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REINFORCEMENT OF LEADERSHIP BEHAVIOR IN SPECIALLY-CONSTRUCTED GROUPS

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN PSYCHOLOGY

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ABSTRACT

Current interest in behavior modification through use of reinforcement principles recently has been extended to the area of leadership behavior. Several studies have shown that it is possible to increase both participation and status of a selected person within a group by giving him positive reinforcement for leadership behaviors, while at the same time punishing these same behaviors in other persons within that group.

The purpose of the present study was to investigate the effect of reinforcement in a group situation in which personality characteristics associated with leadership behavior were controlled.

The CPI Leadership scale was administered to 177 student volunteers from introductory psychology classes at the University of Hawaii. Ss were then rank-ordered on the basis of these scores and assigned to one of four experimental conditions. A total of 36 four-person groups with nine groups per condition were formed. Half of the groups had target persons (TPs) with high leadership scores, and half had TPs with low scores. Using a factorial design, half of these TPs were reinforced for specified leadership behaviors and punished for silence (all reinforcement administered through individual earphones), while the other half received no reinforcement. Non-target persons (NTPs) in all groups had intermediate leadership scores, and they were punished (buzzer) for leadership behaviors and positively reinforced for agreeing with TP.

The results indicated that high leadership TPs participated more in the discussion and were rated significantly higher on leadership behaviors by NTPs. All ratings were made on modified Bales interaction

categories following the discussions.

Moreover, it was possible to increase talking time significantly through reinforcement for high leadership TPs but not for low leadership TPs. This increased verbalization for high leadership TPs was maintained during unreinforced generalization sessions conducted 24 hours later.

Reinforced high leadership TPs were rated higher than their nonreinforced counterparts on eight of the nine scales used, although individual mean differences were not significant. Among low leadership TPs, the reverse was true. Reinforced TPs were rated lower than TPs in the respective control condition, but again, the magnitude of the differences did not reach significance. These latter findings were explained in terms of nonverbal cues associated with punishment of TP for silence.

Following reinforcement morale tended to be lower only in groups with reinforced low leadership TPs. In this latter case, it was not that NTPs resisted the reinforced TP, but rather that these TPs seemed to refuse to assume leadership responsibilities in the group.

Groups with reinforced high leadership TPs reported the greatest satisfaction with the group product, while groups with reinforced low leadership TPs reported lowest satisfaction, although all ratings were above the "average" modulus (50%-ile) presented to Ss.

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CHAPTER I

Introduction

Leadership behavior has been the subject of extensive study during the past three decades. As a result of this effort, it has become quite clear that prediction is difficult because of the complexity of the criterion and the inadequacy of many of our measures (Cattell and Stice, 1954).

Gross (1961), for example, reduced leadership to the following dimensions: creating and defining goals, clarifying and administering them, choosing appropriate means, assigning tasks and coordinating, motivating, creating loyalty, representing the group, and sparking the membership into action at the right moment.

This defined multiplicity of behavior is further complicated by the realization that any group may have more than one leader at a time (Hamblin, 1960). One member may have the most substantive influence as far as accepted ideas are concerned, while another may coordinate activity or maintain cohesion.

In terms of a factor analysis, Halpin and Winer (1957) and Fleishman (1957) have identified two factors which they call Consideration and Initiation of Structure. The Consideration scale is defined by behaviors that indicate a regard for the comfort and well-being of group members, while the Initiation of Structure scale is defined by behaviors associated with the leader's role and the structure that he imparts to the group.

Using a behavioral approach, Cartwright and Zander (1960) also emphasized two separate leadership functions which may occur. One is

goal achievement while the other is maintenance of the group itself. The first has to do with the original purpose of developed aspirations of the group, and the second consists of keeping interpersonal relations pleasant, arbitrating disputes, providing encouragement, listening to the minority, stimulating self-direction, and increasing the inter-dependence among members.

Adding still further to the complexity of leadership behavior is the realization that the actions required for achievement of valued states in one group may be quite different from those in another. This, in turn, will alter the traits that are considered essential in a leader. Warriner (1955), recognizing this fact, pointed out the importance of the follower, for a leader cannot exist without followers. Sanford (1963) stated that three aspects--the leader, the follower, and the situation must be considered in any study of leadership.

In a recent study, Burke (1965) utilized just such an approach. He simultaneously varied the personality of the leader, the personality of the followers, and the leadership situation. In general, the predicted interactions were obtained, adding support to the position that a simple trait approach or a situational approach cannot adequately explain leadership behavior.

Now that some of the implications involved in leadership have been presented, an operational definition is required in order more fully to understand the phenomenon. Bass (1960) provided one such definition. He stated that leadership arises out of an interaction between persons. It is closely associated with status, and this is representative of the group. (A) wants to change (B)'s behavior. Therefore, any change in

behavior by (B) is rewarding to (A). We may consider (A)'s efforts at changing (B)'s behavior as leadership. Of course (A) may have limited success in this effort, and in fact, he may be rejected entirely. On the other hand, he may encounter a great deal of success and thereby be considered a successful leader. In any case, his success or failure can be assessed either through a sociometric questionnaire administered to the group or through behavior ratings made by trained independent observers. Cattell and Stice (1954) reported that comparable results were attained using both of these methods.

Similar definitions of leadership have been provided by Gates (1923), Gurnee (1936), Lapiere (1949) and Smith (1948). Adams and Romney (1959) were the most explicit in their definition. They stated that a reinforcing circular pattern exists between (A) and (B). (A)'s behavior provides the stimulus for (B) and at the same time specifies its own reinforcement. For example, (A) might ask (B) to perform some service for him or for the group. When (B) performs this service, (A) is rewarded. (A) in turn will reward (B) with "Thank you," "That is a good idea," etc. With this, the circle of reinforcement has been completed. As long as the requirements of (A) and (B) continue to be met, the situation will exist on a stable basis. Adams and Romney further added that this behavior is learned and is sometimes transferrable to other situations.

This learned behavior may be the result of (B) perceiving (A) as controlling the means to need satisfaction (Katz, 1951), or (A) may have demonstrated an ability to solve problems, maintain the group, reward or punish, or in fact, (A) may even have ability and power (Bass, 1960).

Out of this state of flux, according to Carter (1963), an established group will arise in which the abilities of each member will be evaluated relative to the task, and personality characteristics will be considered in terms of goal orientation and the characteristics of the other members of the group.

As Clifford and Cohn (1964) suggested, it is futile to discuss universal leadership traits without associating them with a specific group situation. This by no means is meant to imply that traits are unimportant, but merely that these traits take on importance as a function of the perception of the group members. Furthermore, this perception is determined by the traits of the members themselves and the demands of the situation or task.

Using such a modified trait approach, it is possible to examine and re-evaluate some of the evidence that has been accumulated in this area. Comprehensive reviews have been provided by Jenkins (1947), Stogdill (1948) and Hare (1962). Both Jenkins and Stogdill concluded that no single trait or group of traits has been isolated which sets off the leader from members of his group. Wide individual differences within and between groups exist, and traits are likely to vary from situation to situation. Hare (1962) added that, although correlations between "good" personality traits and leadership are generally positive, they are rarely large. As a result, so little variance is accounted for that prediction of leadership behavior is not possible on this basis.

Intelligence might be considered as a special case inasmuch as its importance, within certain limits, has been established. Hollingsworth (1926) stated that the leader is likely to be more intelligent, but not

too much more intelligent, than the average of his group. Stogdill (1948) cited 23 studies in which leaders were brighter than followers and five studies in which there were no differences. In five other studies he discovered that large differences in IQ militated against leadership. A subsequent review by Mann (1959) revealed that 99% of the studies he investigated showed a positive relationship between leadership and IQ. On this basis, he concluded that intelligence represented the single best predictor of leadership ability, although its predictive power still left much to be desired. In a recent review, Bass (1960) reported correlational results from twenty studies that ranged from .06 to .90. In factor analytic work, Eysenek (1953) also found intelligence to be the most important factor in his study of leadership.

Closely related to the trait approach to leadership is the utilization of various tests in attempts to predict this behavior. Using the Allport-Vernon-Lindzey Value Scale, Hartshorn (1956) found leaders to have significantly higher scores on the Theoretical, Economic, and Political scales. Kumar (1965), using a population in India, discovered leaders to be lower on the Theoretical and Religious scales and higher on the Economic and Social scales. These two studies offer some indication of the effects of cultural differences on leadership. Results exemplifying differences such as these are typical, however, since leadership behavior has definitely been established to be a function of both situation and participants.

Using the MMPI, Hartshorn (1956) and Tarnopol (1958) found no differences between leaders and non-leaders. A notable exception was reported by Schiller (1961) who found distinct differences using the MMPI

Ego Strength Scale developed by Barron (1953). Schiller was able to distinguish leadership at four different levels ranging from president of a large group to individuals who had never been elected to any office.

In their work with authoritarian personalities, Bass et al. (1953) found that individuals scoring high on the F-Scale were least likely to attempt or exhibit successful leadership behavior in a leaderless group situation. Tarnopol (1958) also found that non-leaders were more authoritative, while Sanford (1963) stated that authoritarians in a group situation will tend to prefer authoritarian-type leadership.

The California Psychological Inventory (CPI), which is a measure of "normal" personality adjustment, appears to be the most promising instrument in assessing leadership ability. Liddle (1958) found the correlation between peer leadership ratings and CPI scores to be significant beyond the .01 level for both boys and girls. This significance was maintained even when sociometric status was partialled out. As far as the individual scales are concerned, leaders appeared to score higher on what Liddle divided into two major classes: The first included poise, ascendancy and self assurance, and the second included socialization, maturity, and responsibility.

Johnson and Frandsen (1962) administered the CPI to 50 elected leaders and 50 other persons who had never held elected office. They found leaders exceeded non-leaders on 16 of the 18 scales. Fourteen of these differences were significant beyond the .001 level, one beyond the .01 level, and one beyond the .05 level. Flexibility and Femininity were the only scales on which significant differences between leaders and non-leaders were not obtained.

Megaree, Bogart, and Anderson (1966) studied differences between high and low scorers on the Dominance scale of the CPI. It was concluded that this scale has predictive validity in cases where leadership is made salient.

Goodstein and Schrader (1963) conducted an item analysis on the CPI and discovered that 206 out of the 480 items reliably differentiated between managers and men-in-general. This key also differentiated between top management, middle management and first line supervisors.

The evidence indicates that, of those tests which purport to assess personality characteristics, only the CPI has consistently displayed the ability to distinguish between leaders and non-leaders.

Within the laboratory setting, leadership behavior has been investigated using small groups in a discussion situation. Bass (1949) initiated the technique of a leaderless group discussion (LGD) in which he defined leadership behavior as including initiation or formulation of problems and goals, organization of the group's thinking, clarifying other individuals' responses, integrating the responses, outlining discussion, summarizing, generalizing, obtaining agreement and formulating conclusions. Another method uses a set of twelve categories of group interaction behavior developed by Bales (1950). Fiedler (1958) provided an Assumed Similarity of Opposites scale, and the Edwards Personal Preference Schedule (EPPS) has been used by Burke (1965), Rychlak (1963) and Schumer (1961). Others such as Cattell and Stice (1954), Speroff (1964) and Hastorf (1965) have used a sociometric questionnaire to assess leadership behavior.

Hastorf (1965) utilized one of the most interesting approaches.

Using the questionnaire method in a group discussion situation, he adapted a procedure developed by Oakes, Droge and August (1960) in which a leader is developed through the process of operant conditioning. This method differs from other attempts at training leaders.

Prior efforts in this area consisted of conventional training procedures in which leaders were instructed in principles and skills of leadership. Work by Bavelas (1942), Maier (1953), Klubeck and Bass (1954), and Barnlund (1955) falls into this category. A flood of books and pamphlets has also appeared in efforts to improve individual leadership techniques. A sample of these includes Sheffield (1929), Coyle (1937), Lasker (1949), Gouldner (1950), Haiman (1951), Johannot (1953), Whyte (1953), Andrews (1955), and Laird and Laird (1956).

Still another approach is that of sensitivity training which can be traced to the National Training Laboratories at Massachusetts Institute of Technology and later to the University of Michigan. Subsequently, training laboratories were held in Bethel, Maine, and in the past several years training sessions have been held throughout the country.

The sensitivity training approach to leadership has as its goal the attainment of awareness of individual internal needs, values, perceptions and resources (Bradford et al., 1964). This is based on the assumption that these insights can be learned best through the process of participation in which the learner is involved.

To return to the conditioning method as used by Hastorf (1965), he found that the perceived sociometric status (leadership) of an individual in a group was directly related to the participation of that individual in the group discussion. The participation itself was controlled

by E through the use of reinforcement-delivering lights. Essentially, Hastorf was able to select a person (the target person) who ranked third (out of 4) on a sociometric survey and increase his status in a subsequent discussion simply by getting him to talk more. Each person had a panel containing a red and green light. Reinforcement occurred when a green light indicating "contribution to the group process" was flashed for verbalization on the part of the target person (TP). Non-target persons (NTPs), on the other hand, would receive a red light flash indicating "behavior which would eventually hamper the group process" whenever they expressed an opinion. Their green light would flash only if they expressed agreement with TP. The TP would receive the red light for prolonged silence. As stated above, the net result was to increase both talking time and status of the TP within that group. It was discovered that the increased status of the TP persisted into a subsequent extinction session in which reinforcement (lights) was neither expected nor delivered.

Zdep and Oakes (in press) essentially replicated the Hastorf (1965) study in an attempt to discover if the questionnaire he used might have been reactive in nature and hence sensitized group members to the leadership behavior being investigated. An unexpected type of reactivity was discovered, but this did not detract from the main findings of the study. The questionnaire appeared to have little effect on the behavior of TPs, but rather, the more ascendant NTPs engaged in leadership behavior to a greater extent once they had been exposed to the questionnaire. Zdep and Oakes (in press) referred to this as a "sleeper effect," but it closely parallels the results obtained by Megargee et al. (1966)

who found that the CPI Dominance scale did not predict leadership behavior until the leadership aspect was made salient.

In addition to sociometric data, the Hastorf (1965) study used amount of verbalization as a dependent variable. Others have used this measure with great success. Bass (1949) discovered a correlation of .93 between amount of participation and leadership ratings in ten-person groups. Similar findings were reported by Peterman (1950), Slater (1955), Borgatta and Bales (1956), Kirscht et al. (1960), and Shelley (1960). Closely related to this, Goode (1951) has shown that many studies characterized leaders as persons possessing linguistic skills which enabled them to express themselves clearly and reliably. O'Connor (1932) even expressed the belief that successful executives had larger vocabularies than did those of lesser success.

Several other studies which investigated various aspects of the Hastorf procedure have been conducted in the University of Hawaii laboratories. David (1967) observed the increased status effect and increased verbalization for TPs as a result of reinforcement. However, it was noted that in subsequent sessions, non-reinforced Ss who had participated in earlier discussions increased their talking time when placed in a different naive group. Although this is mere speculation, a reactive effect, similar to that obtained by Zdep and Oakes (in press) might have occurred when the experienced Ss, having been exposed to the questionnaire stressing leadership, realized that they were in inexperienced groups.

Smith (1967) and Khemka (1967) investigated the implications of applied external reinforcement with respect to Heider's (1958) theory.

Heider's analysis would suggest that if participants are aware that TP's behavior was the result of reinforcement lights operated in an arbitrary manner, they would not attribute increased status to that TP. Hastorf (1965) reported that although NTPs in his groups attributed increased status to TPs, Es who were aware of the contingency did not. However, both Smith and Khemka discovered increased TP status, even if the persons reporting this status were aware of the methods by which reinforcement was delivered.

The present study was designed to investigate the effects of verbal reinforcement delivered to TP in a situation similar to that used by Hastorf (1965). However, since previous research has clearly indicated that group characteristics play an important part in determining who will emerge as leader, more effective control of group composition was maintained.

This was done by assigning TPs and NTPs to groups on the basis of CPI scores, according to the scale developed by Goodstein and Schrader (1963). This scale was discussed earlier.

Reinforcement was delivered by individual earphones instead of a panel of lights. This procedure permitted differential reinforcement of various behaviors associated with leadership. Furthermore, Hastorf's questionnaire, which has revealed certain reactive effects, was not used. Instead, a questionnaire based upon Bales' (1950) interaction categories was substituted.

Elaborate attempts were made to convince Ss that E was especially interested in the group product rather than the group interaction process. An evaluation of the final group product was obtained in connection with

this.

It should be pointed out that the groups used in this study were not random groups, but as the title of the study implies, they were groups that had been specially constructed on the basis of initial CPI scores. Half the groups had High CPI TPs, while the other half had Low CPI TPs. The NTPs across all groups had intermediate CPI scores. On this basis, generalization of these results must be limited to those groups in which CPI scores are known or can be determined.

It was hoped that this study would answer several questions. First of all, the Zdep and Oakes (in press) study had provided subjective evidence that indicated certain Ss were more conditionable than others. It was felt that these differences in conditionability might be explained in terms of personality differences.

In this respect, the present study consisted of systematically varying those personality traits assessed by the CPI which Goodstein and Schrader (1963) found to be important in leadership. Furthermore, the task situation was controlled in such a way as to make task ability fairly constant across all Ss used. In this case, the group task was to plot an election campaign for a hypothetical candidate for whom certain biographical data were supplied. Outside of an occasional political science student who "thought" he was better prepared to cope with the problem than the other participants, Ss were fairly well matched in their experience with this type of problem.

In this way, the conditionability of "natural leaders" and "non-leaders" was systematically assessed. Thus, by comparing the high and

low CPI TPs, it was possible to determine the predictive power of this CPI scale in controlled groups such as this.

Finally, this study was designed to study systematically the effects produced on NTPs or "followers" in groups with conditioned leaders. Of special interest here was whether or not the "sleeper effect" would appear with a less reactive questionnaire, and whether a group with a conditioned leader would suffer from lower morale than would a group with a natural leader.

CHAPTER II

Statement of Hypotheses

Previous research in the areas of learning theory and leadership behavior suggests several hypotheses which are pertinent to this study. These are concerned primarily with predictability in terms of the Goodstein and Schrader CPI scale and the various effects obtained through the administration of reinforcement within a group situation.

Before presenting these hypotheses, however, it is necessary briefly to reiterate the assumptions involved in the use of this particular CPI scale. Actually, this scale is the product of an applied situation involving managers and men-in-general. The item analysis revealed differences between these norm groups on 206 out of the 480 items on the entire CPI. These differences may be the result of experience obtained by the managers on the job, or they may reflect actual personality differences independent of differences in experience.

For the purposes of the present study this cause and effect distinction is irrelevant. Inasmuch as personality traits as such are not under investigation herein, the only assumption made concerning this leadership scale is that the scores obtained will correlate positively with concurrent leadership behavior. This assumption will be tested directly in this research.

In terms of actual hypotheses to be considered, there are several possible approaches. It could be assumed that High CPI Leadership scale TPs would be most like the managers in the norm group. Hence, they would be quite verbal, ascendent, and otherwise possess "natural" leadership

abilities to a greater extent than would lower scoring persons, that is, both NTPs and low scoring TPs. On this basis it would be quite natural to expect High CPI TPs to talk more and be rated higher on leadership behavior than Low CPI TPs.

As far as the effect of reinforcement is concerned, it is possible that High CPI TPs may already be at a verbalization ceiling, and hence it would not be possible to increase verbalization for them through the use of reinforcement. An alternate consideration makes note of the fact that NTPs will be punished for leadership behaviors in the reinforced conditions. If this is effective it should create more "dead space" than would exist normally if NTPs continued at their normal operant levels of verbalization. This condition should permit TP to step into the leadership void, especially since he will be encouraged to do so by E.

In the case of the Low CPI TPs, they would be expected to have lower verbalization levels, and the problem of a ceiling effect really is not pertinent in this case. However, the question remains whether the CPI Leadership scale will identify these TPs as the type of persons who could not be conditioned in earlier studies. Certainly there is no particular reason to expect such an identification, and the alternative possibility is that Low CPI TPs should display the greatest increase in verbalization under reinforcement in light of their originally low levels. One final consideration concerning reinforcement is that for the Low CPI TPs, operant levels may be too low to administer sufficient positive reinforcement. If this is the case, the results will depend upon the effectiveness of punishment of silence for TP. In light of

these various interpretations, a prediction based upon the outcome in this case might well be stated in the null form.

It is anticipated that morale ratings immediately following reinforcement will be depressed, since NTPs will be punished for leadership behaviors during this session. It is possible to speculate further that morale should be lowest in those groups where TP is unable to fill the leadership void successfully. High CPI TPs may overly dominate the discussion, or low CPI TPs may not be successful in assuming leadership under the influence of reinforcement.

It is also possible that a certain amount of resistance may develop toward reinforced TPs. In the case of High CPI TPs, NTPs may regard them as being overly dominant, or they may vent reinforcement-produced frustration against TP. Low CPI TPs may verbalize more under the influence of reinforcement, but NTPs who have higher CPI scores may regard this increased verbalization as being immaterial or as not reflecting good ideas.

All groups will evaluate their final products, and it seems reasonable to expect higher ratings for groups in the High CPI Condition. Groups having Low CPI TPs should have lower product evaluations, first of all because of ineffective TPs, and secondly, because of competition for leadership among NTPs who have equivalent CPI scores.

On this basis the following hypotheses are suggested tentatively:

H_1 TPs with high leadership (CPI) scores should have higher verbalization levels and higher leadership ratings than should low scoring TPs.

H_2 (Stated in null form) A differential reinforcement effect on High and Low CPI TPs should not be obtained.

H_3 Group (NTP) morale following reinforcement should be depressed primarily because NTPs have been punished for leadership behaviors.

H_4 NTPs should resist the leadership efforts of reinforced Low CPI TPs to a greater extent than High CPI TPs.

H_5 Higher group product ratings should occur in the High CPI TP Condition.

CHAPTER III

Method

The Ss for this study consisted of student volunteers enrolled in introductory psychology classes at the University of Hawaii. Approximately 177 Ss took the California Psychological Inventory (CPI) in group testing situations. They were then assigned to groups on the basis of these test scores.

Materials used in this study consisted of a CPI Leadership scale developed by Goodstein and Schrader (1963) and a leadership questionnaire based upon Bales interaction categories that was further modified using an empirical norm group of non-subjects, and case study material of hypothetical political candidates written by the present writer. Reinforcement was delivered by means of earphones connected to individual intercom sets. Subjects were in a laboratory room equipped with a one-way vision glass, intercoms and a sound system to deliver background music.

The CPI Leadership scale consists of 206 out of the 480 items in the entire CPI test. The item numbers may be found in Table 20 in the Appendix. This scale was developed according to an item analysis by Goodstein and Schrader (1963). Their norm groups consisted of 603 industrial managers and 1,748 non-managers.

Subjects received biographical information on a hypothetical candidate (Robert Smith) for the United States Senate. Contrasting information about his opponent was also presented. The biographies are presented below.

Robert Smith

Robert Smith was born in Honolulu on April 4, 1925. He was educated at the Punahou Schools and received his B.A. degree from the University of Hawaii in 1947. He served as a jet combat pilot in Korea, winning a Silver Star and Purple Heart. Since that time he has been an executive in a local importing firm, and he also has been elected to a term in the State House of Representatives. Mr. Smith is married, has two sons, and is active in many church and charitable organizations in Honolulu.

The Opponent

Mr. Smith's opponent is attempting to win a second term in the United States Senate. He holds a degree from Washington State University, and he has been in local politics for twenty years. He is known as a Moderate and has the support of scattered groups in both business and industry. He is noted for his lack of support for education and welfare measures. Although he is supported by a great many people, his critics refer to him as a "do-nothing Senator."

Groups were composed of four Ss seated around a table. Each S had a Western Electric master-type intercom unit before him. These units were adapted for inconspicuous transister radio-type earphones by installing a jack wired to the speaker system of each unit. Sound was shunted through the earphone when it was plugged in and through the regular speaker of the intercom when the earphone was disconnected. These four intercoms were wired to a similar unit controlled by E in an adjoining room. E was able to speak to Ss individually or as a group.

Attempts were made to insure the privacy of communications by installing foam pads on the earphones and by piping recorded instrumental music into the room through a separate system. The volume of this "making music" was determined through use of a series of pilot groups.

A questionnaire for assessing leadership behavior was developed based upon Bales interaction categories (1950). The actual questionnaire is presented in Table 21 in the Appendix. The scales were presented in a counterbalanced order which differed from the order originally used by Bales.

The leadership modification of the scales actually consisted of a unique method of scoring developed through use of a norm group of 288 students from an undergraduate personality class. None of the students from the norm group were used in the experiment, although it was assumed that they were quite similar to Ss actually used in the discussion groups.

The norm group was asked to rate the importance of each of the interaction behaviors in terms of leadership within a four-person discussion group. They were asked to envision the best leaders they actually knew in such a situation, and then using a six-point scale, they were asked to rate the extent to which these leaders would engage in each of the Bales interaction behaviors. In the scoring, those behaviors which were rated significantly different from the zero or "neutral" point on the scale were considered to characterize leaders.

An analysis of the norm group ratings revealed that the items dealing with showing agreement, asking for orientation, and joking did not reliably distinguish between leaders and non-leaders. Furthermore,

the items involving disagreement, showing antagonism, and showing tension were considered to be relatively absent in a leader. On this basis, within the experimental groups, these scales were scored in a reversed direction, that is the lowest ranked person on these behavior categories received the highest leadership score.

If the six-point scale that was used is assigned values ranging from zero (not at all) to five (very great amount), the results of the evaluation by the norm group can be presented numerically. This is done in Table 1.

Table 1

Development of a leadership questionnaire based on Bales interaction categories using a norm group of 288 persons

Item	Behavior	Mean	Std. Dev.	Mode
1	Solidarity	3.28	1.02	3
2	Asks for opinion	3.47	1.04	4
3	Agreement	2.41	1.03	2[b]
4	Disagrees	1.37	0.96	1[a]
5	Gives opinion	3.26	1.15	3
6	Shows antagonism	0.99	1.03	1[a]
7	Asks for orientation	2.83	1.17	3[b]
8	Jokes	2.99	1.17	3[b]
9	Asks for suggestion	3.25	1.12	3
10	Gives suggestion	3.24	1.13	3
11	Shows tension	0.67	0.70	1[a]
12	Gives orientation	3.32	1.02	4

a ---denotes item scored in a negative direction as a result of this analysis.

b ---denotes item eliminated as a result of this analysis.

The experimental questionnaire contained all twelve of the Bales categories. However, only nine of these, as indicated above, were scored. Scores ranging from zero (not at all) to five (very great amount) were used for the six positive items, and scores ranging from five (not at all) to zero (very great amount) were used for the three negative items. Ss' task was to rank all four participants using a six-position scale on each of the items.

The experimental room was eight feet square and separated from the observation room by a one-way vision glass. Ss were seated around a square table on which there were four intercom sets with individual earphones. Music was piped in by means of a speaker located near the entrance to the room. The volume of the music was such that it did not interfere with the conversation, but it minimized the possibility of a participant overhearing a communication from another person's earphone. This had occurred in early pilot groups in connection with the buzzer used in the reinforcement procedure.

E observed the discussion from an adjoining room, administered the reinforcement, and kept a record of the total talking time for each participant.

The procedure consisted of forming a total of 36 groups, each containing four persons. Half of the groups had target persons (TPs) with high CPI scores, while the other half had TPs with low CPI scores. The non-target persons (NTPs) in each group had intermediate CPI scores.

The 36 groups were run under one of four experimental conditions, with nine groups per condition. These were as follows: (A) High CPI TP- reinforcement used, (B) High CPI TP- control group with no

reinforcement, (C) Low CPI TP- reinforcement used, and (D) Low CPI TP- control group with no reinforcement.

Assignment of Ss to groups was on the following basis: Beginning with the first-ranked person on the CPI scale, TPs were assigned in an ABBA order to conditions (A) and (B). Then beginning with the lowest ranked person, TPs were assigned to conditions (C) and (D) using the same counterbalanced order. The remaining Ss with intermediate CPI scores were then used as the source of NTPs after those with the highest and lowest scores had been eliminated, in order to minimize the possibility of using NTPs with scores resembling those of TPs.

Thereupon the range of NTP scores was divided into three parts, and attempts were made to fill each group with a member from each of the three sub-ranges. Since a mediating factor was the free time Ss had available to participate on consecutive days, it was not always possible to adhere strictly to this method of assignment. However, evidence supporting the equality of NTPs across conditions can be found in the next section of this paper.

Groups from each of the four conditions were run in a random order over a period of two weeks. Each of the experimental groups met for group discussions at the same hour on two consecutive days. On the first day, Ss were led by E from a subject waiting room to the experimental room. The masking music played in the background.

Ss were seated alphabetically around a table. E then stated:

> "Good (morning-afternoon), would each of you place his earphone on? You are here to engage in a group discussion in which you will be asked to come up with a solution to a problem

that we will give you. You're going to be working on this problem both today and tomorrow, so it might be a good idea to get to know one another before we actually begin the experiment. It is not necessary to use proper names, but instead refer to a person by his position, either North, South, East, or West. Try to associate each person with his position.

"As a sort of 'warm-up' while I'm readying our equipment in the control room, I'd like you to discuss the question of lowering the voting age for young people. What are your feelings concerning this important matter? Please discuss this topic while I'm gone, and I'll be back in a few minutes to start the experiment."

E then returned to the control room where he monitored the group for ten minutes in order to obtain operant speaking levels for each S. At the end of this time, E returned to the experimental room and read the following instructions:

"We are now ready to begin. (Pause) Today's discussion will last 30 minutes and will cover a problem that is outlined in these folders. It is a problem that has confronted a group of investigators in our department. The solutions that will be proposed by groups such as yours are essential for future investigation (distribute folders). The directions are self-explanatory, and I can answer no individual questions about them. You may now read the material in your folder. When you have finished, I'll give you additional instructions by

way of your intercoms."

E returned to the control room and recorded the operant rates while Ss read the material in their folders. This material consisted of the following instructions:

"As you may know, several faculty members of the University of Hawaii Psychology Department are conducting studies of voting behavior. Their investigations have shown that the type of campaign conducted by a candidate for office is of crucial importance to his success.

"Therefore, these faculty members would like you, as university students, to aid in this work. They want you to plan the election campaign of a hypothetical candidate, Robert Smith, who would like to run for the United States Senate from the State of Hawaii. Biographical information for the candidate and his opponent is presented below."

After the short biographical sketches of Mr. Smith and his opponent, these printed directions followed:

"Please do not label either candidate as a Republican or a Democrat, but merely as a candidate who could represent either ticket. Your task both today and tomorrow will be to plot a winning campaign for Mr. Smith. Feel free to use your imagination. If you were running, what strategy might you use? You may approach the problem in any manner you like, for there is no single 'correct' solution. Just remember to confine your discussion to the problem at hand. It is important to plan a complete campaign, and in order to obtain a record of it, your

discussion will be recorded for future study by the principal investigators involved (actually, it was not recorded). If you would like to take notes, there is scratch paper provided beneath these instructions.

"Once you have finished reading this page, please look up so we may give you additional instructions. Rereading is unnecessary at this time."

At this point, Ss were asked (by intercom) to adjust the individual volumes of their headsets to a comfortable level. Once this was accomplished, groups in conditions (A) and (C), the groups to be reinforced, received these instructions:

"In order to keep the discussion oriented toward a practical goal, each of you will be given feedback concerning your performance in the group. This feedback is based upon the results of more than three years of experimental work with group discussions in our laboratories, and it has proved quite successful in promoting excellent solutions to group discussion problems. Whenever anyone makes a contribution to the discussion which is helpful or functional in facilitating the group process, we will let him know this. On the other hand, whenever anyone behaves in a way which will eventually hamper or hinder the group process, he will hear a buzzer such as this (sound buzzer). Please do not mention or in any way indicate that you have received this feedback from the experimenters."

All groups then received the following instructions: (Groups (B) and (D) received only these instructions.)

"Please begin the discussion when the white light at the center of the table goes on. The red light beside it will light when five minutes remain in your discussion. The discussion will last for a total of thirty minutes, and you will not be expected to have completed your campaign until the close of tomorrow's discussion. Good luck!" (White light goes on.)

During the discussion E kept a record of the total talking time for each participant. In the reinforced groups, TPs received the comment "Good" whenever they expressed an opinion. Whenever they asked a question they received a "Very good," and whenever they attempted to direct or structure the conversation, they received "Excellent." NTPs heard the buzzer for extensive opinion-giving or whenever they asked a question or attempted to guide the discussion. TPs heard the buzzer for extensive silence on their part.

After twenty-five minutes the warning light went on, and the session was concluded five minutes later. Ss were reminded that the discussion would be continued the next day at the designated hour. In the meantime, they were asked not to discuss the experiment among themselves or with others.

They were then led to a larger room where they completed a leadership questionnaire based upon Bales twelve interaction categories. A copy of the questionnaire can be found in the Appendix. In addition to completing the questionnaire, Ss were asked to estimate group morale on a ten-point scale.

When the group returned the following day, they were seated around

the table in their former seats. Their folders of the previous day were before them, but music and earphones had been removed since no individual feedback was to be given.

Ss were told that the earpieces would not be used for this discussion since additional instructions would not be required. They were then asked to take up the discussion where they had left off yesterday and further admonished to confine themselves to the topic at hand. They were told that the discussion would again last 30 minutes and that the red warning light would signal them when five minutes remained in their discussion.

E again recorded total talking time for each S during this discussion, and no reinforcement was administered. When 30 minutes had elapsed they were told (by intercom) that the experiment was over and that their campaign should be completed.

E returned to the experimental room and asked Ss' cooperation in not discussing what they had done or said during the experiment in order to prevent future Ss from arriving with more or different information than the present group had when it began the experiment. E also told them that he would come to their classrooms towards the end of the semester in order to explain the experiment and give them the results.

At that point they were again led to the larger room to complete an identical leadership questionnaire, a morale rating and a rating of their own campaign on a percentile scale.

CHAPTER IV

Results

The distribution of CPI Leadership scale scores is presented in Table 2. All tested Ss are included, thereby enabling one to obtain an indication of the distribution of these scores in the population from which Ss were drawn.

Table 2

Distribution of CPI leadership scale scores

Range	Number	Range	Number
< 89	3	130-139	35
90-99	7	140-149	33
100-109	9	150-159	29
110-119	12	160-169	21
120-129	22	170-179	6

Ss were assigned to groups on the basis of these CPI scores. The mean scores for TPs and NTPs in the various experimental conditions are presented in Table 3.

Table 3

Mean CPI scores of subjects assigned to various conditions

Condition	TP	NTP
A (High-Experimental)	167	138
B (High-Control)	168	140
C (Low-Experimental)	96	137
D (Low-Control)	96	141

The percent of total talking time for TPs in each of the sessions was one of the dependent variables under investigation. Tables 4 and 5 present analysis of covariance summaries for these data. In each case the design is a 2 x 2 analysis with repeated measures on the second factor (Session). Percent talking time for the ten minute operant session was used as the covariate.

Table 4

Summary of analysis of covariance of TP percent talking time for high CPI condition

Source	df	MS	F
A (Reinforcement)	1	1190.25	27.49***
Error Between	15	43.29	
B (Session)	1	164.69	5.22*
AB	1	23.37	----
Error Within	16	31.53	

* $p < .05$

*** $p < .001$

Table 5

Summary of analysis of covariance of TP percent talking time for low CPI condition

Source	df	MS	F
A (Reinforcement)	1	0.74	----
Error Between	15	256.40	
B (Session)	1	72.25	1.88
AB	1	46.69	----
Error Within	16	38.41	

The analyses of TP percent talking time were then combined to create a 2 x 2 x 2 analysis of covariance, again with repeated measures on the Session factor. This resulted in a highly significant effect for CPI Score, F ($df = 1, 31$) = 15.70 ($p < .001$). The effect due to Session again reached significance. This value, was F ($df = 1, 32$) = 6.51 ($p < .05$). The reinforcement effect previously found in the High CPI Condition did not appear when both High and Low CPI Conditions were combined in this analysis. A clearer picture of the results may be obtained by examining the adjusted mean values in Table 6.

Table 6

Adjusted mean values of TP percent talking time for the various conditions

Condition	Reinforcement Session	Generalization Session
High Experimental	51.67	49.00
High Control	41.78	35.89
Low Experimental	20.73	15.62
Low Control	18.49	17.94

It can be seen in Table 6 that percent talking time for TPs in groups with high CPI TPs was much higher than the TP talking time for the corresponding low CPI TP groups. Furthermore, the decrease in talking time from the Reinforcement to the Generalization Sessions can be noted in all groups, although reinforced TPs with high CPI scores maintain their unusually high verbalization rate, even after a one-day interval between Reinforcement and Generalization Sessions.

A second dependent variable consisted of TP leadership ratings made

by NTPs. Although TPs also completed the Bales questionnaire, their self-ratings were not used in the analyses. As stated earlier, only nine of the twelve categories were scored. The scales indicating negative behaviors were scored in reverse, thereby making all entries positive. A total score for each TP was obtained by adding the nine separate scores as rated by the three NTPs in his group. Table 7 contains a summary of the analysis of variance made on these scores. The design is a 2 x 2 x 2 analysis with repeated measures made on the Session factor.

Table 7

Summary of analysis of variance of TP leadership ratings for the sum of nine Bales categories

Source	df	MS	F
A (CPI Score)	1	1214.43	21.00***
B (Reinforcement)	1	20.17	0.35
AB	1	282.03	4.88*
Error Between	32	57.83	
C (Session)	1	3.97	0.65
AC	1	8.33	1.35
BC	1	0.23	0.04
ABC	1	2.17	0.35
Error Within	32	6.16	

* $p < .05$

*** $p < .001$

The results presented in Table 7 indicate that a highly significant effect due to CPI Score was obtained. An inspection of the individual

mean ratings in Table 8 reveals that TPs with high CPI scores were rated significantly higher on the questionnaire than were TPs with low CPI scores. The A x B interaction (CPI Score x Reinforcement) came about primarily due to the unusually low ratings of TPs in the reinforced Low CPI control condition. On the other hand, the corresponding reinforced High CPI TPs had ratings higher than their respective control condition, as was predicted.

Table 8

Mean TP leadership ratings for the various conditions

Condition	Reinforcement Session	Generalization Session
High-Experimental	32.8	32.4
High-Control	29.7	29.7
Low-Experimental	19.6	21.3
Low-Control	25.1	25.8

Inasmuch as differential reinforcement was administered for opinion giving, asking questions, and directing the discussion, separate analyses were made for each of the Bales categories. These results are summarized in Table 9. The TP ratings for each category were analyzed using a 2 x 2 x 2 analysis of variance design with repeated measures on the Session factor. Individual summary tables for these analyses may be found in the Appendix.

Table 9

Summary of 2 x 2 x 2 analyses of variance for each of the nine Bales categories used in this study

Bales	F Value					
Category	A	B	C	AB	AC	BC
Solidarity	18.78***			4.24*		
Asks opinion	23.42***					
Disagrees						
Gives opinion	33.69***			4.18*		
Antagonism	14.04**					
Asks for Sugg.	18.38***			3.90[a]		
Gives Sugg.	21.37***				6.12*	
Shows tension	9.93**					
Gives Orient.	23.17***			4.70*		

Note---F values in this table are those that reached significance. A = CPI Score, B = Reinforcement, C = Session.

a $p < .10$

* $p < .05$

** $p < .01$

*** $p < .001$

It is quite evident from the summary presented above that TP CPI scores played a very important part in the rating of TP leadership behaviors. In each case the High CPI TPs received higher leadership ratings than did the Low CPI TPs. In one category (Disagrees) a significant difference between High and Low CPI Conditions was not obtained. This may have occurred because the frequency of this behavior in all

conditions was too low for meaningful differences to be reported. It is interesting to note that A x B (CPI Score x Reinforcement) interactions appeared for those categories which were reinforced, e.g. giving opinion, asking questions, and giving orientation. A fourth interaction was obtained within the category of solidarity. These interactions may be analyzed in terms of the mean scores involved. These ratings and their respective standard deviations are presented in Table 10.

Table 10

TP leadership rating means and standard deviations for those categories yielding A x B interactions

Category	High-Exp.		High-Control		Low-Exp.		Low-Control	
	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Solidarity	3.65	.78	3.24	.94	1.72	.95	2.56	1.08
Gives opinion	4.03	.45	3.83	.67	1.83	1.16	2.78	1.02
Asks Sugg.	3.50	.76	2.94	.85	1.59	1.06	2.24	1.03
Gives Orient.	3.91	.59	3.49	.95	1.76	1.11	2.68	1.11

Note---Ratings for the Reinforcement and Generalization Sessions are collapsed in this table.

It can be seen in Table 10 that within the High CPI Condition the reinforced TPs were rated higher than their nonreinforced counterparts. However, within the Low CPI Condition, the reinforced TPs were rated lower than the corresponding nonreinforced TPs.

The other significant interaction (CPI Score x Session) involved the category gives suggestion. The TP leadership rating means presented

in Table 11 show that this was associated with a decrease in Generalization Session ratings for the High CPI TPs and an increase in ratings for the Low CPI TPs.

Table 11

TP leadership rating means and standard deviations for the category yielding an A x C interaction

Condition	Reinforcement Session		Generalization Session	
	$\bar{X}$	SD	$\bar{X}$	SD
High-Experimental	4.18	.59	3.77	.35
High-Control	3.59	.73	3.48	1.01
Low-Experimental	1.74	1.21	2.26	1.24
Low-Control	2.48	1.23	2.59	.99

In order to analyze the reinforcement effects more thoroughly, separate analyses of variance were made on the High and Low CPI TPs for each of the nine Bales categories. Each of these consisted of a 2 x 2 analysis of variance with repeated measures on the Session factor. Table 12 presents a summary of these analyses.

Table 12

Summary of analyses of variance for High and Low CPI TPs on each of Bales categories

Bales Category	F Value					
	High CPI TPs			Low CPI TPs		
	A	B	AB	A	B	AB
Solidarity	1.00	2.47	0.62	3.55	0.94	1.58
Asks opinion	0.02	0.95	0.57	1.32	1.16	1.14
Disagrees	0.27	0.01	0.16	2.72	0.00	0.90
Gives opinion	0.73	3.61	0.32	3.45	0.73	0.44
Antagonism	0.21	3.28	2.50	1.28	0.09	1.09
Asks for Sugg.	2.10	0.30	1.94	1.87	0.06	2.06
Gives suggestion	2.18	1.86	0.61	0.89	5.58*	2.29
Shows tension	2.02	0.22	0.65	1.05	1.16	1.73
Gives Orient.	1.37	0.90	0.00	3.34	1.66	1.28

$p_{.10}$ (df=1, 16) = 3.05

$p_{.05}$ (df=1, 16) = 4.49

A = Reinforcement, B = Session

On the basis of only one value out of 54 reaching significance in the above table, it is suggested that this probably occurred on the basis of chance alone.

Table 13

Mean ratings for high and low CPI TPs on each of nine Bales categories

Bales	High CPI TPs		Low CPI TPs	
Category	Reinf.	Extin.	Reinf.	Extin.
Solidarity	3.33	3.55	2.02	2.26
Asks opinion	3.33	3.17	1.74	2.00
Disagrees	3.07	3.09	3.50	3.50
Gives opinion	4.09	3.78	2.22	2.89
Antagonism	2.56	2.83	3.59	3.52
Asks for Sugg.	3.18	3.26	1.89	1.94
Gives Sugg.	3.89	3.33	2.11	2.43
Shows tension	4.04	4.09	3.22	3.05
Gives Orient.	3.80	3.61	2.07	2.37

A final analysis of TP leadership ratings used weighted scales. These weights were based upon the results obtained from the ratings by the norm group. The scales used by the norm group were very similar to those presented in Table 21 in the Appendix. These were later assigned values ranging from zero through five. The scaling midpoint thereby became 2.5. The weighting system used consisted of attaching greater weights to larger absolute mean deviations from this midpoint, and at the same time assigning greater weight to the ratings with smaller standard deviations. Therefore, the greater the importance for leadership a behavior was judged to have and the greater the agreement on this rating, the higher the weight assigned to that category. The following formula was used:

$$W = \frac{\text{Absolute deviation of mean from 2.5}}{\text{Standard deviation}}$$

The respective means and standard deviations for the norm group ratings were presented in Table 1. The TP weighted leadership ratings were summed for all nine Bales categories. Using these ratings a 2 x 2 x 2 analysis of variance with repeated measures on the Session factor was made. Again, the effect due to CPI Score was highly significant, F (df=1, 32) = 16.99 ($p < .001$). An interaction involving CPI Score and Reinforcement was also obtained, F (df=1, 32) = 4.81 ($p < .05$). As with the unweighted values, this was associated with higher ratings for reinforced High CPI TPs compared to their control group, whereas reinforced Low CPI TPs had lower ratings compared to their control group. Table 31 in the Appendix presents a summary of this analysis.

Inasmuch as three of the nine categories were scored on the basis of assigning the highest score to the person who engaged least in that particular behavior (e.g. Shows antagonism), an interesting artifact developed in which a person who seldom engaged in the discussion could conceivably receive the highest scores on these three categories. Therefore separate analyses were made on the six positive as well as the three negative behaviors.

A 2 x 2 x 2 analysis of variance with repeated measures on the Session factor for the six positive behaviors yielded a highly significant effect due to CPI Score, F (df=1, 32) = 29.48 ($p < .001$). A summary of this analysis is presented in Table 32 in the Appendix.

A similar analysis was made for the three negative behaviors (Disagrees, Shows antagonism, Shows tension). Again an effect due to

CPI Score was obtained, F (df=1, 32) = 4.31 ($p < .05$). A summary of this analysis is presented in Table 33 in the Appendix. For all analyses in which a significant effect due to CPI Score was obtained, this effect was associated with higher leadership ratings for TPs in the High CPI Condition.

Separate analyses for both High and Low CPI TPs were carried out using these weighted ratings, first on the six positive categories, then on the three negative categories, and finally on all nine categories combined. In each case the analysis consisted of a 2 x 2 analysis of variance with repeated measures on the Session factor. A summary of these analyses is presented in Table 14.

Table 14

Summary of analyses of variance on weighted TP leadership ratings for High and Low CPI TPs

Source	F Values	
	High CPI TPs	Low CPI TPs
Positive Categories		
A (Reinforcement)	1.55	2.61
B (Session)	1.52	2.21
AB	0.08	1.84
Negative Categories		
A (Reinforcement)	0.76	0.20
B (Session)	1.56	0.29
AB	0.17	2.84

Table 14 (Continued)

Summary of analyses of variance on weighted TP leadership ratings for High and Low CPI TPs

Positive and Negative Categories Combined

A (Reinforcement)	1.64	3.24
B (Session)	0.04	1.29
AB	0.21	0.14

Note--$p_{.10} = 3.07$

Inasmuch as NTPs in half the groups were punished for leadership behaviors, the effect of this punishment on talking time in the various conditions is presented in Table 15. A 2 x 2 x 2 analysis of variance with repeated measures on the Sessions factor (Operant Session not included) was made on NTP group mean talking times (not percent talking time). A significant effect of TP CPI score was obtained, F (df=1, 32) = 21.05 ($p < .001$), indicating that NTPs talked substantially more when they were in groups with Low CPI TPs.

In order to determine if a punishment effect was obtained for either condition, separate analyses of variance were made for High and Low CPI TP conditions. The F-values for the punishment effects for both High and Low conditions were 2.74 and 0.21 respectively. Neither value differed significantly from chance.

Table 15

Mean NTP talking time in seconds for the various conditions

Condition	Operant Session[a]	Reinforcement Session	Generalization Session
High-Exp.	315	218	235
High-Contr.	289	281	285
Low-Exp.	416	343	374
Low-Contr.	375	369	379

a--adjusted for 30-minute session

NTP assessment of group morale is reported in Table 16. Each NTP rated the morale for his group on a ten-point scale at the conclusion of both Reinforcement and Generalization Sessions. Average NTP and TP morale ratings for each group were obtained, and the mean ratings are reported in Tables 16 and 17.

These morale ratings become more meaningful when interpreted in terms of the composition and treatment imposed under the different conditions. The High CPI groups may be considered to have had "natural" leaders, while the TPs who were studied as leaders in the Low CPI groups actually should have had the least chance of assuming leadership in their respective groups. In the reinforced groups TPs were rewarded and NTPs were punished for leadership behaviors. It can be seen in Table 16 that NTP morale suffers very little when NTPs are punished for leadership behaviors if the TP is able to fill the leadership gap. Morale was therefore lowest in the Low CPI experimental condition where TP apparently did not fulfill the leadership function.

Table 16

Mean group morale ratings made by NTPs

in the various conditions

Condition	Reinforcement Session	Generalization Session
High Experimental	7.30	8.11
High Control	7.41	8.15
Low Experimental	6.41	8.07
Low Control	7.70	7.78

A 3-way analysis of variance with repeated measures on the Session factor indicated that there was a significant increase in morale following the Generalization Session, F (df=1, 32) = 22.40 ($p < .001$). A reinforcement x Session interaction, F (df=1, 32) = 5.65 ($p < .05$), might be associated with the exceptionally large increase in morale for NTPs in the Low Experimental condition in relation to its control condition. A significant Reinforcement effect was not obtained in separate analyses of variance made on the High and Low CPI TP conditions, although a Reinforcement x Session interaction was discovered in the Low CPI TP condition, F (df=1, 32) = 7.48 ($p < .05$). An analysis of variance of the simple reinforcement effects involved in this interaction indicated that the reinforcement (in this case NTP punishment) was associated with a significantly lower morale rating for only the Reinforcement Session, F (df=1, 16) = 3.74 ($p < .10$).

Identical analyses were made on TP estimations of group morale. The mean ratings are presented in Table 17. A 3-way analysis of variance

with repeated measures on the Session factor indicated that TP estimations of group morale were higher in the High CPI TP condition, F ($df=1, 32$) = 4.58 ($p < .05$). The same analysis revealed a CPI Score x Reinforcement interaction, F ($df=1, 32$) = 5.27 ($p < .05$), as well as a Reinforcement x Session interaction, F ($df=1, 32$) = 4.67 ($p < .05$). As can be seen in Table 17, the first interaction can be associated with high morale for reinforced High CPI TPs and low morale for reinforced Low CPI TPs in comparison with their respective control groups. The second interaction can be associated with an increase in morale among reinforced CPI TPs following the Generalization Session, whereas for the TPs in the control condition, morale decreased slightly for the second session. A Reinforcement effect was not obtained in separate analyses made on High and Low CPI TP morale ratings.

Table 17

Mean group morale ratings made by TPs in the various conditions

Condition	Reinforcement Session	Generalization Session
High Experimental	8.6	9.1
High Control	7.9	7.3
Low Experimental	5.9	7.7
Low Control	7.3	7.8

After the groups had completed their political campaigns, group members were asked to rank their own campaign in comparison to campaigns that they anticipated would be planned by other groups taking part in the experiment. This was done on a percentile scale, with the 50% point

representing an "average" campaign, 0% representing the worst campaign, and 100% representing the best campaign. A mean rating for all groups in each experimental condition was calculated. These mean ratings are presented in Table 18.

Table 18

Mean campaign evaluation scores on a percentile scale for the various conditions

Condition	NTP	TP	Both
High Experimental	76.8	84.4	79.0
High Control	78.2	68.9	76.1
Low Experimental	71.6	69.6	70.6
Low Control	74.0	74.7	74.3

Analyses of variance were made separately for NTP, TP, and combined campaign ratings. They were 2 x 2 analyses without repeated measures, since campaign ratings were not obtained following the Reinforcement Session. No significant F-values were obtained for the NTPs, but for TPs a significant CPI Score x Reinforcement interaction was obtained, F (df=1, 32) = 5.07 ($p < .05$). By referring to Table 18 one can see that this was associated with high ratings for reinforced High CPI TPs and low ratings for reinforced Low CPI TPs in comparison to their respective control groups. An analysis of variance on the simple effects of reinforcement showed that TPs in the High Experimental condition rated their group campaigns significantly higher than their nonreinforced counterparts, F (df=1, 16) = 5.73 ($p < .05$), while the means in the Low CPI condition did not significantly differ.

The analysis on the combined NTP and TP campaign scores showed that groups with High CPI TPs rated their campaigns significantly higher than Low CPI TP groups, F ($df=1, 32$) = 3.08 ($p < .10$), although this level of significance is not particularly impressive.

CHAPTER V

Discussion

The results obtained in this study lead one to the conclusion that conditioning of leadership behavior is a far more complex process than was anticipated in the original Hastorf (1965) study. By using reinforcement, Hastorf was able to increase talking time for a selected TP, and this increased talking time presumably led to higher status being attributed to that TP within his group.

These results have been replicated by Zdep and Oakes (in press), David (1967), and Khemka (1967). Zdep and Oakes questioned the adequacy of the Hastorf questionnaire on the grounds that it may have been a reactive measure, thereby sensitizing participants to the leadership factor that was being investigated. The results of their study led to the conclusion that Hastorf's questionnaire did appear to have an effect on the more ascendant NTPs in the group. After being exposed to this questionnaire, participation by the ascendant NTPs in the group discussion dramatically increased.

The present study used a questionnaire based on Bales interaction categories. This was considered to be a more subtle approach, inasmuch as questions such as "Who do you think talked most?", or "Who would you say was the group's leader?" were not included. Although the Bales items may have somewhat reactive, it was felt that they would be more sensitive than Hastorf's original questionnaire.

As far as the effect of reinforcement itself was concerned, inter-subject differences in response to the reinforcement lights in earlier studies covered a broad range. Some Ss increased markedly in participation

under the influence of the lights, while in others, the effect was minimal at best. This led to the suggestion that inter-subject personality differences might have been contributing to this effect. Therefore, the present study involved the assignment of Ss to groups on the basis of CPI Leadership scale scores. Differences in conditionability might therefore be interpreted in light of these scores.

Several dependent variables came under investigation in this study. One of the most important was talking time. In terms of this variable, it was discovered that TPs with High CPI Leadership scale scores were really a different "type" than were those who obtained low scores. First of all, they participated in the discussions to an extent which was at least double to that of their Low CPI counterparts, thus supporting the first advanced hypothesis. Moreover, it was possible significantly to increase this participation still further through the administration of verbal reinforcement for High CPI TPs, and there was virtually no decrease in participation during a second session which was conducted twenty-four hours later. In Hastorf's study, the Generalization Session immediately followed the one in which he delivered reinforcement to the group. Hence, it was really not known just how stable the reinforcement effect was. However, it can now be concluded that the increased talking time for High CPI TPs persists, relatively undiminished, after twenty-four hours.

With Low CPI TPs in comparable groups, the situation was a bit more complicated. First of all, the operant levels of participation for these TPs were quite low, making it difficult to administer positive reinforcement for leadership behaviors. Oakes (1962) encountered similar

difficulty in reinforcement of Bales categories in a group situation. He was able to obtain a significant reinforcement effect for only one category, that of giving opinion. Oakes concluded that low operant rates for the other behaviors did not permit sufficient reinforcement to be administered in order to obtain a reinforcement effect. This conclusion also appears to be applicable in the case of Low CPI TPs.

Attempts were made to increase participation by punishing TPs for silence by using a buzzer audible only to TP. In most cases this had very little effect on TP participation. Thereupon, by continuing to punish leadership behaviors of NTPs in that group, it was possible to terminate the discussion. Whenever this occurred, punishment was administered to NTPs at a lower rate to prevent the discussion from coming to a complete standstill. Still, quite a bit of "dead space" resulted, thus giving TP sufficient opportunity to participate if he chose to do so.

Those Low CPI TPs who participated very little in the discussion were interviewed following the Generalization Session. When asked if they remembered what the buzzer signified, all of them stated that they had realized it indicated too low a level of participation. Furthermore, their subsequent answers to queries tended to follow an established pattern. It became evident that these TPs seldom engaged in verbalization in group situations, usually because they felt that their contributions had very little value.

We might speculate that reinforcement of leadership behavior in the Low CPI TP groups functioned not as conditioning, but rather as counter-conditioning. It seems likely that many of the low CPI TPs previously

had been conditioned in their everyday life situations to remain silent in group discussion situations in which their participation had been punished through various indications of rejection.

Therefore, when confronted with this new situation in which a competing response, verbalization, was reinforced, they continued to engage in silence, a form of behavior which would bring minimum rejection. They soon realized that silence in the experimental group brought a form of rejection (the buzzer) from the experimenter. Normally they could have escaped this rejection by verbalizing, but from past experience they may have realized that this could bring even greater punishment from the other group participants. Possibly, on this basis they then decided to remain silent, thereby confining the knowledge of this rejection to themselves and the experimenter, for they realized that the other participants were unaware of the buzzer sound in their earpiece.

An alternate interpretation that the buzzer was ineffective must be discarded, since TPs receiving punishment for silence engaged in nervous movements, profuse sweating, and exhibited great relief at the conclusion of the discussion. Usually their efforts at participation were confined to steadfast attention to the speaker, accompanied by head nodding and barely audible comments in agreement. They often found themselves in the awkward position of agreeing with two people who were at opposite positions on a certain issue.

A null hypothesis predicted that reinforcement would not have a differential effect on verbalization levels for High and Low CPI TPs. The present results permit the rejection of this hypothesis, for

although it was possible significantly to increase verbalization through reinforcement of the High CPI TPs, it was not possible to increase verbalization for the Low CPI TPs.

In terms of NTP talking time, it was discovered that total NTP talking time for each group increased during the Generalization Session for both control conditions. By referring to Table 15 it can be seen that a greater increase in talking time was noted among NTPs in the Low CPI TP groups, and this was expected in terms of less verbal competition being encountered from TPs in that condition. The limited increases in talking time following the administration of the questionnaire lead one to believe that its reactivity appears to be well within acceptable limits.

NTP total talking time also increased during the Generalization Session for the reinforced groups (it will be recalled that NTPs were punished for leadership behaviors in these groups). As can be seen in Table 15, much of this increase during the Generalization Session is attributable to a return by NTPs to normal operant speaking levels from the depressed levels during the Reinforcement Session in which punishment was administered. Again the increase in groups with low CPI TPs was greater than in the corresponding High CPI groups.

It had been hypothesized that NTPs would resist leadership efforts of a reinforced Low CPI TP to a greater extent than they would with a High CPI TP. It was discovered that NTPs did not compete with a reinforced High CPI TP, but rather, they appeared to accept his domination of the group. NTPs did not resist leadership efforts of reinforced Low CPI TPs either, but this was because leadership efforts were almost

nonexistent among these individuals.

A second dependent variable in this study consisted of leadership ratings on the Bales categories, but these must be interpreted differently from those obtained by Hastorf (1965). Hastorf's Ss rated TP status rather than TP behavior, and hence status was one step from the actual leadership behavior which he reinforced. Although the correlation between the two types of ratings is undoubtedly quite high, status determination had to undergo an additional perceptional operation on the part of the rater.

TPs were compared initially on the basis of total scores obtained on nine preselected categories. It was discovered that a highly significant difference between High and Low CPI TPs occurred, with High CPI TPs being rated higher than their low-scoring counterparts. This difference held using both weighted and unweighted scores.

Separate analyses on each of the nine Bales categories also were made. TPs with high CPI scores were rated slightly higher on all categories except the one dealing with disagreement (actually lack of disagreement), where no meaningful differences could be ascertained. In light of demand characteristics imposed upon Ss requiring that they perform adequately in the experimental situation, it appears unlikely that they should disagree to any great extent. Hence, there should be no meaningful differences among Ss on this item, except insofar as halo effects from other items influenced their ratings.

A clearer understanding of the effect of reinforcement on leadership ratings can be obtained from Table 19. For the High CPI Condition, the mean ratings for reinforced and nonreinforced TPs were compared on

each of the nine scales following both Reinforcement and Generalization Sessions. It was discovered that out of the 18 comparisons involved, the reinforced TPs mean ratings exceeded those of their nonreinforced counterparts on 16 occasions, although none of these differences are large enough to be considered significant independently. However, the exact probability of 16 "successes" out of a total of 18 trials may be calculated using a binomial expansion formula. The probability of a situation such as this occurring solely due to chance is .00059. On this basis, reinforcement within the High CPI Condition appears to have had a significant effect on leadership ratings, although the effect on any individual scale is quite slight. It should be pointed out that the above probability depends on independent ratings on the scales as well as the absence of halo effects. Inasmuch as Ss spent so much time in completing the ratings, even though they fully understood what was expected of them, it is suggested that halo effects from previous items were quite slight.

Within the Low CPI Condition, a directly opposite result was obtained. TPs in the control condition received higher leadership ratings than the reinforced TPs on 16 out of the 18 possible comparisons. The probability of this occurring by chance is also .00059.

Table 19

Mean leadership ratings on each of the Bales categories for both reinforcement and generalization sessions

Category	Condition							
	High-Experimental		High-Control		Low-Experimental		Low-Control	
	Rein	Gen	Rein	Gen	Rein	Gen	Rein	Gen
Solidarity	3.59	3.70	3.07	3.40	1.44	2.00	2.59	2.52
Asks Opinion	3.29	3.26	3.37	3.07	1.37	1.89	2.11	2.11
Disagrees	3.14	3.26	3.00	2.92	3.37	3.18	3.63	3.81
Gives Opinion	4.14	3.92	4.03	3.63	1.81	1.85	2.63	2.92
Antagonism	2.74	2.77	2.37	2.89	3.92	3.59	3.25	3.44
Asks for Sugg.	3.55	3.44	2.81	3.07	1.41	1.77	2.37	2.11
Gives Sugg.	4.18	3.37	3.59	3.48	1.74	2.26	2.48	2.59
Shows tension	4.22	4.37	3.85	3.81	3.07	2.70	3.37	3.40
Gives Orient.	4.00	3.81	3.59	3.40	1.48	2.03	2.66	2.70

Note---Scales used ranged from 0 - 5 with reversed scoring on negative behaviors.

By resorting to post hoc interpretation, it may be possible to account for the lower leadership ratings for the low CPI reinforced TPs on the basis of nonverbal cues. If one refers to Table 6, it can be seen that there was very little difference in adjusted mean talking times for reinforced and non-reinforced TPs in the Low CPI Condition. What may have occurred, however, is a realization on the part of NTPs that the reinforced TP was being punished during periods of silence, while they themselves were punished for leadership behaviors. This

cuing may have come about through the nervous reactions and pained appearance of the TP during periods of silence. Since in most cases TP did not respond to fill the leadership gap, it may have been regarded as a lack of leadership to NTPs who reflected this in their subsequent ratings.

In terms of group morale ratings, it can be seen from Table 16 that NTP morale was virtually unaffected by the CPI Leadership score of TP, and an effect due to reinforcement was evident only in the Low CPI Condition when morale was at its lowest level. This morale rating subsequently improved when the reinforcement was withdrawn so that at the conclusion of the Generalization Session, it was equivalent to that of other groups. In general, contrary to what had been hypothesized, group morale is unaffected by NTP punishment in an experimental situation such as this if there is someone to fill the leadership gap as appears to have been done in the High CPI Condition. It is probably not wise to generalize beyond this experimental situation, because although E had the power to punish, this power did not extend beyond the experimental room. In a real-life situation, on the other hand, punishment delivered by a superior often has far-reaching consequences and on this basis would probably have a serious detrimental effect on group morale.

For purposes of comparison TP and NTP morale ratings were reported separately, but it is not conventional to include the leader's (in this case the TP) morale estimate as part of the group morale rating. On this basis, no particular emphasis of the analyses on these results will be made.

When the groups evaluated their final product, in this case the

political campaign, it was discovered that NTPs in groups with high CPI TPs rated their products higher, but not significantly higher, than did groups with low CPI TPs. However, among the TPs, reinforced High CPI TPs rated their campaigns significantly higher than did reinforced Low CPI TPs. When the ratings were combined, it was discovered that groups with High CPI TPs rated their products significantly higher than did groups with Low CPI TPs ($p < .10$). This was consistent with the last hypotheses to be advanced.

In light of the results obtained in this study, it can be concluded that persons with high CPI Leadership scale scores behave very differently from persons with low scores in a group situation such as the one used in this study. Persons with high scores have high rates of interaction within the group discussion, and they are rated higher on leadership behaviors by the participants in their groups. Moreover, it is possible to increase further their participation and leadership as rated by the other group members through the use of reinforcement. Subsequently, groups with high CPI TPs tend to be quite satisfied with their final products.

Persons with low scores on the CPI Leadership scale engaged in limited interaction within the group situation, and these persons were usually rated lower on leadership behaviors by the other participants. Furthermore, it was not possible to increase verbalization by these persons through the use of reinforcement. Possibly, this may have been due to a very low operant verbalization levels which did not permit a great deal of positive reinforcement to be delivered. This problem may be further compounded if we assume the low CPI TP has a history in which

silence has been reinforced within group situations he has encountered in everyday life, thereby establishing a relatively stable form of behavior.

Several implications may be drawn from the present research. First of all, regarding materials, Bales interaction categories have been adapted for intragroup leadership assessment on a semi-interval scale. Secondly, the CPI scale which differentiates between industrial managers and men-in-general has been successfully used in a laboratory leaderless group discussion situation. Furthermore, this scale has been found to predict amount of verbalization, leadership ratings by group members, TP morale ratings, and conditionability in this type of group situation.

The findings indicate that reinforcement can be beneficial in terms of leadership behavior for certain individuals, and these individuals have been identified on the basis of high CPI Leadership scale scores.

The other side of the picture was made evident when E attempted to place low scorers in the leadership slot through the utilization of reinforcement. It was discovered that they resisted these attempts, and furthermore, group members may have responded to this behavior by the punished TP as indicative of still lower leadership ability.

Finally, the ramifications on morale, satisfaction with the group product and actual feelings toward TP were clarified. It might be concluded that reinforcement within groups such as those in the High CPI condition certainly does not detract from group performance or solidarity, even though NTPs were punished for attempted leadership.

CHAPTER VI

Summary

Current interest in behavior modification through use of reinforcement principles recently has been extended to the area of leadership behavior. Several studies have shown that it is possible to increase both participation and status of a selected person within a group by giving him positive reinforcement for leadership behaviors, while at the same time punishing these same behaviors in other persons within that group.

The purpose of the present study was to investigate the effect of reinforcement in a group situation in which personality characteristics associated with leadership behavior were controlled.

The CPI Leadership scale was administered to 177 student volunteers from introductory psychology classes at the University of Hawaii. Ss were then rank-ordered on the basis of these scores and assigned to one of four experimental conditions. A total of 36 four-person groups with nine groups per condition were formed. Half of the groups had target persons (TPs) with high leadership scores, and half had TPs with low scores. Using a factorial design, half of these TPs were reinforced for specified leadership behaviors and punished for silence (all reinforcement administered through individual earphones), while the other half received no reinforcement. Non-target persons (NTPs) in all groups had intermediate leadership scores, and they were punished (buzzer) for leadership behaviors and positively reinforced for agreeing with TP.

Hypotheses advanced were as follows: (1) TPs with high leadership

(CPI) scores should have higher verbalization levels and higher leadership ratings than should low scoring TPs, (2) (Stated in null form) A differential reinforcement effect on High and Low CPI TPs should not be obtained, (3) Group morale following reinforcement should be depressed, primarily because NTPs have been punished for leadership behaviors, (4) NTPs should resist the leadership efforts of reinforced Low CPI TPs to a greater extent than High CPI TPs, and (5) Higher group product ratings should occur in the High CPI TP Condition.

The results indicated that high leadership TPs participated more in the discussion and were rated significantly higher on leadership behaviors by NTPs. All ratings were made on specially-adapted Bales interaction categories following the discussions.

Moreover, it was possible to increase talking time significantly through reinforcement for high leadership TPs but not for low leadership TPs. This increased verbalization for high leadership TPs was maintained during unreinforced generalization sessions conducted 24 hours later.

Reinforced high leadership TPs were rated higher than their non-reinforced counterparts on eight of the nine scales scored, although individual mean differences were not significant. Among low leadership TPs, the reverse was true. Reinforced TPs were rated lower than TPs in the respective control condition, but again, the magnitude of the differences did not reach significance. These latter findings were explained in terms of nonverbal cues associated with punishment of TP for silence.

Not completely supporting the hypothesis advanced, group morale

tended to be lower only in groups with reinforced low leadership TPs. In reinforced groups with high leadership TPs, although NTPs were punished, morale was maintained at a high level, apparently due to successful leadership on the part of TP.

The hypothesized NTP resistance to leadership efforts by reinforced low leadership TPs did not occur, unless one assumes that the lower TP ratings reflected this. However, it was felt that this resistance did not occur, simply because low leadership TPs seemed to refuse leadership responsibilities in the group, even when encouraged to do so through reinforcement.

As predicted, groups with high leadership TPs rated their campaigns higher than groups with low leadership TPs. However, the mean difference between these conditions did not attain a high level of significance ($p < .10$). The lowest campaign ratings occurred in groups with reinforced low leadership TPs, although all ratings were above the "average" modulus (50%-ile point) that had been printed on the rating scales.

APPENDIX

Table 20

Goodstein and Schrader CPI leadership scale

Items scored "True"					Items scored "False"					
4	224	7	43	94	155	194	257	318	383	435
42	239	9	47	98	157	199	261	323	384	438
50	259	11	48	109	158	204	265	325	385	439
53	320	12	56	110	164	206	266	327	388	441
66	326	13	63	111	166	209	270	337	390	444
78	359	14	64	115	169	217	271	338	397	452
95	376	15	67	117	170	219	273	341	398	457
96	403	16	68	119	173	220	274	347	401	461
107	410	20	69	121	174	223	281	350	404	462
108	412	23	70	122	176	225	282	353	405	
135	413	24	71	124	177	226	284	358	409	
138	432	26	73	128	178	227	285	360	416	
140	448	27	75	136	181	232	286	363	417	
146	451	31	76	137	182	233	291	364	419	
162	453	32	79	139	183	236	294	365	421	
180	464	33	85	141	184	237	299	370	422	
202	475	37	90	142	186	243	300	378	423	
207		38	91	145	188	244	308	379	424	
213		40	92	149	190	252	314	381	429	
221		41	93	151	192	253	315	382	434	

Table 21

Experimental Questionnaire

At this time we would like to get your individual reactions to the political campaign you are planning. In order to do this, we would like you to rank the participants, including yourself, on the items below. The rankings will not affect the discussion in any way, and their only use will be to give us added insight into the proceedings. They will be kept confidential.

Listed below and on the reverse side of this sheet are twelve different types of group interaction behavior. Rank the individuals by placing the letters of their positions in separate boxes which describe the degree to which they engaged in the specified behavior. Each individual must be placed in a separate box. Please read the descriptions beneath the boxes before you make a decision. An example is provided below.

EXAMPLE:

RANK THE PARTICIPANTS ON THE DEGREE TO WHICH THEY CHANGED THE SUBJECT.

	E	S	W		N
not at all	slight amount	moderate amount	considerable amount	great amount	very great amount

---

1. Rank the participants on the degree of solidarity they displayed (e.g. raising other's status, giving help, reward).

not at all	slight amount	moderate amount	considerable amount	great amount	very great amount

2. Rank the participants on the degree to which they asked for opinion, evaluation, analysis, expression of feeling.

very great amount	great amount	considerable amount	moderate amount	slight amount	not at all

*3. Rank the participants on the degree to which they agreed, showed passive acceptance, understanding, concurrence, compliance.

very great amount	great amount	considerable amount	moderate amount	slight amount	not at all

Table 21 (Continued)

Experimental Questionnaire

4. Rank the participants on the degree to which they disagreed, showed passive rejection, formality, or withheld help.

not at all	slight amount	moderate amount	considerable amount	great amount	very great amount

5. Rank the participants on the degree to which they gave opinion, evaluation, analysis, expressed feelings or wishes.

not at all	slight amount	moderate amount	considerable amount	great amount	very great amount

6. Rank the participants on the degree to which they showed antagonism, deflated other's status, defended or asserted themselves.

very great amount	great amount	considerable amount	moderate amount	slight amount	not at all

*7. Rank the participants on the degree to which they asked for orientation, information, repetition, confirmation.

very great amount	great amount	considerable amount	moderate amount	slight amount	not at all

*8. Rank the participants on the degree to which they joked, laughed, showed satisfaction.

not at all	slight amount	moderate amount	considerable amount	great amount	very great amount

9. Rank the participants on the degree to which they asked for suggestion, direction, possible ways of action.

not at all	slight amount	moderate amount	considerable amount	great amount	very great amount

10. Rank the participants on the degree to which they gave suggestion or direction.

Table 21 (Continued)

Experimental Questionnaire

very great amount	great amount	considerable amount	moderate amount	slight amount	not at all
—	—	—	—	—	—

11. Rank the participants on the degree to which they showed tension, asked for help or withdrew out of the field.

not at all	slight amount	moderate amount	considerable amount	great amount	very great amount
—	—	—	—	—	—

12. Rank the participants on the degree to which they gave orientation, information, repeated, clarified, confirmed.

very great amount	great amount	considerable amount	moderate amount	slight amount	not at all
—	—	—	—	—	—

Please rate the morale that you feel existed in your group.
Circle one of the numbers on the scale below.

1	2	3	4	5	6	7	8	9	10
Low				Average					High

PLEASE GO BACK TO YOUR RANKINGS AND MAKE SURE THAT YOU HAVE RANKED EACH PERSON A TOTAL OF 12 TIMES.

Note: * denotes an item that was not scored for the analyses.

Table 22

Summary of analysis of variance of TP leadership ratings on Bales category (Solidarity)

Source	df	MS	F
A (CPI Score)	1	30.67	18.78***
B (Reinforcement)	1	0.80	0.49
AB	1	6.93	4.24*
Error Between	32		
C (Session)	1	0.97	2.61
AC	1	0.01	----
BC	1	0.19	----
ABC	1	0.81	2.19
Error Within	32		

* $p < .05$

*** $p < .001$

Table 23

Summary of analysis of variance of TP leadership ratings on Bales category (Asks for opinion)

Source	df	MS	F
A (CPI Score)	1	34.29	23.42***
B (Reinforcement)	1	0.81	0.56
AB	1	1.30	0.89
Error Between	32	1.46	
C (Session)	1	0.04	----
AC	1	0.82	2.08
BC	1	0.67	1.71
ABC	1	0.08	----
Error Within	32	0.40	

*** $p < .001$

Table 24

Summary of analysis of variance of TP leadership ratings on Bales category (Disagrees)

Source	df	MS	F
A (CPI Score)	1	3.12	2.43
B (Reinforcement)	1	0.19	----
AB	1	2.11	1.65
Error Between	32	1.28	
C (Session)	1	0.00	----
AC	1	0.00	----
BC	1	0.04	----
ABC	1	0.35	0.84
Error Within	32	0.42	

Table 25

Summary of analysis of variance of TP leadership ratings on Bales category (Gives opinion)

Source	df	MS	F
A (CPI Score)	1	47.82	33.69***
B (Reinforcement)	1	2.47	1.74
AB	1	5.93	4.18*
Error Between	32	1.42	
C (Session)	1	0.10	0.34
AC	1	1.04	3.54
BC	1	0.01	----
ABC	1	0.22	0.76
Error Within	32	0.29	

* $p < .10$

*** $p < .001$

Table 26

Summary of analysis of variance of TP leadership ratings on Bales category (Shows antagonism)

Source	df	MS	F
A (CPI Score)	1	13.37	14.04**
B (Reinforcement)	1	1.31	1.37
AB	1	0.35	0.36
Error Between	32	0.95	
C (Session)	1	0.19	0.48
AC	1	0.56	1.46
BC	1	1.13	2.95
ABC	1	0.00	----
Error Within	32	0.38	

** $p < .01$

Table 27

Summary of analysis of variance of TP leadership ratings on Bales category (Asks for suggestion)

Source	df	MS	F
A (CPI Score)	1	30.71	18.38***
B (Reinforcement)	1	0.04	0.02
AB	1	6.52	3.90[a]
Error Between	32	1.67	
C (Session)	1	0.07	0.24
AC	1	0.00	----
BC	1	0.07	----
ABC	1	1.12	0.25
Error Within	32	0.30	

*** $p < .001$

a $p < .10$

Table 28

Summary of analysis of variance of TP leadership ratings on Bales category (Gives suggestion)

Source	df	MS	F
A (CPI Score)	1	39.99	21.37***
B (Reinforcement)	1	0.04	----
AB	1	4.33	2.31
Error Between	32	1.87	
C (Session)	1	0.01	----
AC	1	1.48	6.12*
BC	1	0.01	----
ABC	1	0.55	2.27
Error Within	32	0.24	

* $p < .05$

*** $p < .001$

Table 29

Summary of analysis of variance of TP leadership ratings on Bales category (Shows tension)

Source	df	MS	F
A (CPI Score)	1	15.39	9.93**
B (Reinforcement)	1	0.01	----
AB	1	4.17	2.69
Error Between	32	1.55	
C (Session)	1	0.06	0.33
AC	1	0.22	1.30
BC	1	0.05	0.32
ABC	1	0.39	2.35
Error Within	32	0.17	

** $p < .01$

Table 30

Summary of analysis of variance of TP leadership ratings on Bales category (Gives orientation)

Source	df	MS	F
A (CPI Score)	1	39.44	23.17***
B (Reinforcement)	1	1.21	0.71
AB	1	8.01	4.70*
Error Between	32	1.70	
C (Session)	1	0.05	0.13
AC	1	1.05	2.55
BC	1	0.30	0.73
ABC	1	0.31	0.74
Error Within	32	0.41	

* $p < .05$

*** $p < .001$

Table 31

Summary of analysis of variance of weighted TP leadership ratings on nine Bales categories

Source	df	MS	F
A (CPI Score)	1	656.35	16.99***
B (Reinforcement)	1	8.65	0.22
AB	1	185.74	4.81*
Error Between	32	38.63	
C (Session)	1	2.71	0.56
AC	1	4.82	1.00
BC	1	0.06	----
ABC	1	1.55	----
Error Within	32	4.82	

*** $p < .001$

* $p < .05$

Table 32

Summary of analysis of variance of weighted TP leadership ratings on six positive Bales categories

Source	df	MS	F
A (CPI Score)	1	928.73	29.48***
B (Reinforcement)	1	17.66	0.56
AB	1	129.00	4.09
Error Between	32	31.50	
C (Session)	1	1.46	0.41
AC	1	12.97	3.64
BC	1	3.68	1.03
ABC	1	6.05	1.70
Error Within	32	3.57	

*** $p < .001$

Table 33

Summary of analysis of variance of weighted TP leadership ratings on three negative Bales categories

Source	df	MS	F
A (CPI Score)	1	23.62	4.31*
B (Reinforcement)	1	1.65	----
AB	1	5.16	0.94
Error Between	32	5.48	
C (Session)	1	0.25	----
AC	1	2.04	1.41
BC	1	3.64	2.53
ABC	1	1.49	1.03
Error Within	32	1.44	

* $p < .05$

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