CONSIDERATION AND ICS: INSTRUCTOR LEADERSHIP INFLUENCING STUDENT PERFORMANCE

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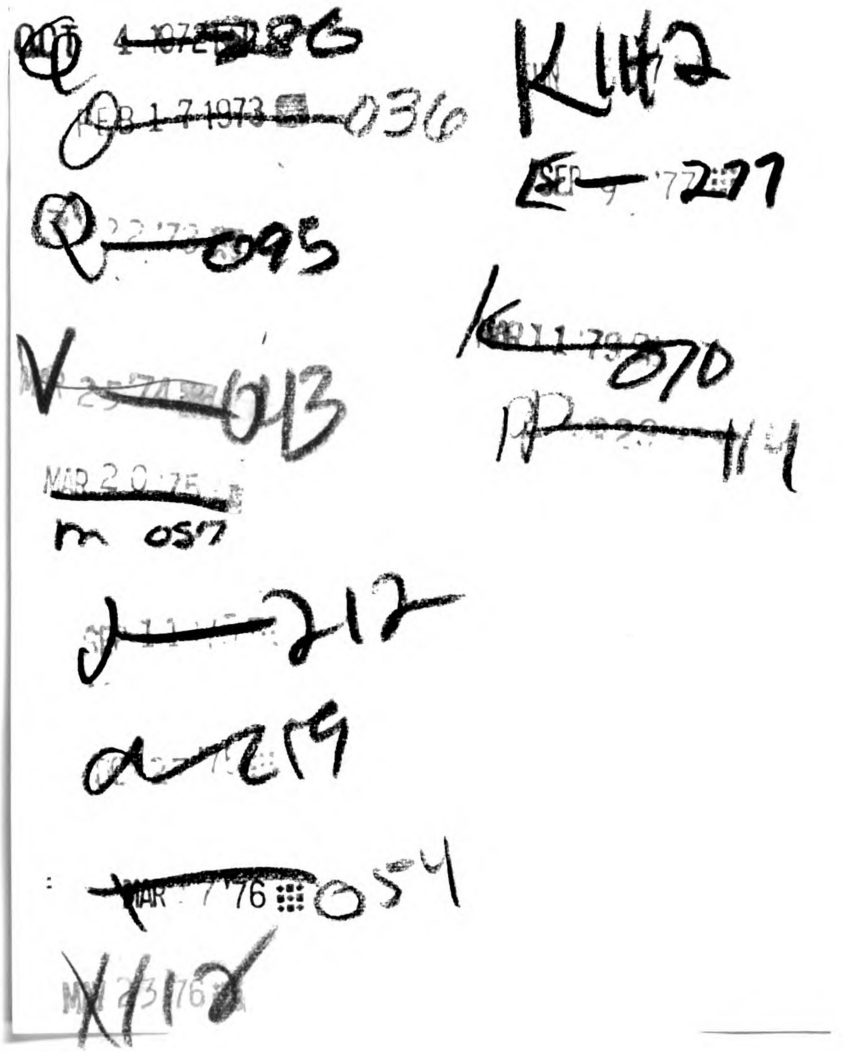

ABSTRACT

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By

Jack E. Dawson

It was hypothesized that college students taught with high Consideration would submit more annotated bibliographies than students taught with low Consideration and that students taught with high Initiation of a Cooperative Structure (ICS) would submit more annotated bibliographies than students taught with low ICS. Test performance and amount of semivoluntary participation in experimental research were also examined. An annotated bibliography was defined as standard reference information and an abstract of a journal article or passage in a book. Subjects were required to submit some annotated bibliographies each week their section met, and the assignment was graded pass-fail. Test performance was defined as the number of correct answers marked on regularly scheduled examinations. The questions included in the measure were identical for all subjects and were selected at random from a file supplied by the publisher of the book used in the course. Amount of

semivoluntary participation in experimental research was defined as the number of research credits obtained by each subject. Subjects received one credit for each half hour's participation in experimental research; and as many as eight credits could be included as points in the subjects' course grade.

Four sections of General Psychology were taught in a 2x2 factorial manipulation of the variables. Successful manipulation of the variables was confirmed and the operational definitions were validated by the results. Analyses revealed that subjects who received the high Consideration treatment performed significantly higher on the annotated bibliographies, test performance, and semivoluntary participation in research variables. The analyses also revealed that subjects who received the high ICS treatment performed significantly high on the annotated bibliographies variable, nonsignificantly higher on the test performance variable, and nonsignificantly lower on the semivoluntary participation in research variable. There was a significant interaction obtained in the analysis of the semivoluntary participation in research variable. Subjects who received the low Consideration-high ICS treatment obtained disproportionately fewer research credits than subjects who received the other treatments. The results were discussed and implications for future research were drawn.

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Jack E. Dawson

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Finally, I wish to thank the students who were the subjects in the experiment. Your participation allowed me an experience which I sincerely hope is the basis for a program of research that will ultimately improve the quality of classroom instruction and refine leadership theory.

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INTRODUCTION

What makes a successful leader? Early social psychologists hypothesized successful leaders possessed distinctive personality traits which set them apart from their fellows. However, controlled attempts to support the hypothesis were, in the main, fruitless (see Stogdill, 1948; Mann, 1959; Gibb, 1969 for reviews). The sterility of this type research led investigators to try new approaches to the study of leadership. For example, the Bureau of Business Research at Ohio State University developed a description of leadership behaviors.

The Bureau began by constructing a nine category list of leadership functions. These categories represented all of the leadership functions which the members of the Bureau considered necessary for the maintenance of a group. Following the construction of the categories, Bureau members collected 1,790 one sentence descriptions of leadership acts exhibited in organized structures, groups, and situations (Hemphill and Coons, 1957). The descriptions were sorted

into the predetermined categories, and 150 of them were chosen to represent the larger set. The 150 descriptions were selected to meet two criteria: (1) a description had to fit into one category with as little overlap into other categories as possible; and (2) a nearly equal number of descriptions were to be placed into each category.

The 150 descriptions became the basis of a questionnaire. Each description was paired with a Likert scale set of adverbs. The adverbs expressed either degree or extent depending on the nature of the behavior being described. This questionnaire was administered to three different subject populations. The first sample of subjects was selected from a university summer school population by Hemphill and Coons (1957). The 357 respondents were asked to pick a leader within their own experience and describe him with the questionnaire. A factor analysis of the responses resulted in three orthogonal factors. One reflected the social acceptability of the leader's behavior, i.e., his consideration of co-workers. A second reflected efforts of the leader to initiate a cooperative group structure for attaining desired goals. The third factor reflected the leader's emphasis on production.

These same factors were found by Halpin and Winer (1957) when bomber crew members were asked to describe their aircraft commander. The Consideration factor accounted for 49.6 percent of the variance; the Initiating a Cooperative

Structure (ICS) factor accounted for 33.6 percent of the variance; and the Production factor accounted for only 9.7 percent of the variance. A new factor, Social Awareness, accounting for 7 percent of the variance, was also found. These latter two factors were much weaker than the larger factors. Also, many of the items on all of the scales had loadings on more than one factor. Consequently, although the analysis showed the four factors to be orthogonal, the impurity of the items generally led to intercorrelations between the scales.

Fleishman, Harris, and Burtt (1955) conducted a third factor analysis using data collected from 100 foremen employed by the International Harvester Company. Their analysis again revealed the Consideration and Initiating a Cooperative Structure (ICS) factors found in the two previous studies (Hemphill and Coons, 1957 and Halpin and Winer, 1957). Although many of the items loading on these two factors were the same as those in the Halpin and Winer study, some were not. Fleishman, Harris, and Burtt found the reliabilities of the scales for Social Awareness and Production Emphasis to be extremely low and consequently discarded them. The descriptions which were found to have significant factor loadings are presented in Tables 1 and 2.

Definition of Consideration and ICS. The items in Tables 1 and 2 are the source from which the following definitions are derived. That the behaviors specified in

TABLE 1

SUPERVISORY BEHAVIOR QUESTIONNAIRE
CONSIDERATION STATEMENTS

Consideration Statements	Correlation with factor
He does personal favors for foremen under him	+
He expresses appreciation when one of us does a good job	+
He is easy to understand	+
He helps his foremen with their personal problems	+
He stands up for his foremen even though it makes him unpopular	+
He sees that a foreman is rewarded for a job well-done	+
He tries to keep the foremen under him in good standing with those in higher authority	+
He stresses the importance of high morale among those under him	+
He backs up his foremen in their actions	+
He treats all his foremen as his equals	+
He criticizes a specific act rather than a particular individual	+
He is willing to make changes	+
He makes those under him feel at ease when talking with him	+
He is friendly and can easily be approached	+
He puts suggestions that are made by foremen under him into operation	+
He gets the approval of his foremen on important matters before going ahead	+
He refuses to give in when people disagree with him	-
He demands more than we can do	-
He criticizes his foremen in front of others	-
He insists that everything be done his way	-
He rejects suggestions for changes	-
He changes the duties of people under him without first talking it over with them	-
He treats people under him without considering their feelings	-
He resists changes in ways of doing things	-
He 'rides' a foreman who makes a mistake	-
He refuses to explain his actions	-
He acts without consulting his foremen first	-
He is slow to accept new ideas	-

TABLE 2

SUPERVISORY BEHAVIOR QUESTIONNAIRE INITIATING A COOPERATIVE STRUCTURE (ICS) STATEMENTS

Initiating a Cooperative Structure (ICS) Statements	Correlation with factor
He encourages overtime work	+
He tries out his new ideas	+
He rules with an iron hand	+
He criticizes poor work	+
He talks about how much should be done	+
He encourages slow working foremen to greater efforts	+
He assigns people under him to particular tasks	+
He asks for sacrifices from his foremen for the good of the entire department	+
He insists that his foremen follow standard ways of doing things in every detail	+
He sees to it that people under him are working up to their limits	+
He offers new approaches to problems	+
He insists that he be informed on decisions made by foremen under him	+
He stresses being ahead of competing work groups	+
He 'needles' foremen under him for greater effort	+
He decides in detail what shall be done and how it shall be done	+
He emphasizes meeting deadlines	+
He asks foremen who have slow working groups to get more out of their groups	+
He emphasizes the quantity of work	+
He waits for his foremen to push new ideas before he does	-
He lets others do their work the way they think best	-

the two tables are actually those causing a leader to be regarded as high or low on the factors was strongly supported by the results of the present study.

The underlying factor in Consideration is the leader's interest in his followers as social, human entities. The interest can be expressed in a number of behaviors including doing favors, helping followers with problems, and recognizing the contributions of followers by expressing appreciation or rewarding them, being receptive to their ideas and placing some of their suggestions into operation, and in general, being willing to change in response to the group. The recognition of followers can be manifested by supporting them in their actions even if it means jeopardizing the leader's own position with his peer group or those above him. The leader also considers the feelings of his followers. He does not openly criticize them in front of others; he asks for their approval on important matters, and he does not unnecessarily ride a follower who makes a mistake. The nonpunitive nature of the leader puts his followers at ease in their relations with him; and although they may recognize and respond to him as a superior, they feel that he treats them as his equals.

The underlying factor of ICS is a desire to get the task at hand completed. The leader attempts to coordinate the work of his followers; and this generally leads to the standardization and detailing of procedures, assigning

followers to tasks, occasionally calling for sacrifice from the followers, and an insistence that the leader be informed of the followers' decisions. The leader tries to get all his followers to work up to their limits. He spends time motivating slow working followers to increase performance. He sets deadlines, talks about the work to be done, and emphasizes quantity. He directly attacks the improvement of work procedures. He tries out his new ideas, offers new approaches to problems, and criticizes poor work. All of these behaviors leave the impression of firmness and control. The followers view the leader as a leader, a man with an iron hand.

Instrument research utilizing ratings of productivity. The three studies by the Bureau of Business Research demonstrated the existence of two relatively independent dimensions of leadership behavior, but it remained to be demonstrated that differences on these dimensions were related to successful and unsuccessful leadership. Halpin and Winer (1957) studied a sample of twenty-nine aircraft commanders. They found effectiveness ratings by superiors to be correlated positively with ICS. These same ratings showed no relation to the Consideration factor. Consideration was, however, highly correlated with an index of crew satisfaction. Halpin and Winer concluded that crew morale is dependent on a commander's Consideration while judged effectiveness by superiors is dependent on a commander's ICS.

Using three new samples of aircraft commanders, Halpin (1957) replicated the results of the Halpin and Winer study. In addition to replicating the previous results, Halpin found aircraft commanders rated high by their superiors on Overall Effectiveness more often scored above the mean on both Consideration and ICS; whereas, commanders rated low on both dimensions more often scored below the mean.

Hemphill (1957) reproduced Halpin's results in a moderately large university. His measure was departmental reputation as ranked by 234 faculty members. Of twenty-two departments, he found those with the best reputations for good administration had chairmen who were described as above the average on both Consideration and ICS.

Instrument research utilizing objective measures. Objective measures of productivity are difficult to obtain for individual leaders in large organizations. Of the previously mentioned studies, only Fleishman, Harris, and Burtt report any objective measures. They were unable to make direct measures of productivity but did construct some indirect measures. These were absenteeism, accidents, grievances, and turnover. The production divisions showed a positive correlation between the number of absences and degree of ICS and negative correlation between the number of absences and Consideration. They also showed positive correlation between ICS and grievance rate. In the

non-production divisions, Consideration was correlated negatively to the number of reported accidents while ICS was correlated positively with the turnover rate.

Leadership Research Without the Ohio Instrument.

Survey Research Center. Katz, Maccoby, and Morse (1950) interviewed twelve pairs of clerical working groups at the home office of the Prudential Insurance Company. The pairs were matched for high and low productivity. Their results, while different in form, are similar in content to those found by the researchers at Ohio State. Katz et al. found more supervisors of high producing groups reported spending more than half of their time in supervision. A close examination of the ICS definition and the descriptions in Table 2 should quickly convince the reader that high ICS requires more time from the leader than does low ICS. Most of the statements describe behaviors the high ICS leader would exhibit rather than behaviors he would not exhibit. Generally speaking, the high ICS behaviors are positive acts requiring time and effort from the leader. Thus, high ICS requires a great deal of time from supervisors, and high producing supervisors would be expected to spend more of their time in supervision than low producing supervisors. One would also expect the high producing supervisor to report spending more of his time in supervision if he included the Considerate behavior of consulting workers

on important matters as part of his supervisory behaviors. This latter observation will take on more importance after discussing another finding of the study.

Although high producing supervisors reported spending more of their time in supervision, low producing supervisors are reported as supervising their employees more closely. Solving this paradox gives insight into the nature of the ICS factor. There is a Consideration statement and an ICS statement which sound very much alike but actually reflect distinctively different behaviors on the part of the leader. One is the negative Consideration statement, "He insists that everything be done his way." The other is the positive ICS statement, "He decides in detail what shall be done and how it shall be done." On one level these statements are the same. The task is to be done the way the leader has decided. On another level the statements are different. The ICS statement makes no assumptions about how the leader arrived at his decision. He may have consulted with his co-workers and asked for their opinions (a positive Consideration act, Table 1). Having heard everyone out, he made a decision which he felt would please his co-workers and result in maximum production. Or, he may have made his decision without consultation and with no concern about his co-workers' opinions. When his co-workers objected, he insisted that the task be completed in the manner he directed (Table 2).

In this study, Katz et al. report the closer supervision was manifested by sheparding rush work through the clerical channels and by the supervisor giving specific directions on how such work was to be completed. Closer supervision also took the form of elaborate explanation of new procedures which were very similar to the old procedures. Since the clerks were skilled workers, such explanations were probably unnecessary. Also, the clerks had likely established personal work styles which, while different from those of the supervisor, were no less efficient. Under these conditions, elaborate explanations may have been interpreted as insisting everything be done the supervisor's way. In summary, all of the above information indicates that high producing supervisors reported spending more of their time in supervision while workers in low producing sections reported receiving closer supervision for two reasons: (1) high producing supervisors exhibited more behaviors (including Considerate ones) which the supervisors felt were part of their leadership behaviors while (2) low producing supervisors depressed productivity by coupling ICS acts with low Consideration.

Katz, Maccoby, Gurin, and Floor (1951) repeated the Prudential study but used work gangs employed by the Chesapeake and Ohio Railroad as subjects. This study is even more supportive of the Ohio hypothesis. Again descriptions of high productivity foremen reflect ICS. The foremen

reported spending a larger portion of their time in supervision. High producing foremen stressed the effectiveness of supervision in helping their workmen do a better job. More specifically, these foremen mentioned supervisory duties such as planning and performing skilled tasks. Men in high producing sections perceived their foremen as better planners. Workers in high producing sections reported that their foremen taught them new things, such as special techniques, skilled processes or some of the foremen's supervisory duties. All of these behaviors reflect ICS, and, in this study, the nature of the acts are much more clearly specified than in the Prudential study.

In comparing the two studies, Katz et al. took special note of the seemingly opposite effects of close supervision. They rightly attributed the differences to the nature of the jobs being done. In the insurance company, work methods were sufficiently standardized to the point that employees received little help of a technical nature out of close detailed supervision. The work of railroad section gangs was much less standardized. In other words, the section gang members were learning their jobs. Instruction from the foremen actually offered the gang member a better way of doing his work. The clerks had already learned their jobs, and, therefore, instruction from the supervisor did not offer them a better way of performing them.

The railroad study provides two good examples of high consideration behaviors on the part of the high producing foremen. The first example is that, "workmen feel their foremen take somewhat more personal interest in their off-job-problems," which is a direct correlate to the Consideration statement, "He helps foremen with their personal problems (Table 1)." The second example is that more workers in high producing sections felt that their foremen reacted "nonpunitively" when the men did a "bad" job. This is similar to the Consideration statement, "He criticizes a specific act rather than a particular individual."

Lewin, Lippitt, and White. The previously reviewed studies share a common methodological drawback: they all are correlational in nature. Since correlational data cannot establish the direction of causality, it is not known whether Consideration and ICS affect productivity or are affected by productivity. An especially plausible hypothesis is that leaders of highly productive groups become Considerate because their groups have high productivity. This paper has assumed that Consideration and ICS do affect production. There are data which can be interpreted as support for this assumption. In the 1930's and 40's, Lewin, Lippitt, and White conducted a number of experimental investigations into the nature of leadership. They experimentally manipulated the behavior of leaders in attempts to form democratic, authoritarian, and laissez-faire work groups.

In one study (Lippitt and White, 1965), which is typical of all the Lewin, Lippitt, and White research, the three styles of leadership were defined as follows. The authoritarian leader determined all group policies for club activities and procedures, and he assigned group members to tasks. He told the group what to do one unit at a time, kept his standards for praise and criticism to himself, and remained aloof from the group. The democratic leader suggested new approaches to problems but let the group members decide what would be done. He let the group determine its own division of responsibility. The leader treated the group members as his equals, made it easy for the group members to understand the general steps toward obtaining their group goal, and made his standards of praise and criticism known. The laissez-faire leader took little initiative in making suggestions, made no evaluations, and was friendly.

Of the three styles of leadership, the authoritarian leader is the highest on ICS. He decides in detail what shall be done and how it shall be done, and he assigns group members to particular tasks which are both positive ICS behaviors (see Table 2). The democratic leader exhibits both positive and negative ICS behaviors. He suggests new approaches to problems, which is a positive ICS behavior, but he also lets group members do things the way they think best, which is a negative ICS behavior. The laissez-faire

leader exhibits only the negative ICS behavior of not suggesting new approaches to problems. Therefore, if the Consideration of the three styles of leadership is held constant, the authoritarian leader would be expected to have the highest productivity.

However, the definitions of the three styles of leadership indicate Consideration is not held constant. The democratic leader is the highest on Consideration. He exhibits a number of positive Consideration behaviors and no negative ones. He expresses appreciation when a group member does a good job, consults with the group on important matters, treats the group members as his equals, and makes it easy for the group to understand the general steps toward achieving their goal (See Table 1). The laissez-faire leader exhibits only the one positive Consideration behavior of being friendly and easy to approach. The authoritarian leader exhibits a number of negative and only one positive Consideration behaviors. The negative acts are being difficult to approach (remaining aloof), refusing to explain his actions, and making it difficult for the group members to understand the steps toward obtaining their goal. The one positive act is expressing appreciation when one of the group members does a good job. Therefore, if ICS were held constant, the democratic leader would be expected to have the highest productivity.

Since, on the one hand, the authoritarian leader is expected to have the highest productivity, while on the other hand, the democratic leader is expected to have the highest productivity, the obvious prediction is that the laissez-faire leader will have the lowest productivity. This was the finding of the Lewin, Lippitt, and White studies. They also found it was not possible to clearly classify either the authoritarian or the democratic leader as the most productive. When the leader was present in the group, the authoritarian leader had the highest productivity. When the leader was not present in the group, the democratic leader had the highest productivity (Lippitt and White, 1965). Although it has been demonstrated that the Lewin, Lippitt, and White studies can be interpreted as supporting the hypotheses being advanced in this paper, the support should not be regarded as confirmation. The definitions of the leadership styles do not include all of the behaviors which the Fleishman et al. (1955) study indicates represent the variables. Also, the experiments were designed in such a way that they obscure information which might either support or fail to support the hypotheses being advanced.

The Need for Further Research

Inadequacies of past research. One inadequacy is that, although there has been extensive research using the Consideration and ICS variables, the data are almost entirely correlational. Such data leave three possible interpretations:

(1) high Consideration-high ICS causes high productivity; (2) high productivity causes high Consideration-high ICS; (3) a third unspecified factor causes both high productivity and high Consideration-high ICS. The Lippitt and White experiments offer only limited support for the first alternative since their independent variables cannot be clearly characterized in terms of Consideration and ICS.

A second inadequacy is that most past research has used survey methodology. This approach, while highly useful, has one drawback. Reliable differences in subject responses do not necessarily reflect the content of the questions being asked. The differences in responses may be caused by a halo effect, the origin of which is unrelated to the content of questions being asked. There is a suggestion in the Lippitt and White research that the content of the questions does reflect the relevant behaviors; but again, the relation of their independent variables to those under consideration is too ambiguous to enable sound judgments.

A third inadequacy is that the Ohio research, which directly investigated Consideration and Initiating a Cooperative Structure, suffers from a lack of objective criteria for productivity. The Survey Research Center utilized objective measures of productivity, but did not work directly with the Consideration and ICS variables. The contribution of the Lippitt and White Research is equivocal with respect to this issue.

Research investigating Consideration and ICS is warranted because (1) there have not been sufficient and unambiguous experimental investigations of the concepts; (2) there is no experimentally tested, operational definitions of the concepts; and (3) more objective results would add increased support to the validity of the concepts.

Nature of the Research Needed

Given the past research, what is needed is an experimental study. Such a study could solve all three of the problems outlined above. First, it would eliminate the ambiguity attached to correlational data. Positive results would support the previously inferred relation of high Consideration and high ICS as a cause of high productivity. Second, the study would necessarily formulate and test an operational definition. The third problem would be solved by designing an experiment enabling objective measurements of productivity.

A Desirable Research Setting

In order to deal with the problems of past research, a research setting must have two characteristics. One, it must enable experimental manipulation of the independent variables Consideration and ICS; and two, it must enable objective measurements of productivity. Such control is possible in the laboratory; however, much of past research has been conducted in realistic settings. Given the nature

of the variables being studied, for applied reasons, the research should show the long term effects of the variables.

The classroom has the potential for meeting all of the above criteria. The behavior of the instructor can be manipulated. Objective criteria are possible. The setting is realistic. A history of leader-co-worker interaction is an implicit part of the setting. The classroom offers three additional advantages. One, it extends the settings in which Consideration and ICS have been investigated, and positive results would provide more extended generalizations of the past research findings. Two, classroom research on these variables offers a new theoretical perspective to educational research. Three, previous research in the field of education indicates Consideration and Initiating a Cooperative Structure are variables which may operate in the classroom.

Since Consideration and ICS have never been used as independent variables in classroom research, the evidence for this final point is not clear. Further, experimental classroom research has had difficulty demonstrating statistically significant effects on objective measures of academic achievement. Bills (1952), Johnson and Smith (1953), Guetzkow, Kelly, and McKeachie (1954), Deignan (1955,) Burke (1955), Haigh and Schmidt (1956), Maloney (1956), and Krumboltz and Farquhar (1957) were all unable to produce statistically significant differences on dependent measures of academic achievement.

Two experiments, one by Wispe (1951) and the other by Asch (1951), did produce significant differences on objective measures of academic achievement. The Wispe study cannot be interpreted as support for the previous finding that high ICS and/or high Consideration yield a higher level of performance, since one of his two treatments was higher on ICS and the other was higher on Consideration. In one treatment condition, instructors more often defined the problem areas for discussion. This is similar to the positive ICS behavior of deciding in detail what shall be done. In the same treatment condition, however, the instructor exhibited an informal manner less often. This is similar to the opposite of the positive Consideration behavior of being easy to approach. The instructor also gave out less information on subjects related to the course and on administrative procedures. This is the opposite of the positive Consideration behavior of being easy to understand.

The Asch (1951) experiment, however, can be interpreted as offering support for the importance of Consideration and ICS in the classroom. Asch's control group received a treatment defined as the traditional teaching method. Subjects in this group were given schedules detailing due dates for the readings, the homework assignments, and the tests. Such behavior is similar to the positive ICS behaviors of deciding in detail what is to be done and emphasizing

deadlines. Traditional instructors also gave two quizzes, a midterm, and a final which counted toward their course grade. This behavior is similar to emphasizing deadlines (a positive ICS behavior) and, if the tests measured the amount the subjects learned, the behavior is similar to the positive Consideration behavior rewarding group members for a job well done. The experimental group received a treatment that was both lower in ICS and Consideration. Although a reading assignment was given to this group, it was general in nature and less detailed than that of the control group. Also, the instructor did not direct class discussion. This is similar to the opposite of the positive ICS behavior of deciding in detail what shall be done. Each week the experimental subjects were required to write reaction reports on any subject they chose. The topic did not have to relate to the course. This combines the positive ICS behavior of assigning subjects to a particular task with the opposite of the positive ICS behavior of deciding in detail what shall be done. The experimental instructor gave no quizzes, and his students gave themselves their course grade. These behaviors are similar to the opposite of the positive Consideration act of rewarding group members for a job well done. In summary then, the control group, relative to the experimental group, was higher on both ICS and Consideration and, therefore, would be expected to out-perform the experimental group. This was Asch's

finding. The control group subjects scored significantly higher on both the multiple choice and essay portions of the final examination.

Selection of dependent variables. Since only two of the ten previously mentioned classroom experiments produce statistically significant results, careful consideration of dependent variables was necessary. The experience of previous researchers suggests test performance is extremely hard to influence. Perhaps this is because test performance is motivated by a number of variables external to the classroom. Students are under pressures from their families, their friends, and their own desires for future success. These sources of motivation may be so overwhelming that motivation supplied by the instructor is relatively unimportant. Therefore, the dependent variable must be one which is maximally responsive to instructor influences and minimally responsive to external influences. This can be done if the dependent variable is made a pass-fail assignment affecting the course grade only if the assignment is failed. Most external influences on such an assignment would only motivate the student to complete the requirements for passing. Achievement beyond these requirements would then be much more susceptible to instructor influence. Making the requirements for passing very minimal allows the greatest possibility for variance in the dependent data.

For the present experiment, the completion and submitting of annotated bibliographies is the main dependent variable. The assignment was made pass-fail and requirements were minimal. An annotated bibliography was defined as the standard reference information and an abstract of a journal article or a summary of at least thirty pages from a book. The assignment was to hand in "some" each week. Scores on multiple choice examinations and amount of time (number of research credits) spent in semi-voluntary participation in laboratory research were also examined for the effects of the manipulations.

HYPOTHESES

1) Subjects receiving the high Consideration treatment will submit more annotated bibliographies than subjects receiving the low Consideration treatment.

2) Subjects receiving the high Initiating a Cooperative Structure treatment will submit more annotated bibliographies than subjects receiving the low Initiating a Cooperative Structure treatment.

METHOD

Subjects

The subjects were undergraduate students enrolled in the General Psychology course at Michigan State University during the 1969 Winter Term. The classes were listed in the Winter 1969 Schedule of Courses and Academic Handbook published by the University. The subjects selected

and enrolled in these classes without knowledge of the experiment. The combined initial enrollment of the four experimental classes was 107. Of these 107, 23 dropped their enrollment during the University-wide two week drop and add period at the beginning of the term. The loss of the students was evenly distributed among the four classes. The 84 students remaining were the subjects of the experiment. The distribution of these 84 subjects among the four classes was 20, 20, 22 and 22.

Design

Operational definitions. The definitions of Consideration and ICS were derived using the Supervisory Behavior Questionnaire (Fleishman, Harris, and Burtt, 1955; Tables 1 and 2) as a guide. Two groups (both composed of psychologists and advanced undergraduates) were formed. Group I developed the definition of Consideration and was composed of the experimenter, two social psychology faculty consultants, and eleven advanced undergraduates. Group II developed the ICS definition and was composed of the experimenter, the two previously mentioned social psychology faculty consultants, and nine advanced undergraduates. The product of these groups is summarized in a code book found in Appendix A. The definitions offered in Appendix A cannot be easily summarized, and any shorter definitions may be misleading. The reader can, however, gain some insight

into the nature of Consideration and ICS from the discussion to follow.

Consideration can be viewed as the behavioral manifestation of a personal concern for students as social, human entities. ICS can be viewed as the behavioral manifestation of a desire to achieve the goals of the course. Table 3 is an attempt to adapt the Consideration statements (Table 1) found by Fleishman, Harris, and Burtt (1955) to the classroom. Many of these statements suggest one manifestation of Consideration is behaviors reducing the social distance between the instructor and his students. High Consideration instructors treat their students as equals; they are friendly toward their students and are easy to approach; they make their students feel at ease when talking to them, etc. Although high Consideration instructors minimize social distance, they do not eliminate it, since other Consideration behaviors depend on the instructor's superior position. High Consideration instructors protect students from criticism; they help their students with personal problems; they do personal favors; and they appreciate and reward good work. High Consideration instructors also attempt to help the students enjoy both the classroom and learning in general. These instructors stress the importance of high morale, and they consider the feelings of their students to be important. High Consideration instructors evidence a high regard for their students'

TABLE 3

INSTRUCTOR BEHAVIOR QUESTIONNAIRE
CONSIDERATION STATEMENTS

Consideration Statements	Assumed correlation with factor
He does personal favors for his students	+
He expresses appreciation when one of us does a good job	+
He is easy to understand	+
He helps his students with their personal problems	+
He stands up for a student even though it makes him unpopular	+
He sees that a student is rewarded for good work	+
He tries to keep his students in good standing with those in higher authority	+
He stresses the importance of high morale among his students	+
He backs up his students in their actions	+
He treats all of his students as his equals	+
He criticizes a specific act rather than a particular individual	+
He is willing to make changes	+
He makes his students feel at ease when talking with him	+
He is friendly and can be easily approached	+
He puts suggestions that are made by students into operation	+
He gets the approval of his students on important matters before going ahead	+
He refuses to give in when people disagree with him	-
He demands more than we can do	-
He criticizes students in front of others	-
He insists that everything be done his way	-
He rejects suggestions for changes	-
He changes assignments without first discussing it with the class	-
He treats his students without considering their feelings	-
He resists changes in ways of doing things	-
He "rides" the student who makes a mistake	-
He refuses to explain his actions	-
He acts without consulting his students first	-
He is slow to accept new ideas	-

TABLE 4

INSTRUCTOR BEHAVIOR QUESTIONNAIRE
INITIATING A COOPERATIVE STRUCTURE STATEMENTS

Initiating a Cooperative Structure Statements	Assumed correlation with factor
He encourages extra-credit work	+
He tries out his new ideas	+
He rules with an iron hand	+
He criticizes poor work	+
He talks about how much should be done	+
He encourages slow working students to greater efforts	+
He assigns students to particular tasks	+
He asks for sacrifices from his students for the good of the class	+
He insists his students follow a standard way of doing things in every detail	+
He sees to it that his students are working up to their limits	+
He offers new approaches to problems	+
He insists that he be informed on decisions made by his students	+
He stresses being ahead of other classes	+
He "needles" his students for greater effort	+
He decides in detail what shall be done and how it shall be done	+
He emphasizes meeting deadlines	+
He asks his poorer students to do better	+
He emphasizes the quantity of work	+
He waits for his students to push new ideas before he does	-
He lets his students do their work in the way they think best	-

ability to make important contributions. They consult students on important matters; they act on student suggestions, and they accept new ideas from the students.

One aspect of high Consideration, being easy to understand, was reinterpreted during the course of the experiment. The original interpretation of the behavior stressed good diction, fluent expression, clear organization of lectures, etc. After the experiment was in progress for two weeks, it became apparent the stress was misplaced. Being easy to understand was re-interpreted to mean exhibiting behaviors allowing students to know clearly what was expected of them. Most of these behaviors do not deal with the actual expression of assignments. Instead these behaviors affect the students' willingness to seek clarifying information. Thus, making the students feel at ease, making them feel they are being treated as equals, and making it easy for the students to approach the instructor contribute to his being easy to understand.

This abbreviated definition of Consideration has one shortcoming: it is too obvious. It does not include many behaviors which the reader would not expect to find in a definition of Consideration. While this is not especially undesirable, it does not make a dramatic impression on the reader's mind, and the reader may include behaviors which are actually ICS behaviors in his conceptualization of Consideration. Some attempts to combat this tendency will be made after presenting the abbreviated ICS definition.

High ICS instructors manifest their desire to achieve the course goals in three basic ways. One, they attempt to help their students to gain the necessary skills to complete assignments. The skills may cover a wide variety of endeavors, including writing, studying, use of the library, etc. In order to help their students gain these skills, high ICS instructors criticize student work (but not necessarily the students), suggest new approaches and try out new ideas. Two, high ICS instructors try to insure completion of work that is necessary for the achievement of the course goals. They do this by assigning students to tasks, keeping informed of students' decisions, and being actively in control of work being done in the class. Three, high ICS instructors try to get as much work done as possible. They do this by setting deadlines, stressing the quantity of work to be done, encouraging the slower students to work harder, and, in general, seeing that all the students are working up to their limits.

In this experiment ICS was not fully manipulated. Since the subjects were not aware of their participation in an experiment and since they were paying to receive a learning experience, full manipulation of ICS was not considered ethical. In all experimental groups, a textbook (Kendler, 1968) was used, reading assignments were made, and scheduled tests and lectures of similar content were given. Therefore, the ICS manipulation with respect to the dependent variable

of test performance was not as strong as it could have been. This is also true of the research credit dependent variable. The assignment was made, Department of Psychology rules governing the completion of the assignment were distributed, and a deadline for completion of the assignment was specified in each of the experimental groups. The ICS manipulation with respect to these two dependent variables consisted largely of attempts or lack of attempts to help students gain the necessary skills for completing the assignment, to be informed of student decisions, to encourage slower students to work harder, and to get everyone to work up to their limits. The other aspects of ICS were manipulated but not to a large degree. ICS was fully manipulated with respect to the annotated bibliography dependent variable.

If the Consideration definition suffers from being too obvious, then the ICS definition suffers from its label. For many people, the word "structure" means rigid and inflexible. This is not a characteristic of ICS. Instead, rigidity and inflexibility are characteristics of low Consideration. Some examples of negative Consideration statements will support this assertion. These are: He refuses to give in when people disagree with him; he insists that everything be done his way; and he is slow to accept new ideas. In order to counteract the connotation of the word structure, the author has taken two steps. First, he has

changed the label of the variable. Hemphill and Coons (1957) labeled the factor Initiating Structure. The author has added the word Cooperation in order to indicate persons described as high on the factor need not be inflexible. Also, the label was changed because in most interactive tasks, cooperation is necessary for the achievement of group goals. This is not as true of the classroom as it is of a football team, for example, but cooperation is necessary in both situations. Positive ICS statements reflecting attempts to achieve cooperation are: the instructor assigns students to particular tasks; he insists his students follow standard ways of doing things in every detail; he insists that he be informed of decisions made by his students; and he decides in detail what shall be done and how it shall be done. The second step the author has taken to counteract the connotation of the word structure is the use of the abbreviation ICS. It is hoped that ICS will become a symbol for the variable and that the reader will not recall the word structure and its associations to consciousness.

As previously mentioned, there may be a tendency to attribute ICS behaviors to the Consideration variable and vice versa. One of these tendencies was mentioned in the discussion of the ICS label change: inflexibility is not a characteristic of high ICS--it is a characteristic of low Consideration. A second tendency is to think of helpfulness as a characteristic of Consideration and, therefore,

not of ICS. High ICS instructors are also helpful, but the help they offer is of a different nature. A high ICS instructor will help students with their course work; while a high Consideration instructor will help students with personal problems and by doing his students personal favors.

A third tendency is to assume high Consideration includes student direction of the class. Student leadership of the class is characteristic of low ICS, not high Consideration. The distinction is an important one which was touched on in the introduction and which deserves further elaboration. An instructor may ask his students how many and what kind of tests they would like to have in the course; however, he may do this in two ways. If he is low on ICS, he will convey the impression that the choice is of little consequence and/or that he will accept whatever student decision is made without offering his own opinions on the matter. If the instructor is high on ICS, he will make it clear that the goal is to choose a test format and a test formula which will maximize student learning. He will contribute descriptions of alternate test formats and test schedules. He will encourage and lead a discussion on the alternatives proposed. And, after he gains the opinions of the students, he will choose the format and schedule. His choice will be heavily influenced by the students; but it will still be his choice nonetheless, and his criteria will be the maximization of student learning.

Measures of the Independent Variables

Three measures of the independent variable manipulations were taken. One was an Instructor Behavior Questionnaire; a second was an Interaction Process Scores analysis of the first half hour of each experimental day of class; the third was another behavior coding scale used by observers present in the experimental groups. The Instructor Behavior Questionnaire was administered immediately after the subjects had completed their second major examination. The experimenter was not present during that class period and both the test and questionnaire were administered by a member of the Human Learning Research Institute at Michigan State University. The questionnaire was represented to the subjects as an initial attempt on the part of the Institute to adapt Fleishman et al.'s (1955) industry oriented questionnaire to classroom use. The subjects were assured their responses were confidential, and they were encouraged to fill out the questionnaires in a manner that would make their identification impossible. The chief differences between the statements (Tables 3 and 4) on the questionnaire administered to the subjects and those found in Tables 1 and 2 is that the word "foremen" was replaced with "students" and the word "group" was sometimes replaced with the word "class" and occasionally with the word "students."

Each experimental class session was tape recorded. The recordings were made without the knowledge of the

subjects by placing a tape recorder on the table which supported the podium. The recorder was concealed in a briefcase, and its motor could not be heard at a distance of more than one foot. These recordings were analyzed using the Interaction Process Scores (IPS) system (Borgotta and Crowther, 1965). The system is a modification of Bales Interaction Process Analysis (Bales, 1950). The IPS system codes all interaction into one of eighteen behavior categories.

The observers using the IPS system were four advanced undergraduate psychology majors. These observers were trained for six weeks. They had no knowledge of the experimental design, the variables, the hypotheses, or any other characteristic of the experiment except that it involved teaching general psychology classes. The coding of the recordings was done during the twelve weeks following the conclusion of the experiment. The first half-hour of forty-eight class sessions (twelve for each group) was scored. One recording from the first week of the experiment for each experimental group was inaudible. Recordings for the eighth session of high Consideration-high ICS group, the ninth session of the low Consideration-high ICS group, the thirteenth session of the high Consideration-low ICS group, and the eleventh session of the low Consideration-low ICS group were not made, either because of technical difficulties or through experimenter error. Also, the two classroom examinations for each group were not recorded.

The groups who developed the operational definitions for Consideration and ICS (i.e., the experimenter, two members of the social psychology faculty, and a group of advanced undergraduates) simultaneously developed a behavior coding scale for use in the classroom. The categories of this scale are those defined in Appendix A. The advanced undergraduates who participated in forming the operational definition and behavior coding scale for Consideration served as Consideration observers during the experiment. Likewise, those advanced undergraduates who participated in forming the operational definitions and behavior coding scale for ICS served as observers using the ICS scale. When possible, there were two observers for each scale present for every experimental session for each group. The raters dressed and acted like the subjects. If they were asked by one of the subjects why they were filling out a coding form, they replied that they were rating a teacher's behavior to fulfill one of the requirements for an education course they were taking. These observers knew the design of the experiment, but they were not told what hypotheses were under investigation or what the dependent variables of the experiment were to be.

There were three dependent variables in the experiment: the main one was the number of annotated bibliography cards handed in by each subject each week of the experiment; the other two examined were the number of items correct on

classroom examinations and the number of research credits each student gained through semi-voluntary participation in laboratory research.

Annotated bibliographies. During the first experimental session, the subjects were told that they would be required to hand in annotated bibliographies. These bibliographies were to be an abstract and standard reference information for either a journal article or a minimum of thirty pages from a book. The article and books were to deal with individual differences, and the subjects were told the experimenter had a personal interest in the topic. "Some" bibliographies were to be handed in every Tuesday and the grading was pass-fail. A subject handing in "some" bibliographies during every week of class would receive a passing grade. A subject not handing in bibliographies during any one week would receive an incomplete grade which would translate into a failing grade in the course.

Classroom examinations. After three weeks of class meetings, the subjects received their first examination. The test consisted of 44 multiple choice questions selected randomly from the test file supplied by the publishers of the textbook adopted for the course and six multiple choice items selected randomly from a file of 20 questions composed by the experimenter. A separate test was composed for each class. Each test contained 21 textbook questions and three experimenter questions which were identical on

each of the four tests administered (Appendix B). These latter 24 questions are designated common items. A second examination was administered after seven weeks of class meetings. Fifty items were selected randomly from the textbook test file, and 26 of these items were common to all tests (Appendix B).

Voluntary participation in research. The subjects were told that their final grade would be determined by their position on a curve derived from the sum of the correctly answered items on the first, second, and final examinations and the number of research credits they had earned. They could earn up to eight credits (points) by participating as subjects in psychological research being done at the University. They would receive one credit for each half hour of experimental participation.

Other data gathered from the subjects during class were scores on the autonomy and deference scales of the Edwards Personality Preference Schedule, scores on the Eysenck Personality Inventory, and scores on the Early Bird scale (Appendix C). The Early Bird scale measures preference for morning verses night activities. Also available for analysis was each student's score on the College Qualification Test (an academic predictor), his class standing (freshman, sophomore, etc.), and his sex.

The course met two days a week for two-hour class sessions. The high Consideration-low ICS group met Mondays

and Fridays from 8:00 to 10:00 A.M. The low Consideration-low ICS class met Mondays and Fridays from 12:40 to 2:40 P.M. The low Consideration-high ICS class met Tuesdays and Thursdays from 8:00 to 10:00 A.M. The high Consideration-high ICS class met Tuesdays and Thursdays from 12:40 to 2:40 P.M. The experiment was originally intended to run nine weeks with debriefing occurring during the tenth week at the final examination. After five weeks, a decision was made to terminate the experiment with the second examination at seven-and-one-half weeks.

The first examination was scheduled for the end of the third week of classes. However, an error in the bookstores resulted in a shortage of textbooks. Therefore, although books were placed in the library for the use of the subjects, many of them did not have a personal copy of the text for the first two weeks of class. The examination in the low ICS groups was rescheduled for the beginning of the fourth week of classes. The subjects in the high Consideration-high ICS group were allowed individually to schedule their examinations outside of normal class time, but not later than the middle of the fourth week of classes. About half of the group took advantage of the opportunity.

RESULTS

Independent Variables

The subjects' responses to the items of the Instructor Behavior Questionnaire were given numerical values from one to five (one meaning exhibiting a high level of the behavior, five meaning a low level of the behavior). The experimental treatments were also given numerical values (one for the high treatment, zero for the low treatment). Twenty-six of twenty-eight Consideration items correlated significantly with the Consideration treatment (Table 5). Fourteen of twenty ICS items correlated significantly with the ICS treatment (Table 6). For each subject, the numerical values of the Consideration responses were summed. This total correlated $r = .800$ with the Consideration treatment. The summed numerical values of the ICS responses correlated $r = .565$ with the ICS treatment. The Consideration total correlated only $r = .222$ with the ICS treatment, and the ICS total correlated only $r = -.110$ with the Consideration treatment. Therefore, the results of this correlational analysis showed that the subjects described the experimenter's behavior in the desired manner.

It is possible that there were variations in the experimenter's behavior which were not part of the intended manipulation of the independent variables. If such variations occurred consistently, an Interaction Process Scores (IPS) analysis would be expected to reveal their occurrence.

TABLE 5

CORRELATION OF THE SUBJECTS' RESPONSES TO THE INSTRUCTOR BEHAVIOR QUESTIONNAIRE CONSIDERATION ITEMS AND HIGH OR LOW CONSIDERATION TREATMENT

Consideration statements	Correlation with Consideration treatment
He does personal favors for his students	.711*
He expresses appreciation when one of us does a good job	.673*
He is easy to understand	.573*
He helps his students with their personal problems	.689*
He stands up for a student even though it makes him unpopular	.462*
He sees that a student is rewarded for a job well-done	.552*
He tries to keep his students in good standing with those in higher authority	.515*
He stresses the importance of high morale among his students	.448*
He backs up his students in their actions	.635*
He treats all of his students as his equals	.709*
He criticizes a specific act rather than a particular individual	.001
He is willing to make changes	.659*
He makes his students feel at ease when talking with him	.754*
He is friendly and can be easily approached	.615*
He puts suggestions that are made by students into operation	.784*
He gets the approval of his students on important matters before going ahead	.700*
He refuses to give in when people disagree with him	-.546*
He demands more than we can do	-.424*
He criticizes students in front of others	-.461*
He insists that everything be done his way	
He rejects suggestions for change	-.609*
He changes the assignments without first discussing it with the class	-.168
He treats his students without considering their feelings	-.718*

TABLE 5--continued

Consideration statements	Correlation with Consideration Treatment
He resists changes in ways of doing things	-.531*
He "rides" the student who makes a mistake	-.519*
He refuses to explain his actions	-.631*
He acts without consulting his students first	-.684*
He is slow to accept new ideas	-.535*

* $r = .292$, $p < .025$, $N = 77$, one tailed test

TABLE 6

CORRELATION OF THE SUBJECTS' RESPONSES TO THE INSTRUCTOR BEHAVIOR QUESTIONNAIRE ICS ITEMS AND HIGH OR LOW ICS TREATMENT

ICS statements	Correlation with ICS treatment
He encourages extra-credit work	.372*
He tries out his new ideas	.064
He rules with an iron hand	.259*
He criticizes poor work	.321*
He talks about how much should be done	.287
He encourages slow working students to greater efforts	.394*
He assigns students to particular tasks	.313*
He asks for sacrifices from his students for the good of the class	.017
He insists his students follow a standard way of doing things in every detail	.421*
He sees to it that his students are working up to their limits	.393*
He offers new approaches to problems	.001
He insists that he be informed on decisions made by his students	.066
He stresses being ahead of other classes	.330*
He "needles" his students for greater effort	.223
He decides in detail what shall be done and how it shall be done	.369*
He emphasizes meeting deadlines	.516*
He asks his poorer students to do better	.545*
He emphasizes the quantity of work	.325*
He waits for his students to push new ideas	-.376*
He lets his students do their work in the way they think best.	-.356*

* $r = .292$, $p < .025$, $N = 77$, one tailed test

The Interaction Process Scores analysis categories are shown in Table 7. Category 2 is consistent with the high Consideration, Categories 14 and 17 are consistent with the low Consideration, and Category 7 is consistent with the high ICS. The other categories either include behaviors not defined by the independent variables or behaviors defined by both of the variables.

The data from the IPS analysis was highly reliable. The mean Pearson *r* between observers was .96 and only two *r*'s (.74 and .84) were below .90. Using the total number of responses coded by the observers, the proportion of responses coded into an IPS category were determined for each condition. For each IPS category, this yielded four proportions: one for the two high ICS groups, one for the two low ICS groups, one for the two high Consideration Groups, and one for the two low Consideration groups. Two difference scores for each category were obtained by subtracting the proportions derived from the high and low ICS conditions and by subtracting the proportions derived from the high and low Consideration conditions. These different scores were rank ordered from highest to lowest. Categories 9, 16, and 18 were not included in the ordering since a proportion of less than .0005 of the total responses were coded into each of these categories. A Mann-Whitney-U test was conducted on the ranked categories testing the null hypothesis that the rankings of the predicted categories (2, 14, and

TABLE 7

INTERACTION PROCESS SCORES CATEGORIES

1. Common social acknowledgments
2. Show solidarity through raising the status of others
3. Shows tension release, laughs
4. Acknowledges, understands, recognizes
5. Shows agreement, concurrence, compliance
6. Gives a procedural suggestion
7. Suggests solution
8. Gives opinion, evaluation, analysis, expresses feeling or wish
9. Self-analysis and self-questioning behavior
10. Reference to the external situation as redirected aggression
11. Gives orientation, information, passes communication
12. Draws attention, repeats, clarifies
13. Asks for opinion, evaluation, analysis, expression of feeling
14. Disagrees, maintains a contrary position
15. Shows tension, asks for help by virtue of personal inadequacy
16. Shows tension increase
17. Shows antagonism, hostility, is demanding
18. Ego defensive

17 for Consideration and 7 for ICS) were equal to or less than the rankings of the remaining categories. The Mann-Whitney-U derived was 4.23 which would occur with a probability of less than .001.

The data from the in-class observers proved to be of low reliability and unsuitable for meaningful analysis. The low reliability was due to inadequacies in the coding scale itself and a lack of sufficient training for the observers. Although several weeks were spent defining the independent variables, time pressures severely reduced observer training in coding the relevant behaviors. The most experienced coder had only received six hours of training when the experiment began. Unfortunately, this was not enough training to enable the coders to produce acceptable reliabilities.

Hypotheses

Hypothesis One predicted that subjects who received the high Consideration treatment would submit more annotated bibliographies than the subjects who received the low Consideration treatment. Hypothesis Two predicted that subjects who received the high Initiation of a Cooperative Structure treatment would submit more annotated bibliographies than the subjects who received the low Initiating a Cooperative Structure treatment. Both hypotheses received strong support from the present results. Raw data were the number of annotated bibliographies submitted each week by each

subject. The data is summarized in Table 8. A 2 x 2 x 7 analysis of variance with repeated measures on the third factor was conducted on the data. Four subjects were randomly discarded in order to obtain equal cells frequencies. The results (summarized in Table 9) showed significant main effects due to Consideration and ICS but no significant main effect due to weeks. There were no significant interactions. A two-way unequal cells analysis of variance was then conducted using only the Consideration and ICS factors. The results are summarized in Table 10. Both the high Consideration and the high ICS treatments resulted in more annotated bibliographies handed in by the subjects. There was no significant interaction. None of the personality and other data (except for that of the dependent and independent variables) were found to correlate significantly with the number of annotated bibliographies submitted by the subjects.

An examination of the test scores shows the same general pattern of results as was found with the annotated bibliographies. Table 11 shows the means and standard deviations of the test scores for the subjects included in the analysis. Five subjects were randomly dropped from this and all following analyses to enable equal cell frequency analyses of variance. Two subjects in the low Consideration-high ICS treatment did not complete the second test. Using the correlation of scores on the first test to

TABLE 8

MEANS AND STANDARD DEVIATIONS FOR THE NUMBER OF ANNOTATED BIBLIOGRAPHIES SUBMITTED OVER WEEKS

		1	2	3	4	5	6	7	Total
Hi Con Hi ICS	$\bar{X}$	1.76	1.57	1.81	1.71	2.19	2.38	1.62	11.76
	o	1.60	.95	1.01	1.08	1.84	1.86	1.46	8.10
	N	21	21	21	21	21	21	21	21
Low Con Hi ICS	$\bar{X}$	1.50	1.95	2.27	1.55	1.36	1.55	1.41	11.59
	o	1.27	.98	1.39	.89	.93	1.19	1.30	5.78
	N	22	22	22	22	22	22	22	22
Hi Con Low ICS	$\bar{X}$	1.23	1.55	1.14	1.55	1.32	1.41	.91	9.09
	o	1.50	1.67	1.42	1.83	1.26	2.59	2.17	7.49
	N	22	22	22	22	22	22	22	22
Low Con Low ICS	$\bar{X}$	1.35	1.25	1.20	.85	1.25	.90	.40	7.20
	o	1.31	.99	1.29	1.01	1.61	1.41	1.16	5.25
	N	20	20	20	20	20	20	20	20

TABLE 10

ANALYSIS OF VARIANCE SUMMARY TABLE FOR UNEQUAL CELL FREQUENCY ANALYSIS OF THE NUMBER OF ANNOTATED BIBLIOGRAPHIES SUBMITTED

Source	df	MS	F
Consideration (C)	1	10.69	4.90**
ICS	1	47.75	21.90***
C x ICS	1	.54	.25*
Error	591	2.18	

* p = .625, two tailed test
** p = .013, one tailed test
*** p = <.00025, one tailed test

TABLE 11

MEANS AND STANDARD DEVIATIONS OF THE TEST SCORES ACHIEVED BY EACH SUBJECT

Treatment	Test One	Test Two	Combined
High Consideration	$\bar{X}$ = 14.15	17.35	31.50
High ICS	o = 2.71	3.23	4.95
High Consideration	$\bar{X}$ = 13.50	16.25	29.75
Low ICS	o = 2.09	3.21	4.59
Low Consideration	$\bar{X}$ = 11.50	16.10	27.60
High ICS	o = 3.54	2.61	4.63
Low Consideration	$\bar{X}$ = 11.90	15.50	27.40
Low ICS	o = 3.06	3.26	5.75

scores on the second test for all other subjects (N = 82), their scores were estimated with a standard regression equation. The raw data were the number of correct responses made by a subject on the test items administered to all experimental groups. There were 24 such items in the first test and 26 such items in the second test (Appendix B). Table 12 is a summary of a 2 x 2 x 2 analysis of variance with repeated measures on the third factor performed on the test data. The results show that subjects who received the high Consideration treatment scored significantly higher on the test than did the subjects who received the low Consideration treatment. Also, the subjects who received the high ICS treatment scored higher on the test than did the subjects who received the low ICS treatment, although not significantly higher. There was a main effect due to time which was still present when the analysis used the proportion of correct responses as data. There were no significant interactions.

Since the subjects were not assigned randomly to their treatment groups, it is possible that the results of the analysis of variance on test scores can be explained by sample bias. The most likely source of bias is associated with the subjects' ability to achieve academically. A measure of this ability was available for each subject. As part of the admissions process into the university where they were students, the subjects had taken the College

TABLE 12

ANALYSIS OF VARIANCE SUMMARY TABLE FOR THE TEST SCORES ACHIEVED BY EACH SUBJECT

Source	df	MS	
Between Subjects	79	14.23	
Consideration (C)	1	97.66	7.34**
ICS	1	9.51	.71
C x ICS	1	6.01	.45
Error	76	13.31	
Within Subjects	80	11.67	
Time	1	500.56	91.85*
C x T	1	12.66	2.32
ICS x T	1	5.26	.97
C x ICS x T	1	.76	.14
Error	76	5.45	

* $p < .001$, two tailed test

** $p < .005$, one tailed test

Qualification Test. This test is a successful academic predictor at the subjects' university and was the only variable (other than the independent and dependent variables) for which data was collected in association with the experiment and to which test performance correlated ($r = .36$, $N = 83$, $p < .01$). A two-way analysis of variance was conducted on the subjects' College Qualification Test scores. The results are shown in Table 13. The lack of significant differences on this measure are unequivocable.

TABLE 13

ANALYSIS OF VARIANCE SUMMARY TABLE FOR THE SCORES ACHIEVED BY SUBJECTS ON THE COLLEGE QUALIFICATION TEST

Source	df	MS	F
Consideration (C)	1	806.45	1.64
ICS	1	5.00	.01
C x ICS	1	36.45	.07
Error	76	490.00	

Analysis of the research credit data was more complex. Table 14 shows the means and standard deviations for the number of research credits obtained by each subject before the date the experiment was concluded. The subjects were given one credit for each half hour they participated in experimental research. Any number of credits up to and including eight were included in the formula for determining

the subjects' course grades. An analysis of variance was conducted on the data, and a summary of the results appear in Table 15. There were no significant main effects. However, the number of research credits obtained before the conclusion of the experiment was found to be correlated with the subjects' Early Bird scores ($r = .26$, $p < .05$, $N = 84$). The Early Bird scale measures the degree to which a person states a preference for activities early in the day. The positive correlation indicates that subjects who preferred activities early in the day earned more research credits. An analysis of variance (summarized in Table 16) showed that these scores were biased in their distribution among the treatment conditions. The bias suggested the advisability of the analysis of covariance which is summarized in Table 17. This analysis showed a main effect for Consideration which examination of the adjusted means (Table 18) shows to favor the high Consideration treatment. The analysis also revealed a significant interaction which inspection of the adjusted means show to be a disproportionately low number of credits obtained by the subjects who received the low Consideration-high ICS treatment. The adjusted means also show that the subjects who received the high ICS treatment obtained fewer research credits.

TABLE 14

MEANS AND STANDARD DEVIATIONS OF RESEARCH CREDITS OBTAINED BEFORE THE CONCLUSION OF THE EXPERIMENT

	High Consideration	Low Consideration
High ICS	$\bar{X}$ = 3.85 o = 2.92	2.55 2.25
Low ICS	$\bar{X}$ = 4.15 o = 3.45	3.30 3.09

TABLE 15

ANALYSIS OF VARIANCE SUMMARY TABLE FOR RESEARCH CREDITS OBTAINED BEFORE THE CONCLUSION OF THE EXPERIMENT

Source	df	MS	F
Consideration	1	23.11	2.51
ICS	1	5.11	.60
C x ICS	1	1.01	.11
Error	76	9.21	

TABLE 16

ANALYSIS OF VARIANCE SUMMARY TABLE FOR THE EARLY BIRD SCORES OF THE SUBJECTS

Source	df	MS	F
Consideration	1	52.81	1.52
ICS	1	.01	.00
C x ICS	1	234.61	6.75*
Error	76	34.75	

* p <.01, two tailed test

TABLE 17

ANALYSIS OF COVARIANCE SUMMARY TABLE REMOVING THE EFFECT OF EARLY BIRD SCORE FROM NUMBER OF RESEARCH CREDITS OBTAINED BEFORE THE CONCLUSION OF THE EXPERIMENT

Source	df	MS	F
Consideration	1	37.29	4.60**
ICS	1	5.60	.69
C x ICS	1	33.96	4.19*
Error	75	8.10	

* p <.05, two tailed test

** p <.025, one tailed test

TABLE 18

RESEARCH CREDIT MEANS ADJUSTED FOR EARLY BIRD SCORE

	High Consideration	Low Consideration
High ICS	3.97	2.19
Low ICS	4.10	3.59

Summarizing the results of the statistical tests: The high Consideration treatment produced significantly higher performance in submitting annotated bibliographies, answering test questions, and obtaining research credits. The high ICS treatment produced significantly higher performance in submitting annotated bibliographies and non-significantly higher performance in answering test questions. It did not produce higher performance in obtaining research credits.

DISCUSSION

The correlational analysis of the subjects' responses to the Instructor Behavior Questionnaire showed the subjects who received the high Consideration treatment described the experimenter's behavior to be higher on Consideration than did the subjects who received the low Consideration treatment. Likewise, the subjects who received the high ICS treatment described the experimenter's behavior to be higher

on ICS than did the subjects who received the low ICS treatment. The Instructor Behavior Questionnaire is a direct classroom adaptation of the Supervisory Behavior Questionnaire (Tables 1 and 2) from which the operational definitions were derived. The subjects' description of the experimenter indicates strongly that the intended manipulations were successful.

However, it is possible that unintended manipulations were also made. All available evidence indicates that this is not true. The correlational analysis shows no significant tendency for the Consideration treatment to be confounded with the ICS treatment and no significant tendency for the ICS treatment to be confounded with the Consideration treatment. Analysis of the highly reliable data obtained from the Interaction Process Scores analysis gave no indication of any unintended manipulations and supported the finding from the correlational analysis of the Instructor Behavior Questionnaire indicating that the intended manipulations were accomplished. Unfortunately, the data obtained from the in-class observers were not suitable for analysis. However, these observers did have extensive exposure to the experimental treatments through the observation of at least one condition and many of them observed two conditions. In meetings with two social psychology faculty consultants (and during which the experimenter was not present), these observers reported no deviation from

the intended manipulations. Further questioning of the observers indicated they were unable to recall any instances of deviation from the manipulation.

Hypothesis one: Subjects who received the high Consideration treatment would submit more annotated bibliorgraphies than the subjects who received the low Consideration treatment and hypothesis two: Subjects who received the high ICS treatment would submit more annotated bibliographies than the subjects who received the low ICS treatment were fully supported. Since the subjects were not randomly assigned to the treatment groups, the support for the hypotheses may have been due to sample bias. No indication of this was found in the data collected in association with the experiment. None of the personality scores or academic predictors correlated with the number of annotated bibliographies submitted by a subject. Likewise, neither class standing nor sex were associated with performance on this variable.

At the initiation of the experiment, it was felt that annotated bibliographies would be more sensitive to the experimental manipulation than would test performance or obtaining research credits. Completing the annotated bibliographies required talents which were likely to be possessed by all of the subjects, it was assumed to be maximally susceptible to changes in the motivations of the subjects which could be affected by the manipulations. The

subjects' test performance was considered to be more difficult to influence. Such performance was assumed to have many more sources of motivation exclusive of the experimental manipulations than was the case with the annotated bibliographies. These increased sources of motivation were expected to decrease the variance in the data and thus restrict the possibility of obtaining statistically significant differences on test performance. While this assumption may be true, the results of the experiment suggest the manipulations are potentially more powerful than anticipated before the experiment was conducted.

Evidence for the power of these variables was revealed in the analyses of both test performance and the obtaining of research credits. Test performance had previously shown itself to be extremely resistant to influences from the experimental manipulation of instructor behavior (Bills, 1952; Johnson and Smith, 1953; Guetzkow, Kelly, and McKeachie, 1954; Deignan, 1955; Burk, 1955; Haigh and Schmidt, 1956; Maloney, 1956; and Krumboltz and Farquhar, 1957). Yet, in this experiment, test performance was significantly affected by the Consideration treatment and non-significantly affected by the ICS treatment.

The lack of a statistically significant effect for the ICS treatment is felt to be due to the lack of power in the manipulation of the ICS treatment with respect to test performance. The subjects of the experiment were regularly

enrolled students at Michigan State University who, as students, were entitled to exposure to the normal amount of course material. In response to that obligation, the ICS manipulation was weakened by making reading assignments in the text book, scheduling examinations, and keeping the lecture material the same in all of the conditions. These actions had the effect of assigning students to particular tasks, stressing deadlines, and appearing to be interested in the students learning the material. These three relaxations in the manipulation raised the general level of ICS in all of the experimental conditions. Therefore, the two extremes in the ICS behavior pattern were not presented in regard to test performance. Instead, only one treatment (high ICS) fell at the extreme of the possible ICS behavior continuum while the other (low ICS) probably fell at the middle of the continuum.

The plausible reason why the ICS treatment produced a statistically significant effect in the case of the annotated bibliographies but not in the case of test performance is that a full manipulation of ICS was made with respect to the annotated bibliographies. Beyond the initial assignment, no deadlines were mentioned in the low ICS treatment. The only outward indication of the assignment ever having been made was the sight of some of the subjects handing the annotated bibliographies to the experimenter. Thus, it is probable that both extremes of the ICS behavior

continuum were present in the treatment with respect to annotated bibliographies but not with respect to test performance.

Since the subjects were not randomly assigned to their treatment groups, it is possible that the test performance results were due to sample bias. The only variable collected in association with the experiment (other than a dependent or independent variable) which correlated significantly with a subject's test performance was his score on the College Qualification Test, and this variable was not found to be biased in its distribution.

The subjects' performance in obtaining research credits was also affected by the experimental manipulations. The number of research credits obtained, however, was correlated to a variable which was biased in its distribution among the treatment groups. When the effects of the variable, Early Bird score, were covaried out, a main effect for Consideration was revealed. This was not true for the ICS treatment. Subjects who received the high ICS treatment obtained fewer, not more, research credits. This unexpected result may be due to the time at which the measurement was taken. At the conclusion of the experiment, the subjects still had two weeks within which to earn more research credits. The task of earning the entire eight credits that could have been counted toward the subjects' course grades could have been accomplished in the

remaining two weeks. Thus the subjects were not under any immediate time pressure to complete the assignment. Fleishman, Harris, and Burtt (1955) found positive correlations between a foreman's proficiency rating by superiors and his ICS ratings by workers only when the foreman's task involved time pressure. There was no significant correlation between ICS and proficiency when the nature of the task allowed its completion by distant or non-existent deadlines. This suggests that research credits would have been affected in the expected manner if the deadline for the completion of the research credit assignment had been passed at the conclusion of the experiment.

The analysis of covariance of the research credit data also revealed a significant interaction which was apparently due to the very low number of credits earned by the subjects in the low Consideration-high ICS condition. This may have resulted from an interaction of low motivation and low time pressure. The subjects seemingly did all of their assignments grudgingly and only to avoid punitive measures. They exhibited many signs of hostility (to be discussed later) and resisting the completion of the research credit assignment may have been one symptom of this hostility.

In addition to the "hard" data collected for analysis, the experimenter made numerous participant observations. One very striking observation was the experimenter's

own feelings about the classes as they progressed. The high Consideration classes developed distinctly higher morale, and the morale had a special "picnic" quality in the low ICS treatment. This picnic atmosphere was very reinforcing to the experimenter; and had he used class morale as a criterion for good teaching, he would have gravitated toward a high Consideration-low ICS style of teaching. Of course, this style of teaching, while gratifying to the experimenter, did not result in the highest performance by the subjects.

The low Consideration classes seemed to be characterized by greater group cohesiveness, but the cohesiveness was of an undesirable nature. The atmosphere in the low Consideration classes was depressed and cool. Conversation and discussion dropped to a minimum very soon after the course began, and the subjects seemed to exert a passive aggression toward the experimenter. In the high ICS condition, the aggression became overt after the first test was returned three weeks into the experiment. In this class, the experimenter had assigned those subjects who had done poorly on the first test an additional task. These subjects were to compose and write one multiple choice question for each bold face heading in the textbook. After two assignments were due, the experimenter began questioning those subjects who had not handed in either of the assignments. The first three subjects questioned replied that they were

aware of the assignment but that they thought it was stupid, and that they were not going to do it (although they later did). At this point, the rest of the class joined in criticizing the experimenter and his class. The remaining class periods were characterized by frequent verbal challenges of the experimenter's viewpoint and discussions of an argumentative nature.

The overt aggression from these subjects made the classes more enjoyable for the experimenter. Discussion was active and motivated. The class had an appearance of involvement in the course. This experience of the experimenter leads him to believe that instructors who have behavior patterns low on Consideration would tend to gravitate toward teaching in a high ICS style. While this style is an improvement over the low Consideration-low ICS style, the results of this experiment suggest it is not the best way to improve student performance.

Many experiments manipulating teacher behavior (e.g. Wispe, 1951, and Asch, 1951) have labeled their independent variables "student-centered" teaching and "instructor-centered" teaching. Although the definitions of these variables varies from experiment to experiment, they essentially reflect the "two natural styles of teaching" (i.e. low Consideration-high ICS and high Consideration-low ICS) found by the experimenter. In the present experiment, these two styles of teaching produced approximately the

same level of performance. Of the ten experiments cited in the introduction, eight of them produced similar results --no significant differences in academic achievement.

Most past educational research that manipulated instructor behavior which is known to the author used a one factor model of teaching. The present research has shown that such a model is inadequate and that at least a two factor model is necessary to explain the instructional styles affecting student performance. The present research also suggests a manner in which these factors can be behaviorally defined. Halpin and Winer (1957) and Fleishman, Harris, and Burtt (1955) used a factor analysis of questionnaire responses describing leadership behaviors to arrive at their definitions. Until the present experiment was conducted, it was possible that, while their instruments measured the factors, they did not necessarily describe the behaviors manifesting the factors. For instance, it is theoretically possible that a statement such as "he wears a red vest" would load highly on the Consideration factor. However, it is not necessarily true that wearing a red vest would increase a person's Consideration. The present experiment shows that behaviors which do affect performance (and manifest the factors) are stated in the Supervisory Behavior Questionnaire. Therefore, the methodology employed by Halpin and Winer (1957) and Fleishman, Harris, and Burtt (1955) will produce an adequate basis for deriving behavioral definitions of the factors.

Some investigators (Maloney, 1956; Haigh and Schmidt, 1956; and Asch, 1951) of student-centered teaching focused on the emotional growth of students. These investigators may find the results of the present experiment interesting but irrelevant to their interests. No standardized measures of emotional growth were taken on the subjects but some indications were present. More of the students who received the high rather than the low Consideration treatment saw the experimenter outside of class as did more of the subjects who received the high rather than the low ICS treatment. Four of the subjects who saw the experimenter discussed their problems relating to school and social life. All of these subject had received the high Consideration treatment and three had received the high ICS treatment. After the conclusion of the experiment, two subjects in the low Consideration-low ICS condition reported to the experimenter significant problems in their social relationships which they felt were heightened by their participation in the experiment.

Debriefing of the subjects resulted in varying reactions among the four conditions. Both of the high Consideration classes were interested to know that they had participated in the experiment, but they were not overly concerned. When given an opportunity to talk to a psychologist who consulted with the experimenter in the project, they declined. In the low ICS class, a few subjects

were puzzeled over the experimenter's "real" personality and were concerned that they had been taken in.

The low Consideration-high ICS class had an initial reaction of amazement followed almost immediately by full acceptance of the experimenter. Three of the subjects later joined in the analysis of the data collected during the experiment. Two subjects showed mild signs of disgruntlement.

The low Consideration-low ICS class reacted bitterly. The bitterness was firmly rooted and had not completely dissipated when the course ended two weeks later. Two of the subjects claimed their experience in the experiment was a major contributor to severe personal problems. One of these two subjects made her initial approach through her faculty advisor. A complaint concerning the experiment and of unknown origin was filed with the university ombudsman. Later interviews with a few of the subjects in this condition indicated the detrimental effects of the experiment had disappeared. These interviews included a subject who claimed the experiment had caused him severe personal problems.

In designing the experiment, there was some concern that there would be inter-communication among subjects in the varying conditions. After the debriefing, a few subjects reported such inter-communications, but said that they did not believe they were talking about the same instructor when the communications occurred. There were absolutely no

indications that any of the subjects suspected they were participating in an experiment until after the debriefing.

CONCLUSION

The results of this study show that the leadership variables Consideration and ICS are ones which affect student performance. This finding has importance for four reasons: 1) the variables were successfully operationalized; and, thus, they supported the previously inferred causal effect on productivity; 2) objective measures of performance varied in the predicted manner, thus increasing the validity of previous findings; 3) the results show that leadership can be studied in the classroom, an environment which is readily available to most researchers; 4) the varables affected academic performance, a dependent variable previously found extremely resistant to influences due to experimental manipulation. This fourth finding significantly increases the theoretical constructs that are thought relevant to educational research.

Future research suggested by the results of this study are: 1) the further development and refinement of the operational definitions for Consideration and ICS; 2) the development of research (and evaluative) instruments designed specifically to measure Consideration and ICS in the classroom; and 3) the development of programs to train instructors in the manifestation of Consideration and ICS.

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APPENDIX A

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Under each category are included the original items on the Supervisory Behavior Questionnaire from which the category is derived. There are also some representative behaviors which would fit into each of the categories. The underlined portion of the example is the portion which causes the behavior to fit in whatever category it is listed under. The portion which is not underlined would fit in some other category or not at all.

Consideration

+1. Stresses the importance of high morale to student(s) or class.

The original item on the questionnaire is (8) "He stresses the importance of high morale among those under him." The key word in the original item is "stresses" and suggests this category should only be scored when the teacher talks about high morale and not because he does something to raise morale.

Examples of behaviors which should be scored.

"(Let me know if there is something you do not like about the course) because I want you to enjoy the course as well as learn from it."

"(I want to make up a seating chart so when you come back from the break, please be sure to sit where you will want to be for the rest of the course.) I would make up the chart now but I want everyone to be happy with where they are sitting and want you to have a chance to change seats if you like."

"(I am really glad we had such a good discussion. It makes me feel like you are involved in the course), and I think that is important."

Examples of behaviors which may be morale boosting but are not behaviors which stress morale and therefore should not be scored.

"You all did extremely well on the test yesterday."

"(I was not sure how good the textbook was going to be), but it has turned out to be really great."

+2. Backs up student(s) or class in their actions or comments.

The original items on the questionnaire are: (5) "He stands up for his foremen even though it makes him unpopular." (7) "He tries to keep the foremen under him in good standing with those in higher authority." (9) "He backs up his foremen in their actions." If you are unsure about scoring a behavior in this category, the behavior probably should be scored under category 18, "rewards students."

Examples of behaviors which should be scored.

(A student says he waited ten minutes for an experiment. When the experimenter did not come, the student left and is now worried about losing experimental credit.) The teacher tells the student he was right in leaving and that the teacher will see the experimenter who did not show up about the student's credits.

(A student brings out an odd point of view during a class discussion.) The teacher supports the possibility of that being a correct interpretation even though other interpretations are more common.

(A student answers a question incorrectly.) The teacher indicates the answer is a common mistake.

(A student is interested in a topic or project which is not covered in the course.) The teacher volunteers to help the student find relevant material and encourages the student to continue.

(The class does poorly on a test.) The teacher assumes that it was he who did not cover the material well enough (rather than the students who did not study well enough.)

-3. Fails to back up student(s) or class in their actions or comments.

There are original items in the questionnaire which are phrased this way. The category is meant to be the opposite of category 2 and the original items 5, 7, and 9. (5) "He stands up for his foremen even though it makes him unpopular." (7) "He tries to keep the foremen under him in good standing with those in higher authority." (9) "He backs up his foremen in their actions."

Examples of behaviors which should be scored.

(A student says he waited ten minutes for an experiment. When the experimenter did not come, the student left and is now worried about losing experimental credit.) The teacher either says, "that is your problem. Try to get a hold of the experimenter." or "You should have waited longer; now you will have to find out if the experimenter came. Try to get a hold of the experimenter."

(A student brings out an odd point of view during a class discussion.) The teacher either fails to support the student and passes on to another student, or he tells the student he is wrong.

(A student is interested in a topic or project which is not covered in the course.) The teacher tells the student he can not help the student and/or discourages the student from doing any more work.

(The class does poorly on a test.) The teacher assumes the class did not study well enough.

+4. Treats his student(s) as his equals, is friendly and easy to talk with.

The original items on the questionnaire are: (10) "He treats all his foremen as his equals." (13) "He makes those under him feel at ease when talking with him." (14) "He is friendly and can be easily approached." What we are trying to code into this category are behaviors which imply the student(s) are to interact with the teacher as they would with each other.

Examples of behaviors which should be scored.

The teacher has student(s) call him by his first name.

The teacher has flexible office hours and encourages appointments.

The teacher gives the student(s) his home phone number and encourages them to call him.

The teacher's behavior exemplifies class rules. If the students are expected to be in class on time, then the teacher must always be in class on time.

(If some deadline or aspect of the course becomes inconvenient for the teacher), he does not change the course unless the change can be made without inconveniencing any of his students.

-5. Treats his student(s) as his inferiors, is not friendly or easy to talk with.

There are no original items in the questionnaire which are phrased this way. The category is meant to be the opposite of category 4 and the original items 10, 13, and 14.

(10) "He treats all his foremen as his equals." (13) "He makes those under him feel at ease when talking with him." (14) "He is friendly and can be easily approached." What we want to code into this category are behaviors which indicate to the student(s) they are to treat their teacher as a superior and behaviors which indicate the teacher regards the student(s) as inferiors.

Examples of behaviors which should be scored.

The teacher has student(s) address him by his last name, Mr. _____, but calls student(s) by his (their) first name(s).

The teacher states definite and inflexible office hours.

The teacher tells student(s) he hopes they will not visit him in his office.

The teacher tells students never to call him at his home.

(If some deadline or aspect of the course becomes inconvenient for the teacher), he changes it even if the change inconveniences several students. (An extreme example would be the teacher walking in on the day of the exam and telling the class he was too tired last night to make up the exam so the exam will be given in the next class.)

+6. Criticizes a specific act rather than student(s) or class.

The original item on the questionnaire is (11) "He criticizes a specific act rather than a particular

individual." To some extent the category is also an opposite to items 19, 23, and 25. (19)"He criticizes his foremen in front of others." (23) "He treats people under him without considering their feelings." (25) "He 'rides' the foreman who makes a mistake."

Examples of behaviors which should be scored.

(A student answers a question incorrectly. The teacher says the student's mistake is a common one. So far this example is like one under "backs up students" and that category should be scored. If in addition the teacher goes on to say something like the following, "criticizes act" should be scored.) "The mistake is one that too many students make, and I hope I can correct it now." The teacher then explains the point.

(A student says he did not hand in any annotated bibliography cards because he could not find the books he was looking for in the library. The teacher says, "The library is a mess, and it is hard to find books (backs students), but people too often let that stop them. Students should persevere until they find what they are looking for or something that will do in its place."

(The class does poorly on one part of a test,) and the teacher spends time explaining what the errors were, what the correct answer is, and why the answer is correct.

A student hands in a sloppy assignment. The teacher spends time talking about the importance of neat assignments.

-7. Criticizes student(s) in front of others.

The original items on the questionnaire are: (19) "He criticizes his foremen in front of others." (23) "He treats those under him without considering their feelings." (25) "He 'rides' the foreman who makes a mistake." To some extent this category is the opposite of category 6 and item (11) "He criticizes a specific act rather than a particular individual."

Examples of behaviors which should be scored.

(A student answers a question incorrectly), and the teacher says, If you had read the assignment, you would not have made that mistake."

(A student says he cannot find a book in the library), and the teacher says, "You should have looked harder. You quit too easily."

(A student hands in a sloppy assignment,) and the teacher says, "You certainly did the assignment poorly, how come you are such a bad student?"

+8. Writes terms and names on blackboard.

The original item on the questionnaire is (3) "He is easy to understand." The behaviors which should be scored under this category are those which are designed to help the student spell or recognize a word. If the teacher is listing a series of related concepts in an outline or abbreviated outline form, the appropriate category is "Draws diagrams and pictures."

+9. Draws diagrams and pictures.

The original item on the questionnaire is (3) "He is easy to understand." The behaviors which should be scored under this category are those which carry an element of organization in and of themselves such as a graph, an outline, a picture of apparatus, etc.

+10. Gives examples.

The original item on the questionnaire is (3) "He is easy to understand." Developing a rule for scoring this category has proven to be unusually hard, and I no longer wonder that there was so much unreliability in this category. The rule which I have settled on is: If the teacher prefaces a remark by "as an example", "to illustrate this," "it is sort of like," or some other introductory statement which indicates the teacher is giving an example, then score the behavior as "gives example." If there is no introductory phrasing, do not score the item. I am not at all satisfied with this rule so if you can think of a better one please let me know.

+11. Uses nontechnical terms to describe new concepts.

The original item on the questionnaire is (3) "He is easy to understand." This category should be scored if the teacher uses a word which some student in the

class might not understand (e.g. Habit strength) but has either already defined the meaning of the term or does so immediately after he introduces the word into his conversation or lecture.

-12. Uses technical terms without adequate definition.

There is no original item on the questionnaire which is phrased this way. The category is meant to be the opposite of category 11 and item (3) "He is easy to understand." This category should be scored whenever the teacher fails to define a term which some student might not understand. Also score this category when the teacher uses technical terms to define another term or concept without repeating the definition in less technical language.

+13. Other clarifying behavior.

The original item on the questionnaire is (3) "He is easy to understand." Any behavior which might help the students to understand the teacher but is not a behavior which could be scored in one of the above categories (8-12) should be scored in this category.

Examples of behaviors which should be scored.

Handouts of printed material, a syllabus, a picture, etc.

Referring to a section in the textbook.

+14. Does favors for student(s) or class.

The original item on the questionnaire is (1) "He does personal favors for the foremen under him." If the teacher helps with the course in any form or if he helps with some problem which obviously lacks in personal involvement, the behavior should be scored in this category.

Examples of behaviors which should be scored.

Allowing a student to take an exam early or late.

Changing an exam date to be more convenient for the class.

Answering a question.

Repeating part of the lecture or discussion for a student.

Helping a student find a book in the library.

Giving a student a ride.

Telling a student where the coke machine is.

-15. Refuses to do favor for student(s) or class.

There is no original item on the questionnaire which is phrased this way. The category is meant to be the opposite of category 14 and item (1) "He does personal favors for the foremen under him."

Examples of behaviors which should be scored.

(A student asks to take an exam early or late,) and the teacher refuses.

(A student asks to see the teacher after class or for an appointment,) and the teacher refuses or tells the student to see him during his office hours.

+16. Helps student(s) with personal problem.

The original item on the questionnaire is (4) "He helps his foremen with their personal problems." The behaviors which should be scored in this category should be unrelated to the course.

Examples of behaviors which should be scored.

"(Please feel free to come and see me about any problems which might develop) even if they do not have anything to do with the course."

"(Some people cannot study well for exams. Sometimes the reason people do not study is that they are afraid they will do poorly in the course. Studying brings the fears closer to consciousness so these people do not study in order to not think about doing poorly. If you cannot study and you think this might be your problem,) please come and see me."

(The class takes a personality inventory. A student scores as a high neurotic. He is anxious about his score and starts questioning the teacher in class.) The teacher suggests the student see him during his office hours.

-17. Refuses to help students with personal problems.

There is no original item on the questionnaire which is phrased this way. The category is meant to be the opposite of category 16 and item (4) "He helps his foremen with their personal problems."

Examples of behaviors which should be scored.

"I do not want anyone to see me unless they need help with the course."

"(Some people cannot study well for exams. Sometimes the reason people do not study is that they are afraid they will do poorly in the course. Studying brings the fears closer to consciousness so these people do not study in order not to think about doing poorly. If you cannot study and you think this might be your problem,) please do not come to see me."

+18. Rewards student(s) (verbally or otherwise) for good work, a good point or question, etc.

The original items on the questionnaire are: (2) "He expresses appreciation when one of us does a good job." (6) "He sees that a foreman is rewarded for a job well done."

Examples of behaviors which should be scored.

(A student asks a question, and the teacher says,) "That is a good question."

(A student asks to take an exam early, and the teacher says "Normally I would not do this,)but since you are a good student, I will."

"(Everybody did so well on the last exam), I am going to raise the curve."

"John, the extra work you did is very good."

"(You have been keeping up with the course so well) I want to reward you. You do not have to come to the next class, but if you do, there will be what I think is a very interesting movie."

+19. Makes or attempts to make changes or assignments with approval.

The original items on the questionnaire are: (12) "He is willing to make changes." (16) "He gets the approval of his foremen on important matters before going ahead." The category is also the opposite of items 22, 23, and 27. (22) "He changes the duties of people under him without first talking it over with them." (23) "He treats people under him without considering their feelings." (27) "He acts without consulting his foremen first."

Examples of behaviors which should be scored.

(The teacher wants to change the date of an exam. He asks the students,) "Is it all right if we postpone the exam one class period?" If the students approve, he changes the date. If the students do not approve, he leaves the date the same.

(A student volunteers for an assignment) and the teacher allows him to do it. (The teacher wants a student to research a certain topic.) He asks, "Is there anyone who would like to read some articles on the moon illusion and report to the class?"

(Someone in the class would like to discuss a topic the teacher had not originally planned to cover.) The teacher asks if anyone else is interested in the topic. If a sufficient number of students show an interest, he discusses the topic. If student interest is low he does not discuss the topic.

-20. Makes changes or assignments without attempting to obtain and obtaining approval.

The original items on the questionnaire are: (12) "He is willing to make changes." (22) "He changes the duties of people under him without first talking it over with them." (23) "He treats people under him without considering their feelings." (27) "He acts without consulting his foremen first." The category is also an opposite of item (16) "He gets the approval of his foremen on important matters before going ahead."

Examples of behaviors which should be scored.

(The teacher changes the date of the exam) without consulting the class.

The teacher picks a student (without asking him or he volunteering) to perform an assignment.

(Someone in the class wants to introduce a new topic for discussion,) and the teacher begins talking without first finding out if the rest of the class is interested.

+21. Puts suggestions made by student(s) into action.

The original item on the questionnaire is (15) "He puts suggestions that are made by foremen under him into operation." The category is also the opposite of items 21, 24, and 28. (21) "He rejects suggestions for changes." (24) "He resists changes in ways of doing things." (28) "He is slow to accept new ideas." Behaviors scored in this category will almost always refer to classroom procedure, form for assignments, discussion topics, and things of that general class.

Examples of behaviors which should be scored.

(Some students suggest that the exam be postponed,) and it is.

(A student wants to discuss a certain topic) and the topic is discussed.

(Students ask that the daily assignment be acceptable in hand written form as well as in typing,) and the assignment format is changed.

-22. Does not put suggestions made by student(s) into action.

The original items on the questionnaire are: (21) "He rejects suggestions for changes." (24) "He resists changes in ways of doing things." (28) "He is slow to accept new ideas." The category is also an opposite to item (15) "He puts suggestions that are made by foremen under him into operation." There are two general types of behaviors which should be scored in this category. One includes the situations where the suggestion is rejected by class consensus. When this is the case, "makes changes or assignments with class approval" should also be scored. The other includes situations where the teacher rejects the suggestion without consulting the class. When this is the case,

"makes changes without attempting to obtain approval" should also be scored.

Examples of behaviors which should be scored.

(Some students suggest that an exam be postponed,) but postponing the exam will inconvenience more students than it will help so the teacher rejects the suggestion.

(Some students suggest postponing an exam,) but the teacher says no.

(A student brings up a topic for discussion in which no one else seems to be interested), and the teacher declines to discuss the topic.

+23. Admits errors.

There is no original item on the questionnaire which is phrased this way. The category is meant to be the opposite of category 24 and item (17) "He refuses to give in when people disagree with him." This category should be relatively easy to score. Every behavior which is scored in this category should include a phrase like "You are right," "I was wrong yesterday when I said," or "I made a mistake when I . . .,."

-24. Does not admit errors.

The original item on the questionnaire is (17) "He refuses to give in when people disagree with him." This category will be harder to score than the last because you will have to judge whether an error was made. If an error was made, if it is brought to the teacher's attention, and if he refuses to acknowledge his mistake, this category should be scored.

Examples of behaviors which should be scored.

(The teacher announces the exam date as January 23. A student says, "You mean January 24 don't you?") The teacher replies, "That is what I said."

(The teacher states some fact about psychology, and a student points out the book says something else.) The teacher says the book is wrong.

(The teacher states some fact, and a student disagrees with him.) The teacher declines to admit his error. (Here you must judge whether the teacher is in error or the student.)

-25. Makes excessive demands on the students.

The original item on the questionnaire is (18) "He demands more than we can do."

Examples of behaviors which should be scored.

On the first day of class, the teacher asks the students what they want the course to cover.

The teacher asks a student or the class a question for which it is not likely anyone will find the answer. (A good clue on whether the teacher has asked an impossible question is the response of the class. If it is not a simple, nearly rhetorical question and no one answers it, the question is likely an impossible one.)

The teacher makes large assignment due earlier.

-26. Insists that everything be done his way.

The original item on the questionnaire is (20) "He insists that everything be done his way." The category is also somewhat of an opposite to category 20 and item (15) "He puts suggestions that are made by foremen under him into operation." This category should only be scored when there is some resistance from the class or student(s).

Examples of behaviors which should be scored.

(There is a questionable point under discussion where more than one point of view finds support from the data. The teacher makes a statement. A student questions it. The teacher admits there may be another side. The student presents his viewpoint again.) The teacher repeats his view and says his is a better answer.

(The class asks that an exam date be changed. The teacher says no. The class repeats their plea,) but the teacher still refuses.

(The class asks the teacher if he can cut down on the length of homework assignments. The teacher says he thinks it is important for the students to be exposed to the material in the assignments. The students say they feel the writing assignments are busy work.) The teacher does not change the assignments.

+27. Explains his actions.

There is no original item on the questionnaire which is phrased this way. The category is meant to be the opposite of category 28 and item (26) "He refuses to explain his actions." Most of the behaviors which are scored under "stress morale" are explanations, but they should not be scored in this category-only under "stresses morale."

Examples of behaviors which should be scored.

"(Please write your name in the upper righthand corner of your papers) so I will be able to record them more easily."

"(I would like for you to move to whatever seat you will want to sit in for the rest of the term) because I would like to make up a seating chart to help me learn your names."

"I have to be out of town Thursday (so someone else will be here to give out the test)."

-28. Refuses to explain his actions.

The original item on the questionnaire is (26) "He refuses to explain his actions."

Examples of behaviors which should not be scored.

(The teacher makes an assignment due on Tuesday and a student asks, "Why can't we hand it in on Thursday?") The teacher replies, "Because I would like it in on Tuesday."

Structure

1. Encourages extra credit work.

The original item on the questionnaire is (29) "He encourages overtime work." Extra credit work is work which will affect the student's grade in the course but is work he does not have to complete in order to receive a grade in the course.

Examples of behaviors which should be scored.

"I think you will get a lot out of going to these experiments."

"I hope you will all take advantage of the extra credit projects. They are both an opportunity to improve your grade and to learn something."

2. Encourages poorer students to work harder.

The original item on the questionnaire is (34) "He encourages slow-working foremen to greater efforts."

Examples of behaviors which should be scored.

"(There were some people who did rather poorly on the last exam. It may be that these people did not realize they needed to study as much as the test required); and if that is true, I hope they will work harder before the next exam."

"(Two or three people are behind in handing in their annotated bibliography cards); this assignment is important, and I hope you will get moving on it."

3. Tries to get all students to do their best work.

The original items on the questionnaire are: (38) "He sees to it that people under him are working up to their limits." (42) "He 'needles' foremen under him for greater effort."

Examples of behaviors which should be scored.

"(You all did pretty well on the last exam, and I am proud of you); however, I think you can do better on the next one; (and if you do, I will raise the curve)."

"(Some of you people may not feel you are very mathematically inclined, but your performance on the homework indicates otherwise) so I am hoping to see nearly all of you answer all of the questions correctly."

"John, you are a good student, and you are doing well in the course; but I think you can do better), and will be looking to see if you improve on the next exam.

4. Encourages more work on material which is required for the course grade.

The original item on the questionnaire is (45) "He asks foremen who have slow groups to get more out of their groups." The main difference between this category and category three is that the behaviors in this category spell out what it is the students are to do.

Examples of behaviors which should be scored.

"(Judging from the questions being asked), I would suggest you reread chapter 5 before the exam."

"(Chapter 3 is a very important chapter) which I hope you will go over with more than your usual care."

"The textbook is an unusually complete and interesting approach to introductory psychology. I think you will enjoy reading it."

5. Discourages work.

There is no original item on the questionnaire which is phrased this way. The category is meant to be the opposite of categories 1, 2, 3, and 4 and items 29, 34, 38, and 45. (29) "He encourages overtime work." (34) "He encourages slow-working foremen to greater efforts." (38) "He sees to it that people under him are working up to their limits." (45) "He asks foremen who have slow working groups to get more out of their groups."

Examples of behaviors which should be scored.

"Do not read pages 19 through 30."

"This is a terrible book. I am sorry I adopted it for the course."

"This part of psychology is boring."

(A student is interested in Freud.) The teacher says, "You would have to read a thousand pages before you

could get a feeling for what Freud was saying. Then you would be acquainted with a point of view which is largely untestable; and therefore, one which I think is damaging."

6. Criticizes poor work.

The original item on the questionnaire is (32) "He criticizes poor work." It is possible for the teacher to be critical of a student rather than the work the student has done so be sure that the criticism includes the work and is not just a personal attack.

Examples of behaviors which should be scored.

"(I have received some sloppy papers lately.) This does not reflect high quality work on the part of those students turning the papers in. The paper is not only what it says; but how it is said, and what it looks like."

"(If you missed more than half of the questions on the last exam), there is something very wrong with your work in the course, (and we need to find out what it is).

"(Bill, you did rather poorly on the last exam.) Missing that many questions means you are not doing something right."

7. Assigns student(s) to a particular task.

The original item on the questionnaire is (35) "He assigns people under him to particular tasks." Behaviors which are scored in this category are of two general types. One, the teacher asks a student to do something during class such as erase the blackboard, read a portion of the test to the class, get some handouts from the secretary, etc. Two, the teacher is assigning the whole class to either the same task (such as a reading assignment) or different tasks (such as individual reports).

8. Asks student(s) to sacrifice for the good of the entire class.

The original item on the questionnaire is (36) "He asks for sacrifices from his foremen for the good of the entire department."

Examples of behaviors which should be scored.

(A question is raised in class, and the teacher does not know the answer.) "George, will you look that up and report to the next class."

"(Harold, you know a lot about statistics), will you meet with Mary before the next test and show her how to work the problems."

(A new student comes into class. The teacher says he has to leave early) and asks a student to stay after class to tell the new student how to complete an assignment.

9. Emphasizes how much work is to be done.

The original items on the questionnaire are (33) "He talks about how much should be done." (46) "He emphasizes the quantity of work."

Examples of behaviors which should be scored.

"The test on Monday will be over chapters 1 through 4, 7 and 8."

"You should be handing in some annotated bibliography cards every week."

"We are going to cover the whole book in the next nine weeks."

10. Stresses being ahead of other classes.

The original item on the questionnaire is (41) "He stresses being ahead of competing work groups."

Examples of behaviors which should be scored.

"(I have three other classes, and they are handing in more annotated bibliography cards than you are.) I hope you people will catch up and pass the other classes."

"(There is only one other class ahead of this. Keep up the good work) and maybe you will pass them.

11. Emphasizes meeting deadlines and being in class on time.

The original item on the questionnaire is (44) "He emphasizes meeting of deadlines."

Examples of behaviors which should be scored.

"The second half of class will start at 9:00."

"March 1 is the last day to hand in your research credits."

"Rick, please do not be late for class next time."

12. Insists that assignments be completed in a standard form.

The original item on the questionnaire is (37) "He insists that his foremen follow standard ways of doing things in every detail."

Examples of behaviors which should be scored.

(The teacher maps out very carefully the format of the annotated bibliography cards) then announces, "and if you do not hand the cards in in exactly this form, I will give them back to you to do over."

"(Harry, your last paper was in pencil); do it over again in ink."

13. Reinforces or states a matter of procedure.

The original item on the questionnaire is (37) "He insists that his foremen follow standard ways of doing things in every detail."

(The teacher announces before his lecture that he will leave time at the end for any questions. During the lecture a student asks a question.) The teacher asks the student to wait until he is finished and then ask the question.

(The teacher has set up a seating chart, and a student is not in the proper seat. The teacher asks, "Is Gary Lee here today?" The student answers. "I thought that was you.) Would you please move over into your regular seat? (I am ready to start class.)"

(A student asks if the teacher still wants the class to sit in their assigned seats.) He says yes.

14. Allows departure from procedure or departs from procedure himself.

There is no original item on the questionnaire which is phrased this way. The item is meant to be the opposite of category 13 and item (37) "He insists that his foremen follow standard ways of doing things in every detail."

Examples of behaviors which should be scored.

(A student asks if he still has to sit in his assigned seat.) The teacher says no.

(The teacher has asked that no one interrupt him during his lecture, but a student does so to ask a question), and the teacher answers it.

15. Decides in detail what and how things shall be done.

The original items on the questionnaire are: (31) "He rules with an iron hand." (43) "He decides in detail what shall be done and how it shall be done." The category is also meant to be the opposite of category 16 and item (48) "He lets others do their work in the way they think best."

Examples of behaviors which should be scored.

"Today I will spend thirty minutes lecturing on statistics. Then I will answer any questions that you have until the break. After the break, I have some problems for you to work on for fifteen minutes, then I want to start on the temperature data we have."

"The reading assignment is: Page 3, the definition of Psychology; page 4, the first four paragraphs of the Function of Science; page 6, the first three paragraphs of The Structure of Science; page 7, the last paragraph beginning, 'If any readers...'; page 9,..."

16. Allows student(s) to do his (their) own work in the way that he (they) think best.

The original item on the questionnaire is (48) "He lets others do their work the way they think best." The category is also meant to be the opposite of category 15 and item (43) "He decides in detail what shall be done and how it shall be done."

Examples of behaviors which should be scored.

"(I would like all of the homework assignments to be typewritten), but you can hand them in any way you like."

"There is no special format for the annotated bibliography cards (as long as you have the author's name and the title of the article or book written down somewhere)."

17. Insists he be informed of students' decisions.

The original item on the questionnaire is (40) "He insists that he be informed on decisions made by foremen under him."

Examples of behaviors which should be scored.

"(If there is some reason why you cannot take an exam when it is scheduled, please come and see me. It may be possible for you to take it some other time,) but you must see me before the exam. If you miss an exam without telling me ahead of time, I cannot do anything about it." Although this behavior is also setting out a procedure, it should be only scored in this category.

"(Some of you are doing extra work in the course.) Please be sure to keep me posted on how things are coming and any change of plans."

"Bill, how is your reading on animal behavior coming."

18. Tries out his new ideas.

The original item on the questionnaire is (30) "He tries out his new ideas." The category is also an opposite of item (47) "He waits for his foremen to push new ideas before he does."

Examples of behaviors which should be scored.

(The class is having difficulty understanding a concept) so the teacher approaches the concept from a different point of view or with a different set of examples.

The teacher comes into the class and says, "I am tired of seeing everybody in the same places. Everybody get up and move to a different seat."

"(I get the feeling you are not understanding the statistics we have been going over. I am not sure what would help, but maybe there is some other way to approach it which will be easier to understand. Instead of lecturing, we could actually conduct a sampling experiment and see how the rules we have been using were derived. Also, I could work up some homework problems, and you might figure out what is happening by struggling through the problems. What do you people think will have the most? (Pause) Well, if nobody has a suggestion), I think I will give you some homework problems."

19. Waits for student(s) to push new ideas.

The original item on the questionnaire is (47) "He waits for his foremen to push new ideas before he does." The category is also meant to be the opposite of category 18 and item (30) "He tries out his new ideas."

Examples of behaviors which should be scored.

"(You all did very well on the exam yesterday, but some of you could do better. I will be glad to help you in any way I can. Maybe extra sessions would help, or I could make up reading assignments to supplement the text. Possibly you just need more time when you are taking the exam.) What do you think?"

"(Jerry suggested we talk about the social psychology of attitude change.) How do the rest of you feel?"

20. Offers new approaches to problems.

The original item on the questionnaire is (39) "He offers new approaches to problems."

Examples of behaviors which should be scored.

"(You all did very well on the exam yesterday, but some of you could do better. I will be glad to help you in any way I can.) Maybe extra sessions would help, or I could make up reading assignments to supplement the text. Possibly you just need more time when you are taking the exam. (What do you think?)"

"(I get the feeling you are not understanding the statistics we have been going over. I am not sure what

would help, but maybe there is some other way to approach it which will be easier to understand). Instead of lecturing, we could actually conduct a sampling experiment (and see how the rules we have been using were derived.) Also, I could work up some homework problems, (and you might figure out what is happening by struggling through the problems. What do you people think will help you the most? (Pause) Well if nobody has a suggestion, I think I will give you some homework problems.)"

APPENDIX B

Test one items which were administered in all treatment conditions

1. Human behavior:

    a. cannot be predicted
    b. is simply common sense
    c. cannot be changed
    d. can be predicted

2. The Skinner box is used for studying:

    a. EEG's
    b. Human problem-solving
    c. human learning
    d. animal learning

3. Stimulus is best defined as any:

    a. electrical shock
    b. sharp noise
    c. property of the environment
    d. influence on behavior

4. The term "empirical" means:

    a. operationally defined
    b. based on observation
    c. intuitively defined
    d. based on experimentation

5. A graphic representation of a frequency distribution is a:

    a. class interval
    b. group of standard scores
    c. correlation index
    d. frequency polygon

6. Subtracting the lowest from the highest scores yields the:

    a. standard deviation
    b. mode
    c. variance
    d. range

7. The axon:

   a. conducts neural impulses away from the dendritic zone
   b. conducts neural impulses toward the dendritic zone
   c. receives neural impulses from other receptors
   d. is the main cell body of the nerve

8. Neural connections are made by:

   a. impulses leaping across the synapse
   b. electrical and chemical stimulation
   c. excitation above the threshold
   d. the synaptic cleft

9. Man's brain is especially different from an animals's in the:

   a. cortex
   b. frontal lobes
   c. corpus callosum
   d. central fissure

10. According to the lecture, the action potential starts at the:

   a. telodendria
   b. the axon hillock
   c. the myelin sheath
   d. the presynaptic terminals

11. The excitatory post synaptic potential is:

   a. all-or-none
   b. can only occur in response to repeated stimulation
   c. occurs in the telodendria
   d. can occur without the cell firing

12. A stereotaxic instrument is used to:

   a. record alpha waves
   b. study perception
   c. implant electrodes in animal brains
   d. study auditory reception

13. Spectrally homogeneous light consists of:

    a. white light
    b. infrared light
    c. short wave radiation
    d. radiations of approximately the same wavelength

14. A radar operator should err more in the direction of:

    a. giving false alarms
    b. failing to detect a stimulus
    c. a high payoff function
    d. saying "no" to a signal-trial

15. Colors are given their names from:

    a. brightness
    b. saturation
    c. hue
    d. intensity

16. The ability to see steady forms of visual stimulation depends on:

    a. a receptor organ that transforms steady states of stimulation to changing states on the retina
    b. visual acuity
    c. the optic nerve
    d. the increased rate of neural activity with steady stimulation

17. The average weight of the adult human brain is:

    a. 100 ounces
    b. 120 grams
    c. 50 ounces
    d. 75 ounces

18. Those variables involved in the perception of depth and distance function:

    a. independently of each other
    b. simultaneously
    c. several at a time
    d. successively

19. With age, the ability to judge the size, shape and brightness of objects:

    a. improves
    b. improves moderately
    c. remains unchanged
    d. decreases

20. Movement, contrast, and intensity are elements of:

    a. perceptual constancy
    b. perceptual set
    c. perceptual attention
    d. perceptual motivation

21. Ivan Pavlov is considered to be the founder of:

    a. learning theory
    b. classical conditioning
    c. instrumental conditioning
    d. operant conditioning

22. What strengthens an association between a stimulus and responses by virtue of its termination:

    a. positive reinforcer
    b. negative reinforcer
    c. electrical irradiation
    d. secondary reinforcer

23. An event that increases or maintains the strength of a response above the operant level is:

    a. a secondary reinforcer
    b. a primary reinforcer
    c. a reinforcer
    d. a higher-order reinforcer

24. Which of the following is <u>not</u> a variable that retards conditioning:

    a. nonreinforcement
    b. increased effort
    c. short delay of reinforcement
    d. massing of trials

Test two items which were administered in all treatment conditions

1. A condition or state in which behavior is activated and directed is called:

   a. motivation
   b. incentive
   c. goal-orientation
   d. drive

2. The center of control for eating seems to be in the:

   a. cerebral cortex
   b. hypothalamus
   c. stomach
   d. pituitary gland

3. The sensation of pain does not depend upon:

   a. the location in which the pain stimulus is applied
   b. the attitude of the organism toward the pain stimulus
   c. attention given by the organism to the pain stimulus
   d. the severity of a physical injury

4. The most difficult factor to control when inflicting punishment is the side effect of:

   a. reinforcement
   b. fear
   c. habit competition
   d. extinction

5. Each response serves as a cue to emit the next response without pausing in the:

   a. variable interval schedule
   b. fixed interval schedule
   c. scalloping effect
   d. none of the above

6. In track, the shot has recently been thrown farther mostly because of:

   a. greater strength
   b. more widely spaced training
   c. changed patterns of movement
   d. younger contestants

7. The 18th century notion that the brain expands with use:

   a. is probably false
   b. is probably true
   c. has never been tested
   d. remains a controversial issue because of conflicting data

8. The belief that merely the passage of time produces forgetting is called the:

   a. theory of oblivion
   b. theory of disuse
   c. theory of non-remembrance
   d. time-memory theory

9. The anticipation method of testing retention produces:

   a. the highest possible amount of retention
   b. a generally high amount of retention
   c. a generally low amount of rentention
   d. the lowest possible amount of retention

10. Habit competition is sometimes called:

   a. interference
   b. inhibition
   c. incorporation
   d. conflict

11. Sounds become useful tools only when they acquire:

   a. frequency
   b. meaning
   c. rhythm
   d. forcefulness

12. The conditioning of a dog to salivate not only to a particular tone, but to similar tones as well, is an example of:

    a. discrimination
    b. primary generalization
    c. semantic generalization
    d. response disinhibition

13. A right handed person unable to speak because of a left-sided cerebral tumor illustrates:

    a. the principle of supremacy
    b. the principle of dominance
    c. the principle of superiority
    d. the principle of influence

14. The double alternative method differs from the delayed reaction problem because:

    a. left-handed animals cannot turn right
    b. the choice point changes
    c. attention span is too great
    d. the relevant cues are self-generated

15. Insight is:

    a. due to a sudden change in perception
    b. unlearned
    c. independent of past experience
    d. a transfer of previous responses

16. In problem solving, temporarily putting a problem aside refers to the period of:

    a. preparation
    b. incubation
    c. illumination
    d. verification

17. During problem solving, muscular movements:

    a. are inhibited
    b. are involved
    c. occur but are irrelevant
    d. hinder

18. People respond to frustration:

    a. pretty much the same
    b. in a certain pattern
    c. by avoiding it
    d. in different ways

19. If aggression cannot be vented on a suitable target, it may:

    a. dissipate
    b. turn inward
    c. be less dangerous
    d. generally improve the situation

20. Fixation occurs when:

    a. frustration cannot be tolerated
    b. frustration is inescapable
    c. punishment is too severe
    d. frustration tolerance is low

21. The approach - avoidance conflict is best reduced by:

    a. raising the approach gradient and lowering the avoidance gradient
    b. lowering both the approach and avoidance gradients
    c. raising the approach gradient
    d. reducing the avoidance gradient

22. In monkeys the first stage of the infant-mother relationship is the:

    a. separation stage
    b. security stage
    c. comfort and attachment stage
    d. reflex stage

23. The ability of a scale or test to measure what it intends to measure is called:

    a. validity
    b. correlation
    c. reliability
    d. significance

24. A severely underactive thyroid at infancy and during the first two years of life results in:

    a. accelerated growth
    b. hyperthyroidism
    c. Grave's disease
    d. cretinism

25. Anoxemia may result in:

    a. starvation
    b. salt deficiency
    c. vitamin deficiency
    d. foolhardy behavior

26. Given to monkeys, Reserpine has the effect of:

    a. permanently modifying behavior
    b. increased overall behavioral output
    c. depressed overall behavioral output
    d. intensified fear

APPENDIX C

APPENDIX C

Early Bird Scale

If a statement in the questionnaire expresses your attitude or feeling to a reasonable degree, mark it "true" on the IBM sheet; if it clearly is not your attitude or feeling, mark it "false."

1. In high school, I preferred math to literature courses.

**2. Eight o'clock in the morning is too early for classes.

3. I like to get the basic ideas clear in my head before coming to a decision.

*4. I don't like New Year's Eve parties.

5. On a test, my first hunch about the right answer is apt to be better than an answer I spend time thinking over a lot.

**6. I like to watch the midnight movies on TV.

*7. I tend to finish my work early, then relax the rest of the evening.

8. When I play cards, I play more slowly than my opponents.

*9. Most nights I get to bed before 12.

**10. I like parties better than picnics.

*11. On Sunday, I like my big meal in the early afternoon with a lighter one in the evening.

**12. Going to sleep is easier for me than waking up.

13. I schedule my study and recreation periods well ahead.

*14. Sunday morning is a good time to get things done.

*15. At heart, I'm more of a farmer than a city slicker.

*16. I tend to get up at the same time every day.

**17. I like midnight snacks.

18. Someday we will discover that human behavior is the result of a few natural laws we have not yet discovered.

*19. I'm at my best in the morning and slow down as the day goes by.

20. I'm more afraid of animals than I am of the dark.

*21. I tend to wake up before the alarm goes off.

22. The bustle and noise of the large American city are not for me.

**23. I prefer dinner late rather than early in the evening.

24. I like things that make life complicated.

25. I have to feel the answer to a problem before I can reason it out.

**26. I usually arrive late at parties.

*27. For me, a good breakfast is more important than a good lunch.

*28. If I wake up early in the morning, it's hard for me to go back to sleep.

29. I crush paper cups after using them.

**30. I'd rather go to the 9 o'clock movie than the 7 o'clock show.

31. I put the stamp on the envelope before I address it.

32. I like onions on my hamberger.

*33. Light coming into the room after the sun rises tends to wake me up.

34. I swallow the seeds when I eat grapes.

35. I hate being tickled.

*36. When I get up in the morning, I soon am wide awake.

37. I make a depression in my mash potatoes before I add gravy or butter.

**38. On a day off, my first meal is brunch.

**39. I brush my teeth before breakfast.

40. I prefer a soft mattress to a hard one.

**41. Night time is more exciting than day time.

**42. I feel more alert after dinner than after breakfast.

*43. I think I would enjoy Yellowstone more than Las Vegas.

**44. I sometimes go back to bed after I've been up for a while.

**45. If I could get the same amount of sleep either way, I'd go to bed late and sleep late rather than go to bed early and get up early.

*46. Most parties drag on too long.

**47. In high school, I liked afternoon classes better than morning classes.

**48. If I had to wait tables, I'd rather work in a night club than in a restaurant.

49. I leave a little liquid in my glass or cup at meal time.

*50. To me, sunrise is more invigorating than sunset.

51. I was afraid of the dark when I was a child.

*52. I'd rather make my own breakfast than lunch.

*53. I do better on a test if I get up early in the morning of the day I take it and study for it than I do when I study late the night before.

54. I prefer food cooked plain rather than with a sauce.

**55. I like to read the Sunday paper in bed.

56. I let my clothing lay around awhile before putting it away.

*57. Taking a nap after dinner usually knocks me out for the rest of the evening.

58. I can make myself belch.

*59. I like to start the day with a good walk.

**60. I drink a lot of coffee during the day.

*61. I'd rather be milkman than a night watchman.

62. I like the idea of masquerade parties.

63. I seem to be more energetic than the average person.

64. It's boring to lie in the sun just to get a tan.

*65. I like a big breakfast.

**66. I'd rather nap after lunch than after dinner.

**67. I think evening weddings are better than morning weddings.

68. I shine my shoes at least once a week.

* Subjects marking this answer as true would receive one point on the Early Bird scale.

** Subjects marking this answer as false would receive one point on the Early Bird scale.

APPENDIX D

APPENDIX D

Raw data for assorted measures

T_1 = score on common items, test one

T_2 = score on common items, test two

CQT = score on College Qualification Test

RC = number of research credits obtained

EB = score on Early Bird scale

D = score on Edwards Personal Preference Scale for deference

A = score on Edwards Personal Preference Scale for autonomy

I = derived score for independence equalling the number of deference items not chosen plus the number of autonomy items chosen on the Edwards Personal Preference Scale minus one.

E = score on Eysenck Personality Inventory scale for extroversion

N = score on Eysenck Personality Inventory scale for neuroticism

TABLE 19

RAW DATA FOR ASSORTED MEASURES
HIGH CONSIDERATION-HIGH ICS TREATMENT

Student	T_1	T_2	CQT	RC	EB	D	A	I	E	N
1	18	21	183	2	8	12	5	21	16	13
2	12	16	135	6	20	13	11	26	16	12
3	20	19	162	0	16	19	7	17		
4	13	18	134	8	13	13	7	22	16	17
5	13	11	141	10	19	21	11	19	14	7
6	17	20	164	5	16	17	6	18		
7	12	19	150	4	24	10	9	26	12	9
8	14	20	128	8	31	14	11	25	10	12
9	13	13	132	0	20	15	13	25	16	6
10	15	21	131	2	20	19	12	21	10	11
11	10	18	115	2	20	21	7	14		
12	16	17	143	4	16	14	11	24	10	16
13	15	19	119	2	26	12	7	24	20	9
14	12	15	148	8	17	18	9	20	16	17
15	17	21	138	4	21	9	11	29	7	19
16	13	15	165	5	20	21	6	14		
17	15	11	128	3	13	10	9	28	12	5
18	9	17	93	0	21	5	7	29	15	20
19	17	22	129	4	25	11	16	32	14	4
20	12	14	113	0	7	14	13	26	9	6

TABLE 20

RAW DATA FOR ASSORTED MEASURES
HIGH CONSIDERATION-LOW ICS TREATMENT

Student	T_1	T_2	CQT	RC	EB	D	A	I	E	N
1	12	16	145	8	17	11	8	27	18	9
2	11	19	106	0	17	12	10	27	15	15
3	13	13	129	0	24	10	13	30	18	13
4	16	18	180	0	22	12	10	25	8	9
5	12	18	123	0	18					
6	16	21	134	9	25	10	8	26	10	13
7	11	15	139	0	10	21	8	15	19	11
8	14	11	141	2	18	18	8	23	23	13
9	13	18	114	9	24	10	13	25	15	12
10	14	14	164	2	15	14	7	21	6	17
11	11	17	128	4	22	14	11	27	6	16
12	15	15	165	4	32	8	12	33	14	20
13	16	18	145	8	14	7	6	27	17	15
14	13	15	110	7	12	9	9	27	14	19
15	15	15	142	6	17	15	13	22	7	14
16	15	21		8	25	11	7	24	9	19
17	17	19	151	6	22	17	13	23	16	5
18	11	12	159	2	13	10	8	27	18	10
19	11	8	111	0	19	11	11	28	18	5
20	15	16	144	8	16	10	10	24	13	11
21	11	15		4	18	22	9	16	13	18
22	16	19	124	8	25	15	4	18	24	7

TABLE 21

RAW DATA FOR ASSORTED MEASURES
LOW CONSIDERATION-HIGH ICS TREATMENT

Student	T_1	T_2	CQT	CR	EB	D	A	I	E	N
1	9	12	129	2	23	15	11	24	16	7
2	13	18	119	0	15	11	10	27	12	7
3	5	16	95	0	8	20	7	16	22	11
4	13	12	153	0	17	21	8	16	16	8
5	6	21	101	6	28	17	11	19	10	13
6	13	16	147	3	13	16	4	17	22	14
7	11	19	119	4	18	14	8	23	9	11
8	12	17	141	4	17	14	15	29	8	14
9	10	19	95	4	19	18	12	23	8	12
10	13	16	123	5	12	20	6	15	22	7
11	11	15	115	2	18	17	8	19	18	7
12	7	14	172	0	16	18	9	20	14	19
13	8		117	0	31					
14	14	15	137	0	11	9	8	26	10	14
15	17	21	148	2	11	15	5	19	16	7
16	15	12	156	8	31	15	8	22	10	14
17	20	18	159	2	26	12	11	27	11	13
18	12	16	122	2	18	14	7	22	10	5
19	12	16	102	6	18	25	6	10	14	3
20	14	16	125	6	16	15	9	23	20	9
21	13	20	144	5	32	7	8	28	14	13
22	9			0						

TABLE 22

RAW DATA FOR ASSORTED MEASURES
LOW CONSIDERATION-LOW ICS TREATMENT

Student	T_1	T_2	CQT	CR	EB	D	A	I	E	N
1	8	9	114	5	18	12	5	22	17	9
2	14	15	140	0	19	8	10	30	14	8
3	13	19	152	6	34	12	14	29	14	10
4	14	16	124	7	16	17	5	17	14	5
5	8	19	107	10	27	8	7	27	16	4
6	15	16	136	2	27	10	9	27	14	9
7	10	15		0	12					
8	12	13		4	14	10	10	28	16	16
9	11	15	101	0	11	18	13	23	16	11
10	8	14	108	4	17	14	7	22	18	16
11	11	18	171	8	11	15	13	25	10	10
12	12	17	143	4	12	13	9	23	13	12
13	13	16	119	0	15	10	12	29	15	10
14	19	19	177	0	12	17	9	21	5	20
15	13	16	132	5	29	7	10	32	16	11
16	12	13	82	0	16					
17	8	12	135	2	13	6	11	32	19	9
18	18	24	156	2	24	20	11	19	12	7
19	10	12	146	0	9					
20	9	12	135	7	19	13	9	23	9	22

TABLE 23

RAW DATA FOR ANNOTATED BIBLIOGRAPHIES
HIGH CONSIDERATION-HIGH ICS TREATMENT

Student	Week						
	1	2	3	4	5	6	7
1	4	2	2	0	0	8	4
2	2	2	2	2	2	2	2
3	0	3	3	1	3	2	2
4	3	2	3	3	4	6	0
5	2	2	2	2	2	2	2
6	2	3	3	3	2	3	4
7	3	2	1	1	1	1	1
8	3	3	3	3	3	3	2
9	2	0	3	3	3	2	2
10	0	1	1	2	1	1	1
11	5	1	1	1	0	0	0
12	1	2	2	2	4	2	2
13	1	2	2	2	3	3	2
14	0	1	1	1	0	3	0
15	0	2	2	2	2	2	2
16	0	0	0	0	0	4	0
17	5	1	2	3	3	1	5
18	2	2	2	2	2	2	0
19	2	2	3	3	3	3	3
20	0	0	0	0	8	0	0

TABLE 24

RAW DATA FOR ANNOTATED BIBLIOGRAPHIES
HIGH CONSIDERATION-LOW ICS TREATMENT

Student	Week 1	2	3	4	5	6	7
1	3	3	3	2	2	2	2
2	0	2	0	2	2	0	2
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	0	0	0	0	0	0	0
6	3	3	3	3	3	2	0
7	0	0	0	0	0	0	0
8	0	0	0	0	0	0	0
9	4	0	4	0	2	0	0
10	0	0	0	4	0	0	0
11	3	2	2	2	2	0	1
12	0	6	0	7	0	0	10
13	3	3	3	3	3	3	2
14	0	2	0	0	0	14	0
15	3	3	2	2	2	2	0
16	2	1	0	3	2	2	2
17	0	4	3	0	3	3	0
18	0	0	0	0	0	0	0
19	0	0	2	0	2	0	0
20	3	3	0	3	3	3	3
21	0	0	0	0	0	0	0
22	3	2	3	3	3	3	0

TABLE 25

RAW DATA FOR ANNOTATED BIBLIOGRAPHIES
LOW CONSIDERATION-HIGH ICS TREATMENT

Student	Week 1	2	3	4	5	6	7
1	0	2	1	1	1	0	1
2	0	2	2	1	1	2	0
3	0	1	4	2	0	0	3
4	0	3	0	0	0	0	0
5	2	2	2	2	2	2	2
6	3	2	4	2	2	3	0
7	2	2	2	2	2	2	1
8	2	2	2	2	2	2	2
9	1	2	2	2	2	1	2
10	2	3	4	2	2	1	1
11	0	2	3	2	0	2	0
12	0	0	0	0	0	0	0
13	4	0	0	0	0	0	0
14	2	2	4	2	2	1	1
15	4	3	3	3	3	4	3
16	3	3	2	2	2	2	2
17	2	2	3	2	2	2	2
18	1	1	2	1	1	1	1
19	2	3	4	3	2	3	3
20	2	3	4	1	2	0	2
21	1	3	2	2	2	3	5
22	0	0	0	0	0	3	0

TABLE 26

RAW DATA FOR ANNOTATED BIBLIOGRAPHIES
LOW CONSIDERATION-LOW ICS TREATMENT

Student	Week						
	1	2	3	4	5	6	7
1	0	0	5	0	0	0	0
2	0	0	0	0	0	0	0
3	0	1	0	0	0	4	0
4	3	2	2	1	2	1	0
5	1	2	2	3	2	1	0
6	3	1	0	1	0	0	0
7	0	0	0	0	0	0	0
8	1	2	0	2	1	1	0
9	2	2	2	2	4	2	2
10	0	1	1	0	0	0	0
11	2	3	2	0	3	0	5
12	0	0	0	0	0	0	0
13	1	2	1	1	1	1	1
14	4	2	3	2	1	1	0
15	2	1	1	1	1	1	0
16	0	0	0	0	0	0	0
17	3	1	0	3	1	1	0
18	2	3	2	1	3	3	0
19	3	2	2	0	6	0	0
20	0	0	1	0	0	2	0

TABLE 27

RAW TOTALS OF OBSERVATIONS CODED INTO THE INTERACTION PROCESS SCORES CATEGORIES

Category	High Consideration High ICS	High Consideration Low ICS	Low Consideration High ICS	Low Consideration Low ICS
1	7	24	17	11
2	52	58	20	33
3	9	30	10	8
4	69	136	95	95
5	64	31	27	21
6	182	287	261	344
7	8	6	3	9
8	208	466	262	256
9	1	1	0	2
10	0	1	3	10
11	3865	4578	4138	5119
12	357	577	456	607
13	23	48	102	60
14	2	5	8	15
15	552	653	652	958
16	0	0	2	0
17	2	6	6	11
18	0	0	2	0