is positively related to the raw number of task contributions, but it is not possible to partial out the total activity factor underlying these results. It may at least be suspected that the relationship would be altered if extroversion were related to task activity, holding activity rate constant through statistical controls (Borgatta, 1953; Carter & Nixon, 1949; Cattell & Stice, 1954; Miller, 1939).

Dominance. The studies reviewed contain only eight results bearing on the relationship between dominance and the number of task contributions. Six of the results are positive and the three significant results are positive (Borgatta, 1953; Carter & Nixon, 1949; Cattell & Stice, 1954).

Masculinity-femininity. Masculinity has been related to task activity in only two studies (Carter & Nixon, 1949; Slater, 1955a). The one study which related masculinity to the raw number of task contributions found 81% of the results to be positive. On the other hand, the study employing percentages of total activity as the measure of task contributions found only one out of three results to be positive. The extent to which masculinity relates to an individual's tendency to concentrate his activity in the task area remains largely unknown.

Conservatism. Four studies (Carter & Nixon, 1949; Cattell & Stice, 1954; Haythorn et al., 1956a, 1956b) have examined the relation between conservatism and the amount of task activity initiated. A slight positive trend emerges from the data, indicating that conservative or authoritarian individuals tend to give more task contributions than nonauthoritarian individuals. However, there are too few results to establish this trend as significant.

Summary. A serious difficulty underlies the attempts to relate personality variables to task activity when the latter is measured in terms of the raw number of task contributions. The results are not independent of the relationship between personality variables and total activity rate. Adjustment, extroversion, masculinity, intelligence, dominance, and conservatism are all found to be positively related to the raw number of

task contributions, but the relationships are reversed in the three cases where it is possible to control for total activity rate by using percentages. Intelligence, adjustment, and masculinity are negatively related to the proportion of a man's total activity which falls within the area of task contributions. It must be admitted that the reversals are not uniformly convincing; the pattern of results for adjustment vs. task activity is mixed, and there are only three results in the case of masculinity. On the other hand, for all their faults, these three reversals succeed in raising the question of whether personality variables may not relate one way to task activity when measures of it are confounded with the general activity factor and quite another way to task activity when this confounding factor is removed.

Social-Emotional Activity

There are two general categories of social-emotional activity. Positive social-emotional activity includes showing agreement, tension release, and solidarity; negative social-emotional activity includes showing disagreement, tension, and antagonism. They are treated separately in this section.

Two aspects of personality, intelligence and adjustment, have been related to social-emotional activity a sufficient number of times to warrant detailed analysis. Fortunately, the essential difficulty with the results on task activity, the confounding of the total activity factor with the results for a segment of an individual's total behavior, is not a problem here. On the one hand, the correlation between the total number of positive or negative social-emotional acts and the total number of acts initiated is low. On the other hand, Borgatta

(1953) and Slater (1955a) have related intelligence and adjustment to the proportion of a man's total activity which falls within the positive or negative social-emotional areas. In addition, Borgatta has related intelligence to the raw number of positive and negative social-emotional acts. Table 6 presents a summary of the relationships of intelligence to positive and negative social-emotional activity, measured in terms of raw amounts and percentages, and then the relationship of adjustment to positive and negative social-emotional activity, measured only in terms of percentages of the total amount of activity.

Intelligence. Despite the low number of results, there is a trend emerging from the data. Intelligence measures are positively related to both the total number of positive social-emotional acts and the percentage of total activity falling in this area. On the other hand, intelligence is negatively related to the two corresponding measures of negative social-emotional activity. Controlling for total activity by the use of percentages does not disturb the trends. In com-

parison with less intelligent group members, the more intelligent individuals appear to concentrate more of their behavior in the area of positive social-emotional activity and less in the area of negative social-emotional activity (Borgatta, 1954; Slater, 1955a).

Adjustment. The individual's personal adjustment is positively related to the proportion of his total activity which is rewarding or supportive. The trend is not very strong, with only 59% of the results in the positive direction, but when contrasted with the relationship between adjustment and negative social-emotional activity, the pattern is interesting. Adjustment is negatively related to the proportion of a man's total activity in the negative social-emotional area. On the basis of these data, it appears that the better adjusted the individual, the more likely he is to initiate positive social-emotional acts and the less likely he is to initiate negative social-emotional acts (Borgatta, 1954; Slater, 1955a).

Summary. Social-emotional activity has received less attention from researchers than any other as-

TABLE 6

THE RELATIONSHIP BETWEEN PERSONALITY FACTORS AND SOCIAL-EMOTIONAL ACTIVITY

Personality Factors	No. of Studies	No. of Results	Positive			Negative			Zero, ?N.S. (g, h)	Positive		% Sig. & in Dir. of Trend (h)
			Sig. (a)	N.S. (b)	Unt. (c)	Sig. (d)	N.S. (e)	Unt. (f)		% (i)	% of Sig. (j)	
Intelligence												
positive												
raw	1	13	2	10	0	0	1	0	0	92 (13)	100 (2)	15 (13)
%	2	13	0	11	0	0	2	0	0	85 (13)	— (0)	0 (13)
negative												
raw	1	13	0	6	0	0	7	0	0	46 (13)	— (0)	0 (13)
%	2	13	0	4	0	0	9	0	0	31 (13)	— (0)	0 (13)
Adjustment												
positive %	2	22	1	12	0	0	9	0	0	59 (22)	100 (1)	5 (22)
negative %	2	22	0	7	0	0	15	0	0	32 (22)	— (0)	0 (22)

pect of an individual's performance covered in this review. The scanty evidence available indicates that the more intelligent or the better adjusted the individual, the more likely he is to concentrate his activity in the positive social-emotional area, and the less likely he is to concentrate his activity in the negative social-emotional area.

Conformity

Beginning with Asch's (1951) ingenious experiment on conformity and his suggestions about possible personality differences between independent and yielding subjects, a number of researchers have been concerned with the problem of relating an individual's personality to his tendency to conform to the opinions of others. One special problem arises in reviewing the results in this area; a considerable number of the results depend upon personality measurements which ask the individual to describe himself. While other sections of this review contain results based upon self-ratings, those results have not created any difficulty. In the first place, they have always been relatively few in number, and, in the

second place, the trends of results depending upon self-ratings have been in close agreement with the trends based upon other techniques of measurement. However, self-ratings on adjustment and extroversion do not relate to conformity in the same way as peer ratings, questionnaires, and objective tests. The trends for results based upon self-ratings must be treated separately in order to obtain a valid summary of the findings. A further complication, introduced by the use of adjective check-lists for self-rating, is the tendency for authors, under pressure to remain brief, to report only the adjectives which differentiate conformers from nonconformers at some specified level of significance. As a result, any estimate of the significance of the findings is inflated. Moreover, it is not possible in the case of those adjectives which do not yield significant results to assess the direction of the relationship. Only the trends relating dominance and conservatism to conformity are sufficiently free of results based upon self-ratings to escape these criticisms.

Table 7 presents a summary of the relationships of adjustment, extro-

TABLE 7
THE RELATIONSHIP BETWEEN PERSONALITY FACTORS AND CONFORMITY

Personality Factors	No. of Studies	No. of Results	Positive			Negative			Zero, ?N.S. (g, h)	Positive		% Sig. & in Dir. of Trend (k)
			Sig. (a)	N.S. (b)	Unt. (c)	Sig. (d)	N.S. (e)	Unt. (f)		% (i)	% of Sig. (j)	
Adjustment self-rating	2	18	13	1	0	1	3	0	0	78 (18)	93 (14)	72 (18)
other techn.	8	30	2	1	2	4	1	6	14	31 (16)	33 (6)	17 (24)
Extroversion self-rating	2	16	10	1	0	1	4	0	0	69 (16)	91 (11)	62 (16)
other techn.	5	10	0	0	2	1	1	2	4	33 (6)	0 (1)	13 (8)
Dominance	4	8	0	0	2	2	1	2	1	29 (7)	0 (2)	33 (6)
Conservatism	6	20	16	3	0	0	1	0	0	95 (20)	100 (16)	80 (20)

version, dominance, and conservatism to conforming behavior. For the first two relationships the results for self-rating techniques are presented separately from those using other techniques of personality assessment.

Adjustment. Those individuals who tend to conform to group opinion also tend to see themselves as better adjusted, as indicated by the fact that 78% of the results are positive. However, peer ratings and personality inventories do not yield the same results; only 31% of the results relating adjustment, as measured by techniques other than self-ratings, to conformity are positive. One way to resolve the dilemma is to assume that self-ratings do not measure personality as validly as the other measures. It may be, for example, that those individuals who tend to conform to group opinion also tend to conform to an acceptable personality characterization in their self-descriptions. If only the results based upon techniques other than self-ratings were considered, it would be possible to conclude that well-adjusted individuals are less likely to conform to the opinions of others (Barron, 1953; Bray, 1950; Cervin, 1955, 1957; Hardy, 1954; Hollander, 1954; Kagan & Mussen, 1956; Kelman, 1950).

Extroversion-introversion. Extroversion is positively related to conformity in 78% of the results employing self-ratings; those who conform to the opinion of others describe themselves as kind, friendly, helpful, and optimistic. However, the results employing projective and personality inventory variables do not confirm this relationship. While there is some evidence that extroversion is negatively related to conformity, a more accurate summary would be that the few relevant findings are inconclu-

sive (Barron, 1953; Bray, 1950; Hardy, 1954; Hoffman, 1953; Kelman, 1950).

Dominance. Although only eight findings bear on the relationship between dominance and conformity, the trend is negative. Only one of these results is based upon self-ratings. It might be concluded that those who yield to group pressures are less dominant individuals (Barron, 1953; Bray, 1950; Hoffman, 1953; Kelman, 1950).

Conservatism. There has been considerable speculation that there is a positive association between conservatism and conforming behavior. The burden of evidence suggests that conservative, conventional, and authoritarian subjects are more likely to yield to group pressure than radical or unconventional subjects. No single measure of the conservatism dimension emerges as an especially potent predictor of conformity in all conditions; in fact, there is a suggestion that it is important to control for a number of conditions if the relationship is to hold at all. There is some indication in these data that authoritarian subjects are less likely to conform to a small group of peers but more likely to conform to either a large group of peers or perceived superiors (Barron, 1953; Bray, 1950; Cervin, 1955, 1957; Hardy, 1954; Hollander, 1954; Kagan & Mussen, 1956; Kelman, 1950).

Summary. Those who are more likely to conform to group opinion see themselves as better adjusted and more extroverted. Only in the prediction of conformity do personality measures other than self-ratings contradict the results based on self-description. By such measures as ratings by others, projective tests, and personality inventories, adjustment and extroversion are nega-

tively related to conformity. In addition, there is a slight indication that dominance is negatively related to conformity. The relationship between conservatism and conformity has received considerable attention, and the data tend to confirm the hypothesis that conservative individuals are more likely to conform to the opinions of others.

Situational Factors

A number of relationships between personality variables and individual behavior and status variables appear to be well established. It is possible to extend the analysis one step further and inquire whether the magnitude of these relationships varies under certain conditions. This section examines the extent to which situational factors affect the relationships between personality characteristics and performance in groups, in an effort to understand the limiting conditions within which the relationships operate.

A situational factor represents a condition of research about which some decision must be made, but which, once the decision is made, may affect the generality of the results. Four examples, for which adequate data are available in these studies, are selected for analysis in this section: (a) the nature of the population from which the sample is drawn; (b) the sex of the group members; (c) the history of the group prior to observation; and (d) the size of the group. The first example contrasts four populations; these are high school students, college undergraduates, military personnel, and all other adults. The second contrasts groups composed entirely of males with those entirely of females; mixed groups are omitted from the analysis of situational factors. The third example compares *ad hoc* ex-

perimental groups with natural, ongoing groups. In the majority of cases, the former are composed of persons unknown to each other before the period of observed interaction, and usually the group exists entirely for the purposes of research. In contrast, natural groups are composed of acquaintances and exist for many reasons other than to be studied. The fourth example compares groups made up of seven or fewer members with larger groups of eight or more. In treating each situational factor the effort will be to determine whether the relationship between the individual's personality and his performance in the group remains constant across the various conditions.

There are sufficient data to study only the relationships of intelligence, adjustment, and extroversion to one dependent variable, leadership. Comparisons are made between conditions of research by determining, for each relationship, the percentage of results within each study which are positive; these percentages are then averaged over studies employing the same conditions of research. The advantage of averaging the proportion within separate studies is that each study is thus weighted equally in the final statistic, the percentage of positive results. It may be remembered that intelligence, adjustment, and extroversion all bear a strong positive relationship to leadership; the question is whether the strength of these relationships varies with the conditions of research under which they are obtained.

The nature of the population. Over two-thirds of studies relating intelligence, adjustment, or extroversion to leadership draw their groups from the college population. One consequence of such a sampling bias is that relatively little data can be found to

determine if, as a consequence, a distorted view of the relationships involved has been created. There appears to be little variation in the relation of intelligence to leadership across populations; the proportion of positive results in military groups is 89% and in adult groups, 100%. However, adjustment is more strongly related to leadership in undergraduate and adult groups than in high school and military groups, the proportions varying from nearly 90% in the former to nearly 70% in the latter. These differences may reflect the influence of a number of underlying factors; for example, it may be that as the age, education, or social class of the group members increases, adjustment is more strongly related to leadership. Finally, extroversion is less strongly related to leadership among high school students (61% positive results) than among the three remaining populations (over 80% positive results).

The sex of the group. The number of studies which examine all-male groups is almost identical with the number examining all-female groups. There is little difference between male and female groups in the way intelligence relates to leadership; 89% of the results are positive in the male groups and 86% are positive in the female groups. Relating adjustment to leadership, 83% of the results are positive in male groups, 62% are positive in female groups. In contrast, 69% of the results are positive when extroversion is related to leadership in male groups, while 85% are positive in female groups. Thus, adjustment is more positively related to leadership in male groups than in female groups, whereas extroversion is more positively related to leadership in female groups.

History of the group. When groups which have interacted prior to ob-

servation are compared with groups without prior interaction, no differences of any magnitude emerge in the relationships of intelligence, adjustment, and extroversion to leadership. The differences between the percentages of positive results in experimental and natural groups do not exceed 4%. Apparently the way these three aspects of personality relate to leadership status does not vary as a result of studying either experimental or natural groups.

Size of the group. In studying the effect of variations in group size, the necessity of holding constant another condition of research, the history of the group, requires that only experimental groups be considered here since in these studies natural groups are in every case larger than experimental groups. The experimental groups range in size from three to 10 members. Dividing them at the median size, seven and one-half, it appears that size alone does not strongly affect the relationships. However, the slight trend is intriguing. Intelligence is more strongly related to leadership in smaller groups than in larger groups, while adjustment is more strongly related to leadership in larger groups. It may be hypothesized that, at least within the range of group size considered here, as the size of the group increases, internal and integrative problems become more important, relative to the external or adaptive problems of the group. It may be that the need for an integrative leader in the larger groups makes it more likely that a well-adjusted individual will be selected, whereas the greater need for an adaptive leader in the smaller groups makes the intelligent individual more likely to be chosen. These differences are only matters of degree, since the relationships are positive in both large and small groups.

Summary. Four decisions which must be made before any research can be undertaken concern the nature of the population, the sex of the group members, the previous history and the size of the groups. Of these, only the previous history appears to make no difference in the way intelligence, adjustment, and extroversion are related to leadership status. To a slight extent, intelligence is more positively related to leadership in smaller experimental groups than in larger ones. Adjustment is more positively related to leadership in undergraduate and adult groups, in male groups, and in larger groups, while it is less strongly related to leadership in high school and military groups, in female groups, and in smaller groups. Extroversion is less strongly related to leadership in high school groups than in college, military, or adult groups, and it is more strongly related to leadership in female groups than in male groups. However, two points should be emphasized. The strong positive relationships between these three aspects of personality and leadership status are not reversed under any variation in the conditions of research; the differences are only a matter of degree and many of the differences are slight.

Summary and Conclusion

This review has examined a number of relationships between the personality characteristics of the individual and the way he behaves or is perceived in groups. Seven aspects of personality were selected for study; all but one were chosen on the grounds that factor analytic studies of personality had repeatedly demonstrated their importance. Roughly 350 out of over 500 different personality variables were then categorized

as measures of the seven dimensions. Six aspects of the behavior and status of the individual were selected, primarily on the basis of the labels and operations of the measures. The relevant findings on the 29 relationships for which adequate data were available were then examined. Finally, an examination was made of the effect of four situational factors or conditions of research on three of the relationships.

Any attempt to evaluate the conclusiveness of this review should take a number of considerations into account. To the extent that contradictory or insignificant findings have been either overlooked by the reviewer or unpublished by the researcher, the trends may be inaccurate. A considerable number of unpublished data are included in this review, but the impact of the remaining unpublished data cannot be known. Secondly, the selection of factors and especially the location of variables within the factors involved decisions which future research may prove ill-advised. Every effort was made to use evidence other than the author's original label for a variable, but the present state of knowledge in the field of personality assessment leaves much to be desired. Finally, the decision to examine the total pool of results for each relationship involved a risk that the statistical interdependence of the measures would bias the results. Whether the proportion of results which are positive for any relationship would increase or decrease if based upon independent samples cannot be determined.

The best predictor of an individual's performance in groups is intelligence. In order of the proportion of positive results, intelligence is found to be positively related to total ac-

tivity rate, leadership, and popularity. In addition, it is positively related to the number of task contributions made by an individual, but, controlling for the total activity rate, it is negatively related to the proportion of his total activity falling in the task contribution area. Intelligence is positively related to both the amount and proportion of positive social-emotional activity, whereas it is negatively related to negative social-emotional activity.

Adjustment is found to be positively related to leadership, popularity, and total activity rate, in that order. It is positively related to the total number of task contributions, but negatively related to the percentage of the total number of acts which are task contributions. Adjustment is positively related to positive social-emotional activity and negatively related to negative social-emotional activity. Although subjects who tend to conform to group opinion see themselves as better adjusted, other measuring techniques indicate a negative relationship between adjustment and conformity. Except for the fact that intelligence has not been related to conformity a sufficient number of times to be reviewed, adjustment is related to behavior and status variables in much the same way as intelligence.

Extroversion is positively related to popularity, total activity rate, and leadership. Although it is positively related to the total number of task contributions, this result cannot be considered as independent of the relation between extroversion and total activity rate. While individuals who conform more than others to group opinion tend to see themselves as more extroverted, techniques other than self-ratings fail to show any significant association.

Dominance is positively related to the total number of task contributions initiated and to leadership. It is negatively related to an individual's tendency to conform to group opinion.

Masculinity bears a low positive relationship to leadership and popularity. A positive association is found between masculinity and the total number of task contributions, although there is some slight indication that this relationship is reversed when the total activity factor is controlled.

Conservatism is negatively related to leadership, but positively related to popularity. A positive association is found between conservatism and the raw number of task contributions. Finally, conservatism is positively related to conformity; those who tend to conform to the opinions of others are more conservative or authoritarian.

The measures of interpersonal sensitivity relate positively to both leadership and popularity. Both relationships are of low magnitude, and, in the case of the latter, there is a possibility that the number of the results which are spuriously positive is sufficient to cast doubt on the whole trend.

In reviewing the results for the seven aspects of personality, reference has been made to the percentage of the total number of results which are positive. In the majority of cases, when only the significant results are examined, the strength of the trend increases. Moreover, several relationships have been examined in a sufficient number of studies to permit the use of the trend for a single study as the unit of research; in each case the proportion of studies yielding positive trends was significantly different from chance.

A number of conditions of research are found to influence the relationship of intelligence, adjustment, and extroversion to leadership. When different techniques of measuring leadership, different populations, and groups of different sizes are used in the research, the relationships are altered. It appears to make no difference to the relationship obtained whether the group members were acquainted with one another before the period of observation and measurement. It should be noted that in no case was the positive relationship of intelligence, adjustment, and extroversion to leadership reversed in direction.

Throughout this review the results have been used to examine the direction of the various associations be-

tween personality characteristics and measures of behavior or status. Occasionally, however, the results contained a sufficient number of correlations to afford some estimate of the magnitude of the relationship. In no case is the median correlation between an aspect of personality covered here and performance higher than .25, and most of the median correlations are closer to .15.

In conclusion, it may be noted that the relationships reviewed are by no means the only ones to which attention has been and should be directed. It is encouraging to note, however, that many clear and significant trends emerge when the body of research on these relationships is considered as a whole.

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