THE RELATIONSHIP BETWEEN SOCIO-EMOTIONAL SPECIALIZATION AND ALLOCATION OF REWARD IN A SMALL LABORATORY GROUP

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ABSTRACT

THE RELATIONSHIP BETWEEN
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ALLOCATION OF REWARD
IN A SMALL LABORATORY GROUP

By

Joshua J. Jaffe

In many groups, socio-emotional leaders emerge who specialize in providing rewards which satisfy all members' personal needs in spite of the fact that the norm of equity prescribes that rewards ought to be distributed on the basis of each person's contribution. Since, if a group member is nonproductive, rewards cannot be allocated so as to both satisfy personal needs and maintain equity, it was hypothesized that the proportion of a group's earnings allocated to a nonproductive co-worker would be positively related to the extent of an allocator's specialization in socio-emotional behavior.

In the first of two studies, groups composed of four female subjects and a confederate (who played the role of a nonproductive co-worker) tried to identify objects by a modified "twenty-questions"

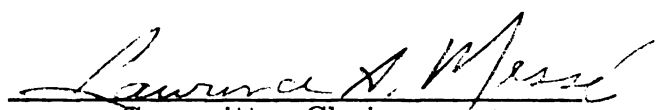
procedure. Groups earned money based upon the number of objects they identified correctly. Group maintenance was made to appear highly relevant to these subjects by having them work face-to-face and expect to work for three additional sessions. Socio-emotional specialization was measured by coding behavioral acts and having all group members rank one another on popularity. Each subject's allocation for the nonproductive co-worker was determined by their response to a questionnaire item asking them how much of the group's earnings they would like to see each member receive.

The popularity ranks received by group members were unrelated to their allocations for the nonproductive co-worker. However, the behavioral measure of socio-emotional specialization was related to the allocations made for one of the two confederates. The fact that the confederate for whom this relationship held was ranked higher on the quality of her ideas than the other confederate suggests that the hypothesized relationship may only occur when a member's deviation from a group's norms is below some maximum limit.

To determine if socio-emotional specialists gave the confederate a larger share of the group's earnings because they were concerned about group maintenance rather than because they were altruistic or more committed to the principle of equal pay

for equal time, selected subjects were later run in a second study where group maintenance was of little relevance. These subjects worked with a confederate they never saw, never interacted with, nor ever expected to work with again. The subject (and, supposedly, the confederate) tried to solve multiplication problems, expecting pay to be determined by the number of problems both team members got correct. When the task was completed, the subject was told that her performance had been much better than her partner's and that she had been chosen by chance to divide the group's earnings.

Under these low maintenance-relevant conditions, there was no difference between the amount of money allocated to the confederate by subjects previously differing in their allocations for the confederate under high maintenance-relevant conditions. This finding is congruent with the explanation of the relationship between socio-emotional specialization and allocation for a non-productive co-worker in terms of concern about group maintenance, and not congruent with explanations in terms of altruism and equal pay for equal time.

Approved 
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A THESIS

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To my parents

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CHAPTER I

INTRODUCTION

This study examines the relationship between group maintenance specialization and the equitable allocation of reward in a small laboratory group. For thousands of years, philosophers and theologians have expressed various points of view concerning fairness, morality, and justice. More recently, empirically oriented social scientists have also become involved with these issues. Because of its relevance to social exchange theory, as well as its practical applications in business and industry, the largest body of literature in this field deals with the distribution of wages and other forms of reward. While most of these studies examine the reaction of the recipient to various conditions of payment, a few examine factors affecting the allocator's response.

Early research in this domain consisted of field studies in which people were observed and interviewed in their natural

work setting (e.g., Clark, 1958; Homans, 1953; Jacques, 1961, 1962; Patchen, 1961; Sayles, 1958). Such studies provide some useful preliminary data concerning people's reaction to inequities against them, as well as inequities in their favor, but definitive conclusions had to await further work, since the natural settings were too complex to yield unambiguous findings. The next phase of the research in wage distribution was controlled laboratory investigation of the effects of underpayment, equitable payment, and overpayment on work quantity and quality under both hourly rate and piece rate conditions. (See Goodman and Friedman, 1971, for a review of these studies.) Typically, in this type of research, a group of subjects were "hired" by an experimenter for different rates of compensation and/or different methods of payment. Thereby, hypotheses derived from different theories about people's sense of fairness could be rigorously tested by measuring the quality and quantity of the work performed under various experimental conditions.

In contrast to the above types of studies in which a subject's rate of payment was determined by the experimenter, more recent research has used paradigms in which the subjects' behavior determined how rewards were divided. Independent

variables in this body of research have included the sex and age of both the allocator and the recipient, the quality and quantity of the work performed by both the allocator and the recipient, messages sent to the allocator by the recipient, constraints upon the recipient's performance, and various measures of the allocator's attitudes, values, personality, and background.

The methodology used in the present study is similar to that of many studies done in this area during the last five years in that the subjects themselves determined how the reward was distributed. However, this study looks at a variable--the emergence of a socio-emotional specialist in a small task-oriented group--whose relation to reward allocation has not previously been explored. It was hoped that knowledge of the functional role a person plays in a group would increase the power to predict how that person distributes rewards.

To put the present study in the context of previous work involving the variables investigated here, a review of the literature is required. The theoretical writings on wage distribution are covered, as well as those empirical studies in which subjects were asked to allocate rewards. The major

studies dealing with role differentiation in laboratory groups are also reviewed.

Review of the Literature

Theoretical Work in Reward Distribution

Distributive Justice. --Homans (1961) defines distributive justice as the problem of justice in the distribution of rewards and costs between persons. For a state of distributive justice to exist, the rewards of each man in an exchange relationship must be proportional to his costs and the net rewards or profits of each man must be proportional to his investments. The state of distributive justice is represented by the equation below.

$$\frac{\text{Person's Profits}}{\text{Person's Investments}} = \frac{\text{Other's Profits}}{\text{Other's Investments}}$$

Person may be any individual while Other is an individual with whom Person is in an exchange relationship, or an individual with whom Person compares himself when Person is in an exchange relationship with some third party. When Person is

being rewarded by a third party, such as an employer, he expects that third party to maintain a state of distributive justice for all participants by the manner in which he distributes rewards.

According to Homans, emotional behavior called anger will be displayed by an individual to the degree that the absence of distributive justice in an exchange is to that individual's disadvantage. Should a departure from the rule of distributive justice prove to be to a man's advantage, he should feel guilty. Since people rationalize to some extent, the threshold for the perception of an injustice to one's disadvantage is expected to be lower than the threshold for the perception of an injustice in one's favor. That is, while a disadvantageous inequity of a given magnitude will be noticed, an advantageous inequity of the same magnitude will remain unnoticed or be cognitively distorted so as to appear equitable.

Differences of opinion concerning the justice of an exchange relationship occur, not because the rule of distributive justice is disputed, but on account of everyone not valuing rewards, costs, and investments identically. However, the more similar the past experience of the two individuals involved in an exchange are, the more closely their perceptions are likely to coincide.

Equity Theory. --Equity theory, as formulated by Adams (1963, 1965), is a restatement and elaboration of the concept of distributive justice. For Homans' term investments, Adams substitutes the term inputs, which he defines as what a man perceives himself to be bringing to an exchange. This means that within the context of equity theory, an attribute may not be classified as an input unless its possessor recognizes it as such and perceives it to be relevant to the exchange. Adams hypothesized that differential perception with regard to the recognition and relevancy of inputs on the part of the parties involved in exchanges is the primary factor leading to disagreements over the fairness of exchanges. He also makes that point that while inputs are in fact interrelated, they are treated cognitively as independent, having the properties of interchangeability and additivity.

Adams substitutes the term outcomes for what Homans calls profits. These receipts which an individual derives from an exchange may be positive or negative depending upon whether rewards outweigh costs or visa versa. Consequences of an exchange are not classified as outcomes unless they are recognized and perceived as being relevant to that exchange. Like inputs, outcomes are also treated cognitively as if they were independent.

According to Adams' theory, equity exists for Person when his input-outcome ratio is equal to some relevant Other's input-outcome ratio, that is, when

$$\frac{\text{Perceived Outcomes } \underline{\text{Person}}}{\text{Perceived Inputs } \underline{\text{Person}}} = \frac{\text{Perceived Outcomes } \underline{\text{Other}}}{\text{Perceived Inputs } \underline{\text{Other}}}$$

When these ratios are not equal, a state of inequity exists. Thus, inequity exists when

$$\frac{\text{Perceived Outcomes } \underline{\text{Person}}}{\text{Perceived Inputs } \underline{\text{Person}}} > \frac{\text{Perceived Outcomes } \underline{\text{Other}}}{\text{Perceived Inputs } \underline{\text{Other}}}$$

or,

$$\frac{\text{Perceived Outcomes } \underline{\text{Person}}}{\text{Perceived Inputs } \underline{\text{Person}}} < \frac{\text{Perceived Outcomes } \underline{\text{Other}}}{\text{Perceived Inputs } \underline{\text{Other}}}$$

Adams states that the magnitude of an inequity must reach some threshold value before it will be perceived. An assimilation-contrast effect reduces the perceived inequity below the threshold value and increases the perceived inequity above the threshold value. Such reductions and increases in the amount of perceived inequity are accomplished by Person through cognitive manipulation of the weights assigned to the inputs and outcomes of both himself and Other. The

critical threshold value in this process depends upon the kind of inequity that exists, being higher in the case of overpayment to Person than in the case of underpayment to Person.

Adams views inequity as a tension inducing state, similar to cognitive dissonance (Festinger, 1957), which motivates a person experiencing it to effect its reduction. The amount of tension created is hypothesized to be proportional to the degree of inequity giving rise to it. When this form of tension is present, there are a number of strategies which will, singly or in various combinations, serve to reduce or eliminate it. The six strategies described by Adams are listed below.

1. Person altering his inputs.
2. Person altering his outcomes.
3. Person distorting his inputs and outcomes cognitively.
4. Person leaving the field.
5. Person acting on Other.
6. Person changing the object of his comparison.

Research in Reward Distribution

Equity theory predicts that when the inputs of two co-workers are equal, they will be motivated to bring about an equal distribution of the team's earnings. This hypothesis is supported by data

obtained by Lane and Messé (1971; Messé, 1968, 1971), Leventhal, Allen, and Kemelgor (1969), and Leventhal, Weiss, and Long (1969). In Study I by Lane and Messé (1971), subjects who had worked for the same amount of time indicated preferences between alternative distributions of reward between themselves and their co-workers. The dominant response was to divide the reward as equally as possible.

In Study II by Lane and Messé (1971), the quality and quantity of the subjects' inputs were manipulated. Subjects in the high input condition worked for a longer amount of time and were told that their work was expected to be of high quality. These subjects tended to divide the reward as equally as possible between themselves and co-workers who also had high inputs. Subjects in the low input condition worked for a shorter priod of time and were told that their work was expected to be of low quality. These subjects tended to allocate a larger share of the reward to themselves than to a co-worker who also had low inputs.

In studies by Leventhal, Allen, and Kemelgor (1969), and Leventhal, Weiss, and Long (1969), a subject and a confederate posing as a co-worker worked at a task for equal amounts of time. When given an opportunity to allocate the money earned by the team, most subjects divided it equally. The confederate left this division

unchanged. Then both team members again worked for an equal amount of time, after which the confederate divided the reward unequally. When given an opportunity to modify this distribution, subjects tended to increase their share when the confederate gave them less than half and decrease their share when the confederate gave them more than half.

According to equity theory, when inputs are unequal, a chooser with higher inputs than his co-worker should allocate a larger share of the reward to the co-worker. The prediction about the behavior of choosers with higher inputs than their co-workers is strongly supported by the data. Choosers who work for a longer period of time than their co-workers tend to take a larger share of the reward for themselves (Lane and Messé, 1971; Lane, Messé, and Phillips, 1971), as do choosers who produce higher quality work than their co-workers (Leventhal and Lane, 1970; Lane and Messé, 1971).

Conflicting results have emerged from studies in which the allocator had lower inputs than his co-worker. Leventhal and Lane (1970) found that subjects induced to believe that the quality of their work had been inferior to that of their co-worker took less than half of the reward themselves. Also, Lane, Messé, and Phillips (1971) found that subjects working for a shorter period of

time than their co-workers allocated a proportionally smaller share of the reward to themselves. However, in Study II by Lane and Messé (1971), subjects who were told that they had worked for less time and were expected to do work of inferior quality to that of their co-worker tended to divide the money equally.

Leventhal and Michaels (1969) hypothesized that Person's evluation of Other's performance would be strongly influenced by the level of performance Person expected of Other. The level of inputs attributed to Other should be a positive function of the extent to which Other's actual inputs exceed the level of inputs expected of him by Person. The level of expected inputs was predicted to be a negative function of the external constraints operating on Other. That is, the greater the constraints, the less work Other has to produce for Person to credit him with a given level of inputs. As predicted, with quality of inputs held constant, the length of time a subject worked was inversely related to the proportion of the team's earnings he allocated to himself. Also, with duration of performance held constant, the percentage of the work the subjects completed was directly related to the proportion of the team's earnings he allocated to himself.

Piaget (1965) proposed that a person's sense of fairness changes with age. This hypothesis is supported by Leventhal and

Anderson (1970), who found that pre-school age children do not allocate rewards in accord with the norm of equity. When these subjects were told that the quality of their co-worker's inputs was inferior to that of their own, males took more of the reward for themselves while females divided it equally. Males and females both tended to divide the reward equally when they were told that the quality of their co-worker's inputs was either equal to or superior to that of their own.

Sex differences have also been shown to affect the distribution responses made by college-age subjects. Lane and Messé (1971) found that females with inputs equal to those of their co-workers are less likely to allocate the reward self-interestedly than are males. Leventhal and Lane (1970) found that when qualitative inputs were unequal, male allocators took more of the reward for themselves than females. When their inputs were superior, females allocated little more than half of the reward to themselves while when their inputs were inferior, females allocated much less than half of the reward to themselves.

Personality variables have also been shown to be related to distribution responses (Lane and Messé, 1971). Subjects scoring high on measures of concern for other persons' welfare tend to make more equitable distribution responses than subjects

scoring lower on this dimension. For females, scores on authoritarianism were positively related to the number of equitable responses they made. Subjects making a high proportion of self-interested responses tended to score high on variables reflecting a need to be free of interpersonal commitments.

The work of Weick (1966; Weick and Nesset, 1968) suggests that in addition to comparison equity with a relevant co-worker, allocators are also motivated to achieve own equity by securing an amount of reward that is in accord with their own internal standard of fair pay. Concern with own equity is predicted to be greater than concern with other equity, that is with one's co-worker being paid in proportion to his inputs. Lane and Messé (1972) tested this hypothesis by giving allocators with inputs equal to those of their co-workers more, as much, or less money to divide between them than pre-test data indicated would be perceived as fair. These investigators found that subjects divided the reward equally in the sufficient reward condition but took more for themselves in both the insufficient and oversufficient reward conditions. Differences in the absolute magnitude of inputs did not affect distribution responses.

Lane and Messé (1971) found that the structure of the alternative reward distributions presented to an allocator affected his choices between them. These alternative outcomes differed in

differential welfare, the degree to which the reward received by one of the two parties exceeded the reward received by the other party and joint welfare, the sum of rewards allocated to the chooser and the receiver. The effect of differential welfare was to increase equitable responses when it favored the chooser. When the two outcomes differed in joint welfare, the one with the highest sum of payments was most likely to be chosen.

Lane and Messé (1971) also systematically manipulated appeals sent to the chooser, ostensibly from his co-worker. Choosers sent an appeal to equity, an appeal to duty, or both appeals were more likely to choose self-interestedly than choosers sent neither appeal. Self-interested responses were also more likely to be made by (1) allocators told that their distributions would remain anonymous than by allocators told that their distributions would be made public, (2) allocators told that they would actually be paid in accordance with whichever one of their distribution responses was selected by chance than by allocators told that their choices were hypothetical, and (3) allocators first choosing between pairs of alternative outcomes in which the more unequal of the two distributions favored the receiver than by allocators first choosing between pairs of alternative outcomes in which the more unequal of the two distributions favored the chooser.

Work in the Area of Role-Differentiation

Role-differentiation exists in a human group or organization when different varieties of behavioral acts are expected of different members of that group or organization. Such specialization may increase over time on account of a mutually reinforcing process whereby the more a person specializes in certain acts, the more others expect him to do so in the future and the more others expect him to specialize in certain acts, the more he is likely to do so. While this phenomenon may occur in any system of human interaction, the literature review presented here will emphasize its occurrence in small, ad hoc, laboratory groups.

The development of role-differentiation was first rigorously demonstrated by Bales and Slater (1955; Slater, 1955) by coding the interaction of ad hoc discussion groups according to Bales' (1951) system of Interaction Process Analysis (IPA). Briefly, IPA classifies all behavioral acts into 12 categories which are subsumed under four main areas: problem-solving attempts, questions, positive reactions, and negative reactions. By this procedure, each subject's basic initiating rank, the number of behavioral acts he initiates relative to the other members of the group, as well as his relative specialization in each type of behavioral act were determined.

Sociometric measures (Moreno, 1934) were also taken after each group session by means of a questionnaire asking each group member to rank one another on the criteria of who had the best ideas, who did the most to guide the discussion, and how well they personally liked each member. After the fourth session, they were asked to rank each other on leadership as well as the other three criteria.

Bales and Slater defined a specialist as a man holding top rank on either talking, receiving communications from others, best ideas, guidance, or liking, while not holding top rank on any other measure. According to this criterion, being liked was the most specialized role. Men ranked first on this dimension emitted the largest number of acts in the positive reactions categories of showing solidarity, tension release, and agreement. In many groups there emerged task specialists who were ranked high on initiating, receiving, best ideas, and guidance but low on liking. Men ranked first on this dimension emitted the largest number of acts in the problem-solving categories of giving suggestions, opinions, and orientation. Also, in some groups, the man with the highest basic initiating rank was not ranked first on either the task or socio-emotional criteria.

Based on the results of his work with Slater, as well as the factor analytic work of Couch and Carter (1952), Clark (1953), Sakoda (1952), Wherry (1950), and Wispé (1955), Bales concluded that Carter (1954) was correct in asserting that there are three orthoginal factors which represent the underlying dimensions people use in evaluating one another. This conclusion was based upon the fact that a man's standing on measures of initiating interaction, having good ideas and providing guidance, and being well liked have often been found to be uncorrelated with one another. Bales labeled these factors activity, task ability, and likability.

The etiology of role differentiation is explained by Bales and Slater in terms of the development of ambivalence toward the task leader. On the one hand, he is useful to the group in that he satisfies its needs in relation to the task. On the other hand, he gives rise to negative feelings because he is constantly proposing changes that would alter the group's culture. Such changes lead to reactions of frustration, anxiety, and hostility on the part of those required to change. The interaction profile of the task specialist indicates a high rate of acts coded as disagreeing and showing antagonism. Such behavioral acts also serve to lower the task leader's popularity. Consequently, the more someone playing the instrumental-adaptive role talks, the less he is liked and the

more someone else who is less active, who reciprocates positive affect, or who reciprocates the group's negative feelings comes to be liked.

In addition to the performance of the task and socio-emotional roles being mutually compatible, the needs and motives of the individuals inclined to take on these roles may also be different. Bales and Slater suggest that people assuming the socio-emotional role need to be liked, desire to avoid conflict, and have ingratiating skills. Task specialists may assume the role on account of their inability to respond to the needs of others or because it serves as an outlet for their hostilities into aggressive and dogmatic problem-solving attempts.

Empirical investigations of role differentiation in small laboratory groups indicate that a number of variables mediate whether a single leader will emerge or whether different individuals will achieve prominence in different areas. One of these variables is the age of the group. Bales and Slater (1955) found that between the first and the fourth 40-minute session during which their groups met, the extent of role-differentiation between the task and the socio-emotional specialists increased markedly. Also, the extent of role-differentiation between task leadership and participation increased over this period of time in some of the groups. Hoffman

and Smith (1960), however, found that role-differentiation decreased during the course of ten 2-hour sessions.

Another variable that has been investigated is the extent of status-consensus within a group, that is the extent of agreement with regard to who had the best ideas, who did the most to guide the discussion, who was the leader, and who was the most popular. Bales and Slater (1955) found that bipartite leadership emerged in most high status-consensus groups. One man was ranked highest on ideas, guidance, talking, and receiving while another man was ranked highest on liking. Tripartite leadership emerged in most low-status consensus groups with the positions of most frequent talker, task specialist, and best liked man occupied by different persons. Other investigators (Turk, 1961a, 1961b; Smith, 1963; Gustafson, 1968), however, failed to find any relationship between status-consensus and role-differentiation.

Bales (1956, 1958) divided groups up into three sub-populations based upon their feedback ratios, the number of behavioral acts initiated divided by the number of behavioral acts received from other group members. The results for the total population showed that the top ranking man on activity was less well liked than the second and third highest talkers, indicating a curvilinear relationship between the two variables. A consistent

linear relationship existed between best ideas and basic initiating rank. When feedback ratios are taken into account, the correlation between liking and basic initiating rank becomes zero in some of the low-feedback groups and negative in others. A curvilinear relationship existed between the two variables in the medium-feedback groups, and a positive, approximately linear, relationship existed between them in the high feedback groups. This suggests that by allowing adequate feedback, a task leader can effectively neutralize most of the antagonism that would otherwise be directed toward him.

Olmsted (1954) gave some problem-solving groups a gemeinschaftlich or (X) value-orientation characterized by norms of affectivity, a collectivity orientation, particularism, ascription, and universalism and other groups a gesellschaftlich or (Y) value-orientation characterized by norms of affective neutrality, a collectivity orientation, universalism, achievement, and specificity (Parson and Shils, 1951). Both greater and more stable role-differentiation occurred in the (X) groups. Also, how much a man said was positively related to the ratings he received on facts (the amount of technical information and suggestions for the solution of the problem they contributed) and harmony (their contribution to keeping the group co-ordinated and working harmoniously) in the

(X) but not in the (Y) groups. A similar relationship was reported by Marcus (1960) who found that role-differentiation occurred in expressive groups characterized by a socio-emotional orientation but not in instrumental groups characterized by a task orientation. However, Smith (1963) found no relationship between the values held by group members and the amount of role-differentiation that occurred.

Theodorson (1957) found some evidence that role-differentiation is more likely to occur in low cohesiveness groups than in high cohesiveness groups. He reasoned that in groups highly attractive to their members and characterized by a strong "we feeling," the more a person contributed to the group, the better he would be liked. However, under conditions of low cohesiveness, where member self-needs are not being satisfied by the group, individuals should be liked on the basis of personal preferences. Turk (1961a, 1961b), however, found no relationship between cohesiveness and role-differentiation.

Smith (1963) argued against trying to account for the development of role-differentiation in terms of group cohesiveness since no relationship had been found between the various possible measures of cohesiveness (Eisman, 1959; van Bergen and Ramuz-Nienhaus, 1960). He advocated the use of attraction to the group as

an alternative to an arbitrary weighted average of the various components of cohesiveness. Data he collected showed that role-differentiation was negatively related to the attraction of the group for its members.

Verba (1961) maintained that role-differentiation develops in groups where task relevant activity is perceived as illegitimate. In such groups, a nonlegitimate emergent leader must engage in task-relevant activity at every possible opportunity. This behavior establishes his position as a task leader but makes him unpopular. However, the position of an established task leader in a group where task-relevant activity is perceived as legitimate is secure. Therefore, he can engage in somewhat less task-relevant activity and somewhat more socio-emotional activity than an emergent leader. Such a pattern of behavior should not earn him the dislike of the other group members.

Two studies by Burke (1967, 1968) support Verba's hypotheses. Task specialization and popularity were uncorrelated in the high task legitimacy groups and negatively correlated in the low task legitimacy groups. In addition, task specialists engaged in more socio-emotional activity in the high task legitimacy groups than in the low task legitimacy groups. Commitment to the task has also been shown to be negatively related to the development of

role-differentiation (Harell and Gustafson, 1966a, 1966b; Harell and Lee, 1965; Gustafson, 1968). Turk (1961a, 1961b) found that role-differentiation occurred in groups showing low acceptance of the activity led but not in groups showing high acceptance of the activity led.

Wilson (1969) found that role-differentiation occurred in groups that knew that they were being observed but not in groups that thought they were not being observed. Also, some groups were told that their task product would have some practical use while others were told that it would serve only research ends. However, this manipulation did not affect the degree of role-differentiation which developed.

An explanatory framework developed by Thibaut and Kelly (1959) is helpful in understanding the circumstances in which a socio-emotional leader is likely to develop. They proposed that a group's survival is dependent upon keeping its members from leaving the group. This in turn is a function of keeping each group member above his comparison level for alternatives, defined as "the lowest level of outcomes a member will accept in light of available alternative opportunities [p. 21]." Under favorable conditions, this objective of providing rewards and keeping costs down may be accomplished fully by the task functions. However, when

either (1) the group has insufficient usable power to obtain rewards from the environment, (2) rewards are being allocated inequitably among group members, or (3) there is a long delay between task effort and reward, increased emphasis upon the maintenance functions of the group is required. However, it is unwise for the task leader to take on these functions as well as the task functions, since doing so would reduce the social distance between himself and his followers. This would in turn lessen his power to discipline his followers and the group's task performance would suffer.

The Present Research

All the work in the areas of wage distribution and role-differentiation have contributed toward the developments of "theories of the middle range" (Merton, 1968). Such theories:

> lie between the minor but necessary working hypotheses that evolve in abundance during day-to-day research and the all inclusive systematic efforts to develop unified theories that will explain all the observed uniformities of social behavior, social organization, and social change. . . . Middle range theories involve abstractions, of course, but they are close enough to observed data to be incorporated into propositions that permit empirical testing (Merton, 1968, p. 39).

Merton believes that the development of more comprehensive theories must come about through the consolidation of such middle range theories rather than by emerging spontaneously from the efforts of such individual theorists as Auguste Compte or Max Weber.

The present research represents an attempt to establish a theoretical linkage between equity theory and role-differentiation theory, two theories of the middle range.

According to Thibaut and Kelly (1959), a socio-emotional leader is strongly motivated to maintain the cohesiveness of the group by keeping every group member above his comparison level for alternatives. This can be done by attending to the following group maintenance functions:

1. perceiving and assessing the reward-cost position of the various group members,
2. allocating the rewards to the various members,
3. synchronizing reward allocations with cost peaks,
4. smoothing out fluctuations of rewards by saving so that regular payoffs are provided for members, even though the group's intake from the environment is irregular (the treasurer, banker, or investment functions),
5. creating new rewards for members, particularly affiliative ones,
6. cutting costs by reducing anxieties, etc.,
7. cutting costs by improving communications,
8. lowering both the comparison level and the comparison level for alternatives of the various members, for example, by censoring information about favorable alternative relationships (Thibaut and Kelly, 1959, p. 276).

The present research is an empirical investigation of the manner in which behavior relevant to the second maintenance function listed above, allocating rewards to the various members, is related to the role an individual assumes in a group structure. Since the socio-emotional leader is the group member most

concerned with group maintenance, it follows that this individual should allocate rewards among various group members in such a way as to assure that each member's outcomes are equal to or greater than his comparison level for alternatives. Therefore, a socio-emotional leader might give a person who contributed comparatively little to the group a greater share of the group's reward than that person's inputs justified in order to prevent that person from becoming dissatisfied and leaving the group.

The norm of equity, however, would create an opposing force against such a reward allocation, since it prescribes that when individuals are involved in an exchange relationship, their input-outcome ratios should be equal. If a nonproductive group member received as much or almost as much of the group's earnings as a more productive group member, the norm of equity would be violated.

It is proposed here that a group member's allocation of rewards for a nonproductive group member will be a function of that group member's relative concern with group maintenance and equity. The more the allocator is concerned with equity, the smaller should be the proportion of reward allocated to a nonproductive group member; the more the allocator is concerned with group maintenance, the greater should be the proportion of reward allocated to a nonproductive group member.

Based upon the above line of reasoning, the following hypothesis was formulated: the amount of money an allocator assigns to the least productive member of a group will be positively related to the allocator's position on the group's socio-emotional status hierarchy. This position can be determined by (a) coding the overt behavior of that individual, and (b) surveying his popularity among his fellow group members. Since previous research in role-differentiation (e.g., Bales and Slater, 1955) has already found both measures to be very highly correlated with one another, it seemed reasonable to assume that both types of measures are related to the same underlying variable. Therefore, it was hypothesized that the proportion of a group's earnings allocated to a nonproductive co-worker by a group member would be a positive function of both (1) the degree to which that member specialized in socio-emotional behavior, and (2) the relative popularity of that member.

Empirical support for the above hypothesis would still leave in doubt the motivation of those group members who, in violation of the norm of equity, give a nonproductive co-worker a greater share of the group's earnings than his inputs merit. Three possible explanations for such a distribution response are described below.

1. The group maintenance hypothesis: A subject would tend to give a nonproductive co-worker a greater share of reward than that co-worker's inputs justify to the extent that the subject is consciously concerned with group maintenance functions. Such a socio-emotional specialist would be motivated to keep everyone's outcome high enough that no one would become dissatisfied and leave the group.

2. The altruism hypothesis: A subject will tend to give a nonproductive co-worker a greater share of the reward than that co-worker's inputs justify to the extent that the subject is concerned about the welfare of others. Such an altruistic allocator would not be motivated by considerations about what effects his distribution response would have on maintaining group cohesiveness. Nor would he be influenced by some general principle such as equity or equality. Instead, a person manifesting the behavioral disposition known as altruism would be primarily concerned with maximizing other people's positively valent outcomes (Sawyer, 1966).

3. The equality hypothesis: An allocator will tend to give a nonproductive co-worker a greater proportion of the group's earnings than that co-worker's inputs justify to the extent the

allocator is motivated to act in accord with the norm of equal pay for equal time. Such allocators are not primarily concerned with group maintenance nor are they behaving altruistically. Instead, they are acting in accord with a general principle of how rewards should be distributed. Such allocators act on the belief that if two people work for the same amount of time they should receive the same amount of pay regardless of the quality or quantity of what each produces.

It is possible, however, to test the group maintenance hypothesis against the two alternative hypotheses by comparing allocative responses of individuals under both high maintenance-relevant and low maintenance-relevant conditions. If the group maintenance hypothesis is correct, allocators inequitably over-rewarding a nonproductive co-worker under high maintenance-relevant conditions should equitably reward such a co-worker in proportion to his inputs under low maintenance-relevant conditions. If either the altruism or equality hypotheses are correct, individuals who over-reward a nonproductive co-worker under conditions of high maintenance-relevance should continue to do so under conditions of low maintenance-relevance.

CHAPTER II

METHOD

High Maintenance-Relevant Study

Subjects

Fifty-two subjects were randomly selected from a group of female college students at Michigan State University who responded to an advertisement appearing in the campus newspaper. The advertisement stated that volunteers could earn money by participating in "Motivation Research." Before anyone committed herself to take part in this study, she was informed that her actual payment for participation would be determined by how well the group she would be assigned to performed at a "game of skill." Volunteers were then randomly assigned to groups consisting of four subjects and one confederate.

It was decided that all group members be of the same sex because Lane and Messé (1971) found that the sex of an allocator's co-worker affected distribution responses. Female rather than male subjects were used because of the data obtained by Vinacke

and his associates (Vinacke, 1959; Bond and Vinacke, 1962; Uesugi and Vinacke, 1963; Vinacke and Gullickson, 1964) from their studies of coalition formation. These results indicated that females' major concern in interacting with members of their groups was the maintenance of harmonious personal relationships in which the welfare of all members was protected. In contrast to this accommodative strategy characteristic of females, males tended to adopt an exploitative strategy. Their primary concern was the protection of their own interests. Therefore, it was thought that the use of female rather than male subjects would optimize the probability that at least one person in each group would be concerned with group maintenance.

Materials and Instruments

Interaction Process Scores (Borgatta, 1962; Borgatta and Crowther, 1965) coding forms were used to record the number of interaction units emitted by each subject falling into one of the following four categories: (1) raises the status of another, (2) shows agreement, concurrence, compliance, (3) disagrees, maintains a contrary position, and (4) shows antagonism, hostility. The first two of the above categories are positive socio-emotional acts while the last two are negative socio-emotional acts. A

socio-emotional score was calculated for each subject by subtracting the total number of negative acts she initiated from the total number of positive acts she initiated and dividing the difference by the number of minutes her group worked.

The names of 31 items, 10 animals, 9 vegetables, and 12 minerals were written on 3 inch × 5 inch index cards, one item per card. (See Appendix A for a list of items.)

A data sheet was used by the experimenter for recording the object the group was trying to identify, the category it fell under, the amount of time and the number of questions the group required to identify it.

A 7-item questionnaire was given to all group members after the completion of the problem-solving session. The first item required the subject to rate every group member, excluding herself, in terms of how desirable it was for each of them to remain in the group for future sessions. The next two items asked the subject to rank all group members, excluding herself, in terms of how well she liked and disliked each of them. The group status hierarchy on the liked-disliked dimension was determined by combining the rankings made in response to these two items. The fourth item called upon the subject to rank all group members in terms of the quality of their ideas. This was followed by an item asking for the

respondent's judgment about who the leader of the group was. The sixth item called for the subject to assess each group member's contribution in terms of a percentage. On the last item, subjects were asked to indicate what percentage of the group's earnings they would like to see each member receive. The percentages assigned in response to the two above items were required to be multiples of five and add up to 100. (See Appendix B for a copy of this questionnaire.)

Design

A mixed design was used, with the two confederates considered the between-group factor and the subjects' reactions to the confederate versus the real subjects treated as a repeated measure.

Procedure

Two female college students were trained to play the role of the nonproductive co-worker. They were instructed to contribute nothing of value to the groups' problem-solving efforts and to avoid emitting any positive socio-emotional acts. Their behavior in the groups was primarily that of wasting time by asking worthless questions. When they were not talking, they were inattentive to the on-going discussion, occupying themselves with reading a newspaper,

doodling, or engaging in some other form of autocentric behavior.

Each group was informed that its task was to play the game of "twenty questions" (Lindley, 1897; Taylor and Faust, 1952). The rules of the game were explained and the subjects were led to believe that their group would meet for a series of four sessions each involving the identification of four objects by the twenty-questions procedure. During each group session, the four items were chosen at random by the experimenter from among 31 items. While each group actually only met for one session, it was considered necessary for the subjects to think that they would be meeting as a group for a longer period of time. Only under such circumstances would it be reasonable for any of the subjects to consider group maintenance a relevant criterion for allocating rewards.

When all group members arrived, the experimenter introduced himself and asked each group member to introduce herself. Then the group was informed that the room they were meeting in was equipped with a concealed microphone and a one-way mirror. Next, the group was escorted to the observation room behind the one-way mirror where any questions they had were answered. The subjects were able to see that the two coders,

separated from one another by a partition, could see into the meeting room.

In order that subjects would attribute norm-enforcing power to the group, the experimenter said that

> To guarantee an effective working group, members will have the option of eliminating from the group any person who appears to be detrimental to its success. For this purpose as well as for the information of the experimenter, each group member will fill out a questionnaire at the end of each session.

Thus subjects were led to believe that their group would continue to exist beyond the present session and that incurring the disapproval of other group members could result in their being excluded from any further participation in the group's activities and the distribution of its rewards.

At the start of each of the four "twenty-questions" games that each group played during the session in which they actually met, subjects were told whether the object was animal, vegetable, or mineral. In trying to identify objects, groups were permitted to ask as many as 30 questions per game instead of the customary 20, in order to increase the likelihood of their correctly identifying the object. Each question, after it was written down by a group member on one of the slips of paper provided, was answered either "yes," "no," "partly," "sometimes," or "not in the usual sense of the word" by the experimenter. Unanimous agreement among the group

members was required before the experimenter would respond to a question. Each of the four games terminated when the group had correctly identified the object, asked 30 questions, or when 20 minutes had elapsed. The group was told that it had earned six dollars each time an object was correctly identified.

After the group completed the last of their "twenty-questions" games, the experimenter announced what the total earnings were and passed out a questionnaire. Before instructing the subjects to begin filling it out, the experimenter promised not to reveal to anyone how any individual responded to the questionnaire items. The subjects were then told not to discuss their answers with anyone else, nor to allow any other group member to see how they were responding to the items. Subjects were then instructed to complete the first six items on the questionnaire. When everyone had done this, the experimenter told them to turn to the last page of the questionnaire on which was printed the item asking the subject's preference with regard to how the money earned by the group should be divided. The experimenter told the subjects that they should indicate percentage figures for each group member which must be multiples of five and add up to 100. At this time, the group members were informed that their payment for participating in the experiment would be determined by averaging the five percentages assigned to them.

When all questionnaires were returned, the subjects were paid in accordance with the amount of money earned by the group and the average percentage of reward allocated to them by the four genuine subjects in the group. In order that the subjects would not make some purchase because they anticipated receiving additional money for participating in three more problem-solving sessions, it was announced that not all groups would be called back. After being pledged to secrecy, the subjects were thanked for their co-operation and dismissed. A few weeks later they were notified by mail that problems encountered with this research necessitated the cancellation of any further sessions of their group. (See Appendix C for the instructions used in the high maintenance-relevant condition.)

Low Maintenance-Relevant Study

Subjects

Since the hypothesized positive relationship between socio-emotional scores and allocations for the nonproductive co-worker was found only in the data from those high maintenance-relevant groups run with confederate 2, only subjects from that confederate's groups were selected to be run in the low maintenance study. The two subsamples selected were (a) subjects with the highest

socio-emotional score giving the confederate 20 percent or more of the group's earnings (i.e., at least an equal share) and (b) subjects with the lowest socio-emotional scores giving the confederate less than 20 percent of the group's earnings. However, in groups where ties occurred between subjects with respect to socio-emotional scores, both subjects were assigned to low maintenance-relevant groups.

Materials and Instruments

Subjects filled out a machine scored answer sheet on which they indicated which of the answers to 60 multiple-choice arithmetic problems they thought were correct.

Later, the subjects in this condition indicated how they would like to see the money earned by their team divided by means of a reward distribution sheet. This instrument listed 21 possible distributions ranging in five percent steps from "I give myself 0% and my partner 100%" to "I give myself 100% and my partner 0%." At the top of this sheet, space was provided for the subject to record the team's total earnings, the number of problems solved correctly by herself and her partner, and the number of problems she and her partner answered correctly per minute of time worked. (See Appendix D for a copy of the reward distribution sheet.)

Before leaving, the subjects filled out a questionnaire concerning the criteria they used in deciding upon a reward distribution.

Design

A simple one-factor design which classified subjects by their socio-emotional score in the high maintenance-relevant study was used.

Procedure

The subjects who were selected for the low maintenance-relevant condition were called and run by a different experimenter in order that they would perceive these conditions as separate experiments. Subjects were seated at a partitioned table with a confederate (again a different person from the confederate in the high maintenance-relevant condition) whom they could not see. The experimenter gave both the subject and the confederate a pencil, an answer sheet, and a pair of headphones connected to a tape recorder. He told them their task was to solve 60 multiplication problems during a 20-minute period, a rate of three problems per minute. It was explained to the team that after each problem was read, they would have 10 seconds to work the problem and another 10 seconds to indicate on their answer sheet which of four alternative

answers was correct. They were told that their pay would be based upon a group rate of 10 cents for every right answer. Insufficient time was allowed for problem solving in order that subjects would not be able to judge accurately how many of the problems they solved correctly. After the experimenter instructed the team to put on their headphones, he started the tape recorder and left the room. When the tape was finished, he returned to the room and told the team members that they would work in separate rooms for the remainder of the study. He indicated that the confederate should leave the room with him and said he would return when he had finished scoring the answer sheets. After five minutes, he returned to the experiment room, informed the subject that she had been selected by chance to divide the group's earnings, and gave her a reward distribution sheet. He told her to write on the appropriate line that she got 27 problems right while her partner got 9 problems right.

All subjects were also told that their group's total earnings were $3.60 and asked to indicate on their reward distribution sheet how they would like to see the money divided between themself and their partner. When the subject indicated that she was finished, her reward distribution sheet was collected and she was paid whatever percentage of the $3.60 she had allocated to herself. Then she

was given a questionnaire to fill out which contained items about the basis upon which her distribution response had been made. When the subject had completed this questionnaire, she was thanked for her participation in the study and dismissed. (See Appendix E for the instructions used in the low maintenance-relevant condition.)

CHAPTER III

RESULTS

High Maintenance-Relevant Study

In order to determine if the confederates' role playing was effective, five 2 × 2 analyses of variance were performed on the data. Each analyses had two levels of confederates, Confederate 1 and Confederate 2, and two levels of group members, subjects and confederates, which was treated as a repeated measure. Thus for each of the five variables, there were two scores derived for each of the 14 groups, one for all the subjects in the group combined and one for the confederate. The dependent measures for subjects were computed by taking the mean of the average score assigned to each subject by her three fellow subjects, while the dependent measure for confederates was computed by taking the mean of the scores assigned to the confederate by the four subjects. Interested readers are referred to Appendix F for the tables of means on which the analyses of variance were based.

The hypotheses that a subject's socio-emotional and sociometric scores would be positively related to her allocation for the nonproductive co-worker were tested by computing Pearson product-moment correlations between these variables.

A 2 × 2 unweighted means analysis of variance was performed on allocations made by the subject in both the high maintenance-relevant and low maintenance-relevant conditions. This analysis had two levels of socio-emotional scores, high and low, and two levels of maintenance-relevance, high and low. The dependent measure was the percentage of the group's earnings allocated to the confederate. Allocations made in the five-person, high maintenance-relevant groups, where equality was 20 percent of the group's earnings, were multiplied by 2.5 in order that they could be validly compared with allocations made in the two-person, low maintenance-relevant groups, where equality was 50 percent.

The data reported here are based upon 14 groups because 4 of the original 18 groups had to be discarded. Since the norms and values held by middle-class Caucasians are not necessarily those held by minority group members, two groups were discarded because one non-white subject was included. This decision can be justified in light of Rokeach's finding based upon data from a national sample administered the Rokeach (1968) Value Survey by

the National Opinion Research Center. This data showed that Blacks rank equality considerably higher than Caucasians. Therefore, Blacks might tend to distribute a reward equally among all group members regardless of inputs, role, or any other variable.

Another group was discarded on account of the presence of an aberrant individual who displayed persistent negativism, impatience, and hostility toward the task. She continually interrupted by asking the experimenter how soon she would be able to leave. Data collected from this group cannot validly be compared with data from other groups whose members all had a far more positive attitude toward the task.

A fourth group had to be eliminated because its members sat at a table which was considerably smaller than the one used by the other groups. Under such crowded conditions, the annonymity of questionnaire responses was doubtful since they could easily be observed by other group members. Such a situation may have put pressure on subjects to divide the money equally and to avoid negative evaluations of other group members.

The Effectiveness of the Confederates' Role-Playing

The effectiveness of the confederates' role-playing was determined by performing analyses of variance upon the data from

the questionnaire items dealing with the desirability of the confederate remaining in the group during future sessions, the relative popularity of the confederate, the relative worth of the confederate's ideas, the percentage the confederate contributed to the group's problem-solving effort, and the percentage of the group's earnings allocated to the confederate.

The desirability of the confederate remaining in the group. --Table 1 presents a summary of an analysis of variance performed on desirability ratings received by subjects and confederates who participated in groups run with each of the two confederates.

Table 1

Analysis of Variance of Desirability Ratings: Group Members × Confederates

Source	df	MS	F
Confederates (C)	1	.143	1.52
Groups/C	12	.094	
Group Members (G)	1	23.223	227.27*
G × C	1	.009	0.09
G × (Groups/C)	12	.102	

*$p < .0005$

The significant main effect for group members reveals that subjects considered it far more desirable for other subjects to remain in the group than for either of the confederates to do so. Both the main effect for confederates and the interaction effect between group members and confederates were insignificant.

Relative popularity of the confederates. --Table 2 presents a summary of the analysis of variance performed on sociometric scores based upon how well group members were liked or disliked.

Table 2

Analysis of Variance of Sociometric Rankings: Group Members × Confederates

Source	df	MS	F
Confederates (C)	1	.004	.31
Groups/C	12	.012	
Group Members (G)	1	21.132	430.60*
G × C	1	.016	.33
G × (Groups/C)	12	.049	

*$p < .0005$

The significant main effect for group members indicates that subjects were much better liked than confederates. Neither the main

effect for confederates nor the interaction effect between group members and confederates was significant.

Quality of ideas. --Table 3 summarizes the analysis of variance performed upon the rankings of group members in terms of who had the best ideas.

Table 3

Analysis of Variance of Best Ideas:
Group Members × Confederates

Source	df	MS	F
Confederates (C)	1	.020	3.69*
Groups/C	12	.005	
Group Members (G)	1	40.681	2,691.69**
G × C	1	.056	3.69*
G × (Groups/C)	12	.015	

*$p < .08$
**$p < .0005$

The main effect for group members was significant, indicating that subjects were perceived as having better ideas than confederates by their fellow group members. The main effect for confederates was marginally significant because the quality of Confederate 2's ideas

was perceived as being higher than the quality of Confederate 1's ideas by their respective group members.

Since the interaction effect between group members and confederates was also marginally significant, an analysis of simple effects (Winer, 1962) was performed. The summary of this analysis, presented in Table 4, reveals the following: (1) subjects were seen as having better ideas than the confederate in Confederate 1's groups, (2) subjects were seen as having better ideas than the confederate in Confederate 2's groups, and (3) Confederate 1 was ranked lower on ideas than Confederate 2.

Table 4

Analysis of Simple Effects of Best Ideas:
Group Members × Confederates

Source	df	MS	F
Subjects	1	.004	.43
Confederates	1	.071	6.95*
Pooled Error	24	.010	
Group Members in C_1	1	21.875	1,447.72**
Group Members in C_2	1	18.862	1,248.29**
G × (Groups/C)	12	.015	

*$p < .05$
**$p < .0005$

In fact, it was the unanimous opinion of every subject in all of Confederate 1's groups that she had the worst ideas in the group.

Contribution to the group. --Table 5 summarizes the analysis of variance based upon how much subjects and confederates were perceived to have contributed to their group by their fellow group members.

Table 5

Analysis of Variance of Relative Contributions: Group Members × Confederates

Source	df	MS	F
Confederates (C)	1	8.17	2.21
Groups/C	12	3.70	
Group Members (G)	1	2,187.72	211.06*
G × C	1	17.09	1.65
G × (Groups/C)	12	10.37	

*$p < .0005$

The significant main effect for group members indicates that subjects were seen as having contributed more to their group than confederates. The main effect for confederates and the interaction effect between group members and confederates were both insignificant.

Allocations. --An analysis of variance was also performed upon the allocations made for subjects and confederates which is summarized in Table 6.

Table 6

Analysis of Variance of Allocations:
Group Members × Confederates

Source	df	MS	F
Confederates (C)	1	9.65	4.89**
Groups/C	12	1.98	
Group Members (G)	1	494.66	87.25***
C × G	1	26.16	4.61*
G × (Groups/C)	12	5.67	

*$p < .06$
**$p < .05$
***$p < .0005$

The significant main effect for group members indicates that subjects were assigned larger shares of reward than confederates. The significant main effect for confederates indicates that Confederate 2 was allocated a larger share of her groups' earnings than was Confederate 1.

Since the interaction between group members and confederates was also significant, an analysis of simple effects (Winer,

1962) was performed. This analysis, summarized in Table 7, reveals the following: (1) Confederate 1 was allocated a smaller share of her groups' earnings than Confederate 2, (2) Confederate 1 was allocated a smaller share of the reward than her fellow group members, and (3) Confederate 2 was allocated a smaller share of the reward than her fellow group members.

Table 7

Analysis of Simple Effects of Allocations: Group Members × Confederates

Source	df	MS	F
Subjects	1	2.02	.53
Confederates	1	33.79	8.84*
Pooled Error	24	3.82	
Group Members in C_1	1	374.15	66.00*
Group Members in C_2	1	146.66	25.87*
G × (Groups/C)	12	5.70	

*$p < .01$

The above results indicate that confederates were evaluated less favorably than subjects by their fellow group members on the criteria of the desirability of their remaining in the group, liking,

best ideas, and contribution to the group. As a consequence of their receiving less favorable evaluations, confederates were allocated a smaller share of the groups' earnings than were subjects. The confederates did not differ in their perceived desirability, liking, or contribution to the group, but Confederate 2 was seen as having better ideas, and was allocated a larger share of her groups' earnings than was Confederate 1.

Relationship Between Socio-Emotional Specialization and Reward Distribution

The data from the Interaction Process Scores (Borgatta, 1962) and the sociometric popularity rankings were used to provide two independent tests of the hypothesis that a subject's tendency to specialize in socio-emotional interaction will be positively related to the share of the group's earnings she assigns to a nonproductive co-worker.

Socio-emotional score. --While four categories of interaction were coded, it was decided to compute socio-emotional scores on the basis of only two categories: (1) raises the status of another, and (2) shows antagonism, hostility. The data collected on agreements and disagrements were disregarded since these categories appeared to be measuring something other than

socio-emotional behavior. Most of the behavioral acts coded under one of these categories either represented simple compliance or were directed at the task which had little personal significance for the subjects. The latter observation is in accord with Mann's (1961) finding that agreement and disagreement are unrelated to socio-emotional status when the topic of discussion is one in which the subjects have little ego-involvement.

In order to correct for the fact that some groups required more discussion time than others to arrive at solutions to the problems, socio-emotional scores were computed by dividing the difference between the number of times a subject raised the status of another and the number of times she showed antagonism and hostility by the number of minutes the group engaged in discussion. The inter-coder reliabilities for the categories used in computing socio-emotional scores were acceptable, being 0.77 for raises the status of another and 0.90 for shows antagonism, hostility.

The insignificant overall correlation between socio-emotional score and allocation for the confederate, shown in Table 8, indicates that the average socio-emotional scores of subjects giving the confederate 20 percent or more of the reward did not differ significantly from that of subjects giving the confederate less than 20 percent of the reward. However, when the data are

Table 8

Intercorrelations Among Dependent Measures:
All Groups

		1	2	3	4	5	6	7	8
1	Socio-Emotional Score	----							
2	Popularity	-.1720	----						
3	Desirability	.0679	.7937***	----					
4	Best Ideas	-.2145	.7798***	.8480***	----				
5	Contribution	.0136	.7242***	.8835***	.8799***	----			
6	Allocation Received	.0234	.5922***	.6818***	.6067***	.7186***	----		
7	Allocation for Confederate	.0559	-.0068	-.0736	.0284	.1695	-.1515	----	
8	Liking for Confederate	.0329	-.1035	-.0235	-.0387	-.0931	.4128**	-.2407	----
9	Problems Solved Correctly	-.0101	.0094	-.0195	.0000	.0000	.0000	.1742	-.3186*

*$\underline{p} < .05$
**$\underline{p} < .01$
***$\underline{p} < .001$

analyzed separately for each of the confederates, socio-emotional score is not significantly related to allocations for Confederate 1 (see Table 9) but significantly and positively related to allocations for Confederate 2 (see Table 10).

Sociometric popularity scores. --Correlations between the average popularity rank received by a group member and the percentage of the group's earnings she allocated to the confederate were calculated. These correlations did not approach statistical significance either for all subjects, for subjects in groups with Confederate 1, or for subjects in groups with Confederate 2.

Correlations Between Dependent Measures

Regardless of whether one looks at the table based upon all group members or either of those based on group members working with one or the other confederate, five variables stand out as being very highly intercorrelated: popularity, desirability, best ideas, contribution, and allocation received. That is, the more a group member contributed to her group, the better her ideas were evaluated, the more desirable her remaining in the group was rated, the better she was liked, and the more money she was allocated.

The money allocated to a subject by her fellow subjects tended to be positively related to that subject's relative liking of

Table 9

Intercorrelations Among Dependent Measures:
Confederate 1's Groups

		1	2	3	4	5	6	7	8
1	Socio-Emotional Score	----							
2	Popularity	-.0658	----						
3	Desirability	-.0892	.8500**	----					
4	Best Ideas	-.1395	.8062**	.8393**	----				
5	Contribution	-.3299	.8125**	.8880**	.9061**	----			
6	Allocation Received	-.2265	.6524**	.6983**	.5687**	.6410**	----		
7	Allocation for Confederate	-.3481	.0354	-.0413	.1134	.2880	-.3059	----	
8	Liking for Confederate	.0150	.0341	-.0553	-.1835	-.2696	.6104**	-.2036	----
9	Problems Solved Correctly	.0809	.0147	-.1072	.0000	.0000	.0000	.0871	-.3926*

*$p < .05$
**$p < .001$

Table 10

Intercorrelations Among Dependent Measures:
Confederate 2's Groups

		1	2	3	4	5	6	7	8
1	Socio-Emotional Score	----							
2	Popularity	-.2591	----						
3	Desirability	.1440	.7410***	----					
4	Best Ideas	-.2839	.7503***	.8627***	----				
5	Contribution	.2759	.6173***	.8906***	.8502***	----			
6	Allocation Received	.3195	.5249***	.7229***	.7153***	.9012***	----		
7	Allocation for Confederate	.3891*	-.0255	-.0481	-.0463	.0806	.1461	----	
8	Liking for Confederate	.0676	-.2055	.0363	.0962	.1008	.2034	-.3187	----
9	Problems Solved Correctly	.0127	.0110	.0345	.0000	.0000	.0000	.1689	-.3926*

*$p < .05$
**$p < .01$
***$p < .001$

the confederate. This relationship was significant overall, significant for subjects in groups with Confederate 1, and insignificant, but in the same direction, for groups run with Confederate 2. Liking for the confederate was positively related to the number of problems the group solved correctly. This relationship was statistically significant for all groups, groups run with Confederate 1, and groups run with Confederate 2.

Low Maintenance-Relevant Study

Since the main hypothesis of this study was supported only by the data from the groups in which Confederate 2 played the role of the nonproductive co-worker, only subjects from these groups were considered for participation in the low maintenance-relevant condition. From each of these seven groups, the subject with the highest socio-emotional score giving the confederate at least 20 percent of the group's earnings and the subject with the lowest socio-emotional score giving the confederate less than 20 percent of the group's earnings were selected to be run in the low maintenance-relevant condition. Because of ties with respect to socio-emotional scores, a total of 19 subjects were selected. However, only 14 were actually run, since five of the subjects selected could no longer be contacted or were unwilling to participate.

After determining that no significant experimenter effects occurred, an analysis of variance was performed on the allocations made by subjects having both high and low socio-emotional scores in the high maintenance-relevant condition and run in both conditions of maintenance-relevance. This analysis, summarized in Table 11, shows a significant main effect for socio-emotional scores, indicating that subjects with high socio-emotional scores allocated larger shares of their group's earnings to the confederate than subjects with low socio-emotional scores.

Table 11

Analysis of Variance of Allocations:
Socio-Emotional Scores × Maintenance-Relevance

Source	df	MS	F
Socio-Emotional Scores (S)	1	2,074.89	14.82*
Maintenance-Relevance (M)	1	47.15	.34
S × M	1	1,338.84	9.56*
Within Cell	24	140.04	

*$p < .01$

Since the interaction between socio-emotional scores and maintenance-relevance was significant, an analysis of simple

effects was performed (Winer, 1962). This analysis, summarized in Table 12, indicates that: (1) subjects with low socio-emotional scores allocated a larger share of their group's earnings to the confederate in the low maintenance-relevant condition than in the high maintenance-relevant condition, (2) in the high maintenance-relevant condition, subjects with high socio-emotional scores allocated a larger share of their group's earnings to the confederate than subjects with low socio-emotional scores, and (3) in the low maintenance-relevant condition, subjects with high and low socio-emotional scores did not differ in terms of the share of their group's earnings they allocated to the confederate.

Table 12

Analysis of Simple Effects of Allocations:
Socio-Emotional Scores × Maintenance-Relevance

Source	df	MS	F
Maintenance-Relevance at S_1	1	446.09	3.19
Maintenance-Relevance at S_2	1	937.12	6.69*
Socio-Emotional Scores at M_1	1	3,373.58	24.09**
Socio-Emotional Scores at M_2	1	40.15	.29
Within Cell	24	140.04	

*$p < .05$
**$p < .01$

CHAPTER IV

DISCUSSION

This chapter is divided into five sections: (1) the effectiveness of the confederates' role-playing, (2) the tests of the hypotheses, (3) the intercorrelations among dependent measures, (4) summary and conclusion, and (5) suggestions for future research.

Effectiveness of the Confederates' Role-Playing

Two confederates were trained to play the role of a non-productive co-worker. Their instructions were to contribute nothing of value to the group, show little interest in the on-going discussion, and do nothing that would make other group members like them. The results from the post-task questionnaire indicated that the confederates' behavior conformed to these instructions. Compared with other group members, confederates were rated lower on the desirability of their remaining in the group, liking, best ideas, and contribution to the group. No significant differences were found between confederates on desirability, liking, and overall

contribution to the group. However, a marginally significant difference was found between the two confederates with regard to how they were ranked on the quality of their ideas. While Confederate 1 was always ranked lowest on best ideas, the quality of Confederate 2's ideas were in some cases ranked higher than that of some of the actual subjects in the group. The experimenter observed a few instances in which Confederate 2 made suggestions which were of some value to the groups in identifying the objects, smiled, and emitted other of positive socio-emotional acts. Con federate 2 was also allocated a larger share of her groups' earnings than Confederate 1.

Tests of the Hypotheses

The main hypothesis of this study was that socio-emotional specialization would be positively related to the percentage of the group's earnings assigned to the confederate. This hypothesis was only partially supported by the data. The first of the two methods used in evaluating this hypothesis was to determine if a positive relationship existed between socio-emotional scores and the proportion of the group's earnings allocated to the confederate. The correlations between socio-emotional scores and allocations for the confederate indicated no

significant relationship overall or in the groups run with Confederate 1, but a significant positive relationship in the groups run with Confederate 2.

A clue to the understanding of this confederate effect is provided by the previously discussed interaction between group members and confederates with regard to best ideas. Confederate 2, who received a higher average rank on ideas than Confederate 1, was also the confederate for whom the significant relationship between socio-emotional score and allocative responses occurred. This may be interpreted in terms of Schacter's (1951) findings with regard to the rejection of the deviant. He observed that a group's initial response toward a deviant member is to increase the amount of communication directed toward him in an effort to bring him into conformity with the group's standards, defined as uniformities in behavior and attitudes. However, after such attempts repeatedly fail, the other group members will eventually ignore the deviant rather than make any further attempts to change him.

In the present study, Confederate 2 may not have been perceived as deviating from the groups' standards as much as Confederate 1, since she was ranked higher on best ideas. Therefore, subjects who were interested in the maintenance

function may have still been trying to change the behavior and attitudes of Confederate 2 in order to bring them into agreement with the majority of the group members. An allocator giving her an equal share of the group's earnings may have been attempting to get the confederate to become more concerned about being an active and valuable member of the group. Such an allocator may have speculated that an over-rewarded nonproductive co-worker would feel obligated by the norm of reciprocity to pay the group back in the future by increased effort. On the other hand, Confederate 1 may have been so deviant from the group's standards that the subjects in the groups of which she was a member specializing in socio-emotional behavior thought the interests of group maintenance could best be served by the total rejection of this nonproductive co-worker and the maximization of the reward received by the remaining group members.

The second test of the main hypothesis examined the strength of the relationship between a subject's ranking on popularity and the amount of money she allocated to the confederate. Contrary to prediction, no significant positive relationship between these variables was present in the data. This lack of relationship is understandable in light of the fact that role-differentiation, with regard to the sociometric rankings received by group members on the task and socio-emotional criteria, did not emerge.

Such differentiation may not have occurred because either the history of the groups was too short, or the level of cohesiveness was too high. Bales and Slater (1955) found that after the first session of an ad hoc group, the man ranked highest on ideas was also best liked, but over the course of four sessions rankings on these two dimensions began to be differentiated. Theodorson (1957) found that role-differentiation occurred in low-cohesiveness but not in high-cohesiveness groups. He concluded that when the task did not provide intrinsic satisfaction, a separate socio-emotional specialist was needed to reduce the negative affect generated by the task leader. However, when task activities did fulfill personal needs, a socio-emotional specialist was unnecessary. In the present study, the level of cohesiveness may have been high for various reasons, such as the subjects wanting to earn as much money as possible, thinking that the games were fun, finding the task intellectually challenging, or wanting to impress the experimenter.

The second hypothesis in this study was that a socio-emotional specialist's motivation for giving the nonproductive co-worker an equal share of the group's earnings was a conscious concern with group maintenance rather than with altruism or the principle of equal pay for equal time. This hypothesis was tested by examining two specific

subsamples of subjects in a reward distribution situation where the maintenance of group cohesiveness should have been minimally relevant. One subsample (high group) was made up of the subjects with the lowest socio-emotional scores of those group members who gave the confederate less than 20 percent of the group's earnings on the first task. The other subsample (low group) was made up of the subjects with the highest socio-emotional scores of those group members who gave the confederate 20 percent or more of the group's earnings on the first task. The low maintenance-relevant condition differed from the high maintenance-relevant condition in terms of both whether or not the subject interacted with the confederate and whether or not the subject expected to work with the confederate at some future time. Only the subjects originally run with Confederate 2 were called back, since the main hypothesis was confirmed only by the data from these groups. As hypothesized, subjects in the high and low groups differed significantly in their allocations for the nonproductive co-worker in the high maintenance-relevant condition but not in the low maintenance-relevant condition.

Correlations Between Dependent Measures

A number of additional significant relationships were found in the data from the post-session questionnaire administered to

subjects in the high maintenance-relevant groups. The following five variables were very strongly correlated with one another: popularity, desirability, best ideas, contribution, and allocation. This indicates a strong positive relationship between a subject's prominence in the task area, how well she was liked, and how well she was rewarded. Such a lack of role-differentiation is characteristic of groups with a unidimensional status hierarchy.

A subject's liking for the confederate was also positively related to the share of the group's earnings allocated to that subject by her fellow group members. This relationship was significant overall and for subjects in groups with Confederate 1, while in the right direction but insignificant for subjects in groups with Confederate 2. While this finding is interesting and merits further investigation, no explanation can be given to account for it at the present time.

The sociometric rank assigned to the confederate was positively related to the number of "twenty-questions" problems a subject's group solved correctly out of the four they attempted. This relationship was statistically significant both overall and when the data was analyzed separately for subjects run in groups with each of the two confederates. Probably subjects in groups that performed poorly and thereby earned little money were more resentful of the confederate than were more successful groups.

Summary and Conclusion

This study explored the relationship between socio-emotional specialization and the allocation of rewards to a non-productive co-worker. It was hypothesized that these two variables would be positively related because of socio-emotional specialists' concern with the satisfaction of all group members.

In the high maintenance-relevant condition, groups composed of four female subjects and a confederate playing the role of a nonproductive co-worker tried to determine the identity of objects by means of a modified "twenty-questions" procedure. Groups earned money for each object correctly identified, worked face-to-face, and expected to work as a group for three additional problem solving sessions. Socio-emotional specialization was measured by both coding subjects' overt behavior and by asking them to rank one another on the criteria of liking and disliking. By asking all subjects how much of the group's earnings they would like to see each member receive, their allocation for the non-productive co-worker was determined.

Since no role-differentiation occurred in these groups, the sociometric measure of liking was unrelated to the allocation for the nonproductive co-worker. However, the behavioral

measure of socio-emotional specialization was positively related to the allocation made for one of the two confederates. The fact that the confederate for whom the relationship held was ranked higher on the quality of her ideas than the other confederate suggests that the hypothesized relationship may only hold when a member's deviation from a group's norms is below some maximum limit.

To determine if the socio-emotional specialists gave the confederate a larger share of the group's earnings because they were concerned about group maintenance rather than because they were altruistic or more committed to a norm of equal pay for equal time, some subjects later were run in a low maintenance-relevant condition. Here a subject and a confederate tried to solve multiplication problems after being told that the team's earnings would be determined by the number of correct answers. Team members never interacted, saw one another, nor expected to work together again. When the task was completed, a subject was told that her performance had been several times better than her partner's and that she had been selected by chance to divide the group's earnings.

Under low maintenance-relevant conditions, there was no difference between the amount of money allocated to the

confederate by subjects previously differing in the amount they allocated to the confederate under high maintenance-relevant conditions. This finding is congruent with the explanation of the relationship between socio-emotional specialization and allocation for a nonproductive co-worker in terms of concern about group maintenance and not congruent with the alternative explanations in terms of altruism and equal pay for equal time.

The data reported here suggest that a positive relationship between socio-emotional specialization and allocation for a nonproductive co-worker is present under some conditions. Future research will be necessary to establish more firmly the existence of this relationship and to determine the parameters of the co-worker's behavior which mediate it. The data also suggest that an allocator who specializes in socio-emotional behavior and gives an equal share of the group's earnings to a nonproductive co-worker is motivated by a concern about group maintenance. However, because of the small sample size in the low maintenance-relevant condition, additional confirmatory studies will be necessary before this conclusion can be stated with a high degree of confidence.

Suggestions for Future Research

While role-differentiation was one of the principal phenomena under investigation, the sociometric data from this

study indicate that no role-differentiation actually occurred. Several modifications could be made upon the procedure used here which might result in greater role-differentiation. Since Bales and Slater (1955) have shown that role-differentiation increases over time, running four sessions rather than one should increase the likelihood of separate individuals playing the roles of task leader and socio-emotional leader. In addition, acceptance of the task is a variable which has been found to be negatively associated with role-differentiation (Turk, 1961a, 1961b). Therefore, role-differentiation should increase if subjects worked at a dull or unpleasant task instead of playing "twenty questions," a popular parlor game.

The occurrence of two interaction effects with the confederates reduced the certainty with which any conclusions could be made about the hypothesis under investigation. That is, one of the confederates was ranked higher on best ideas and was more likely to have been appropriated an equal share of the group's earnings by allocators with high socio-emotional scores than the other confederate. A procedural change which might prove effective in preventing confederate interactions from occurring in future research of this type would be to standardize the role of the non-productive co-worker to a greater extent than was done in the present

study. Confederates could be given more explicit directions, for example being instructed to make one worthless comment during every three-minute interval of group discussion.

Additional information about how a co-worker's behavior influences distribution responses could be obtained by conducting an experiment having a factorial design in which the behavior of the confederate would be systematically varied. Three independent variables that might be worth investigating are the contribution of the confederate to the solution of the problem, her participation in the group discussion, and her likability. Perhaps a $2 \times 2 \times 2$ design could be employed with two levels of ideas, valuable and worthless, two levels of participation, active and inactive, and two levels of likability, pleasant and unpleasant. Thereby it might be possible to establish what types of group members a socio-emotional leader would allocate an equal share of the group's earnings and what types of group members a socio-emotional leader would consider too deviant from the group's norms to merit such acceptance.

The item on the questionnaire administered after the last "twenty-question" problem had been completed, which concerned reward allocation, could have been improved. Instead of asking each subject to assign to each group member a percentage of the group's earnings divisible by five, they could have been

asked to indicate the absolute amount of money they would like to see each group member receive. The procedure that was used created two problems. First of all, many of the subjects had problems understanding the directions. Often, the percentages they wrote down were not multiples of five or did not add up to 100. This made it necessary for the experimenter to return the questionnaire to the subject, explain the instructions again, and ask them to assign the percentages in accordance with the directions. Sometimes this procedure had to be repeated more than once before a subject understood what was expected of her.

Another problem with this procedure was that if a subject chose to give the confederate less than 20 percent but more than 0 percent of the earnings, it was impossible for her to allocate the remainder of the reward equally among the other group members. This may have led some subjects to divide the reward equally among all group members who would have preferred giving the confederate less if equality among the remaining group members could have been attained.

A final improvement that could have been made over the present procedure would be the inclusion of more items on the questionnaire administered in the high maintenance-relevant condition dealing with group members' relative prominence in the task

and socio-emotional area. The computation of average scores for each subject on each of these two dimensions might have increased the reliability with which role differentiation could be measured. Such a procedure was used by Burke (1967) quite successfully.

Thus this study represents the first attempt to integrate two areas of social psychology--role-differentiation and equity. The findings suggest that an allocator concerned with group maintenance will violate the norm of equity and assign an equal share of the group's earnings to a nonproductive co-worker provided that the degree to which such a co-worker deviates from group norms is below some maximum amount.

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APPENDICES

APPENDIX A

"TWENTY QUESTIONS" ITEMS

"TWENTY QUESTIONS" ITEMS

Animal	Vegetable	Mineral
1. Spiro Agnew	1. baseball bat	1. air conditioner
2. leather belt	2. cigar	2. beer can
3. Buddah	3. cotton	3. belt buckle
4. camel	4. maple syrup	4. dime
5. football	5. newspaper	5. garbage can
6. baseball glove	6. orange juice	6. motor cycle
7. goat	7. peanut butter	7. radiator
8. Ted Kennedy	8. rolling pin	8. razor blade
9. Abe Lincoln	9. rubber band	9. scissors
10. turkey		10. tuba
		11. typewriter
		12. washing machine

APPENDIX B

HIGH MAINTENANCE - RELEVANT QUESTIONNAIRE

Name _____ Number _____

MOTIVATION RESEARCH QUESTIONNAIRE

1. Below is a list of group members identified by number. Please indicate for each member how desirable it is that he remain in the group. Do not rate yourself.

	very desirable	somewhat desirable	slightly desirable	not desirable at all
1	[ ]	[ ]	[ ]	[ ]
2	[ ]	[ ]	[ ]	[ ]
3	[ ]	[ ]	[ ]	[ ]
4	[ ]	[ ]	[ ]	[ ]
5	[ ]	[ ]	[ ]	[ ]

2. In the space provided below, write down the numbers of all group members, excluding yourself, that you like. You may choose as many or as few other group members as you wish. Please write each number on a separate line.

_____ (best liked)

_____ (second best liked)

_____ (third best liked)

_____ (fourth best liked)

3. In the spaces provided below, write down the numbers of all the group members, excluding yourself, that you don't like. You may again choose as many or as few members as you like. Please write each number on a separate line.

_____ (most disliked)

_____ (second most disliked)

_____ (third most disliked)

_____ (fourth most disliked)

4. Please rank everyone in the group, including yourself, on the basis of how good their ideas were. Indicate by number.

   A _____ (best ideas)

   B _____ (second best ideas)

   C _____ (third best ideas)

   D _____ (fourth best ideas)

   E _____ (fifth best ideas)

5. On the line below, write in the number of the person you thought was the leader of the group. Indicate by number.

   _____

6. Below are five lines labeled 1 to 5. On each line indicate the relative contribution of each group member, including yourself, by a percentage figure which is a multiple of five. Your five percentage figures should add up to 100%.

   1 _____%

   2 _____%

   3 _____%

   4 _____%

   5 _____%

DO NOT GO ON TO PAGE THREE

UNTIL THE EXPERIMENTER TELLS YOU TO DO SO

7. Below are another five lines labeled from 1 to 5. Please indicate your preference for how the money earned by the group should be divided by writing on each line the percentage of the group's total earnings that you would like to see each member receive. Your percentage again must be multiples of five and add up to 100%.

1 _____%

2 _____%

3 _____%

4 _____%

5 _____%

APPENDIX C

HIGH MAINTENANCE-RELEVANT INSTRUCTIONS

HIGH MAINTENANCE-RELEVANT INSTRUCTIONS

I would like to begin by acquainting you with the physical setting of this experiment. The mirrors you see around the room are one-way mirrors. They allow the two coders in the back room to observe the work of the group. There is a microphone in the ceiling which is connected to a speaker in the back room where the coders are working. They will be taking notes on your sessions in a form of shorthand, which will be the only record made of your interaction. Nothing you say during the course of this experiment will be tape-recorded. Now, if you will follow me, I will show you the set-up we have in the room behind this one.

(E takes the Ss to the next room and points out the equipment that is being used.) Are there any questions? (E frankly answers any questions that may be asked, if at all possible.)

Now let us return to the room where the experiment will be held. (E leads the group back to the room that they came from.)

(When everyone is seated, E says:) My name is _____. (E gives his name, which is also written on a name card in front of him.)

Would each of you please introduce yourself and write your name on both sides of the card in front of you. You may begin. (E indicates the S on the far right and then waits for each S to introduce herself and write her name on a name card before proceeding any further.)

Now, would you also write the number which I shall now give you on the card with your name. You are number one (E indicates the S on the far right), you are number 2, etc.

As you know, you have volunteered to participate in an experiment dealing with motivation. In this particular session, your task will be to play the game of twenty questions. Since some of you may not be familiar with the rules, I shall now explain them. There is a printed set of instructions in front of you which you may use to read along with me and refer back to at any time you wish during the course of the experiment. Please do not write anything on these instructions, since they have to be used again by other groups. You may use the pads of paper in front of you if you wish to write anything down.

You are to try to guess the identity of an object which I will initially define as animal, vegetable, or mineral. Anything from the animal kingdom will be considered animal, anything from the plant kingdom will be considered vegetable, and anything that is not nor has ever been living will be considered mineral. For example, a shoe would be considered animal since it is made from an animal hide, George Washington would also be classified as animal since he is a member of the species in the animal kingdom called Homo sapiens, a telephone pole would be classified as vegetable since it is made of wood which comes from a tree, and a sewing machine would be classified as mineral since it is made from inorganic metals.

Since this information alone would prove insufficient for you to guess the identity of the object, you will be allowed to ask me a series of questions which should enable you to narrow down the range of possible answers and eventually come up with the correct solution. While the number of allowable questions is customarily limited to 20, you will be allowed 30 questions in this experiment. You must phrase them in such a way that they can be answered either "yes," "no," "partly," "sometimes," or "not in the usual sense of the word." If any of your questions are unclear or cannot be responded to in one of these ways, you will be asked to restate

those questions. You will be allowed time for discussion, since you must end up agreeing unanimously upon each question before you ask it.

Each game will end when either you have correctly identified the object, when you have used up, without success, all of the 30 questions allowed you, or when 20 minutes are up. For each game, both the number of questions you ask before finding the solution and the total elapsed time will be recorded by me. The group will earn six dollars for every object it correctly identifies. You will be playing four of these games at this experimental session. Three more sessions, just like this one, will be scheduled in the near future.

To guarantee an effective working group, members will have the option of eliminating any person who appears to be detrimental to its success. Such persons will not be allowed to participate in any of the remaining problem solving sessions. In order that any such people that the rest of the group considers undesirable can be identified, I will ask each of you to fill out a questionnaire at the end of each session. Before we go any further, are there any questions? (If not, proceed with the instructions. If there are questions, try to answer them by rephrasing the original instructions. If this is not possible, avoid answering the question.)

All right, we will now begin work on the first of the four problems. The first object is _____ (animal, vegetable, or mineral). You may now proceed to discuss the first question you wish to ask me. When you have come to a unanimous decision, please write the question out on one of the slips of paper you have in front of you. Then pass it up to me and I will give you the answer. (E will either answer "yes," "no," "partly," "sometimes," or "not in the usual sense of the word.")

(If none of these answers are possible or the question is unclear, E will ask the group to restate the question by saying the following:)

The question you asked was _____ (unclear, could not be answered "yes," "no," "partly," "sometimes," or "not in the usual sense of the word). Please discuss the question again to decide how you wish to reformulate it. When you have finished, write the new question down on a piece of paper and pass it up to me.

(After a properly formulated question has been answered:) Now please formulate your second question using the same procedure that you followed for the last one.

(When a second question is written down, E will follow the same procedure in answering as was followed for the first question.

This procedure will be repeated until either the object is correctly identified or the 30 permissible questions have been exhausted without success.)

(After each of the remaining questions have been asked, E's answer will be followed by:) Now proceed to formulate your _____ (third, fourth, . . . , thirtieth) question.

(If the problem is solved successfully, E will say:) That is correct. Your group has now earned six dollars.

(When a second problem has been solved correctly, E will add:) This brings the group's total earnings up to _____ dollars.

(If the problem has not been solved after 30 questions have been asked, E will say:) I am sorry. You did not arrive at the correct answer, which is _____. (E reads the correct answer to the group.)

(If the problem has not been solved after 20 minutes have elapsed, E will say:) I am sorry, but time is up. The correct answer is _____.

(After the completion of each problem, except for the last one, E will say:) Now we will go on to the _____ (second, third, or fourth) problem. The next object for you to identify is _____ (animal, vegetable, or mineral). Please formulate your first question.

(When the last problem has been completed, E will say:) That was the last of the four problems for today. The group's total earnings are _____ dollars.

You may now turn to the third page of your instructions and read along with me. Before dividing up the group's earnings, I would like each of you to fill out a short questionnaire which I shall now distribute. (E passes out the questionnaire.)

Please look at only the first page of this questionnaire at this time. It contains a series of questions asking you to evaluate the performance of yourself and each of the other group members during this session. The answers to these questions will be used by me to eliminate from the group anyone that most of you think has been detrimental to the group's performance.

Let me assure you that your answers to these questions will be completely confidential. I would like to ask your co-operation in keeping all the responses you make on this questionnaire to yourself. Do not discuss them with anyone else no matter whether such a person is or is not a member of this group. Is this agreeable to all of you? (E waits for everyone to agree.) I, in turn, promise not to tell other group members nor anyone else how any of you answered these questions, so please be frank in your responses.

After you have completed the questions on the first page of the questionnaire, go on to complete the questions on the second page. If you find any of these questions unclear, please feel free to ask me to clarify them. Do not go on to the third page of the questionnaire until I tell you to do so.

Please don't let anyone else see what responses you are making on your questionnaire. Try to move your chair to a position far enough away from your neighbor's to insure privacy. (E will wait for the Ss to complete the first six questions on the questionnaire. He will attempt to clarify any of the questionnaire items that Ss might find unclear.)

Now you may turn to the last page of your instructions. The last question will ask you to make judgment about how the money earned by the group should be divided. Each of you will actually be given a percentage of the group's earnings equal to the average of the percentage assigned to you by each group member, including yourself. This distribution will, of course, be kept confidential. Other group members will only be told the average percentage of reward assigned to them. No one will ever be told the specific percentage assigned to her by other group members. You may now turn to page three of your questionnaire and answer question seven. After you have made your decision as to how the

money should be divided, please fold your questionnaire in half and pass them up to me.

(E will wait until the questionnaires have been returned to him.) It is necessary for me to leave the room for a few minutes to calculate how much money each of you will receive. I shall be back shortly with your pay envelopes. Please do not discuss anything with one another while I am out of the room.

(E will then calculate the average percentage of reward that was assigned to each S, the dollar amount each S is to receive, and put that amount of money in an envelope with the S's name on it.) I have finished calculating the percentage of the group's earnings and the dollar amount that each of you are to receive. I will now give each of you a sealed envelope containing the amount of money each of you will be paid for participating in this experiment. Please come up one at a time, pick up your envelope, and sign the line I will indicate on the voucher. You may begin. (E indicates the S sitting in position number one.)

When we are ready to schedule the additional sessions for this group, you will be notified as to the time and place. I can't tell you when that will be yet since we are having some trouble with scheduling. The coders who were working in the observation room tonight are leaving and new coders will have to be trained. Also,

we don't know as yet if we will have enough money to call back all the groups for the additional session. It may be necessary for us to select at random only half of the groups. Either way, you will be hearing from us by the end of the month.

I would like to thank you for participating in this experiment and hope you found doing so interesting. You may have my assurance of complete confidentiality. None of you will ever be identified personally in the reporting of the results of this experiment. I would like for you to not discuss what went on during this session with anyone else, since we don't want any of our future subjects to know the procedure we use before they come in here. If someone with previous knowledge of the experimental procedure was used as a subject, the validity of this research would be jeopardized. Do I have your word that you will maintain secrecy with regard to this experiment? (E waits for a positive response from each S.)

Do any of you have any questions you wish to ask before this group breaks up for the evening? (E will answer any questions that come up in such a way as to not give the Ss any information that was not contained in the preceding instructions.)

Thanks once again for your co-operation. So long.

APPENDIX D

REWARD DISTRIBUTION SHEET

REWARD DISTRIBUTION SHEET

Myself ___ problems right ___ problems right per minute

Partner ___ problems right ___ problems right per minute

Total earned by group $_____

Check off the way you want the money to be allocated.

_____ I give myself 0% and my partner 100%
_____ I give myself 5% and my partner 95%
_____ I give myself 10% and my partner 90%
_____ I give myself 15% and my partner 85%
_____ I give myself 20% and my partner 80%
_____ I give myself 25% and my partner 75%
_____ I give myself 30% and my partner 70%
_____ I give myself 35% and my partner 65%
_____ I give myself 40% and my partner 60%
_____ I give myself 45% and my partner 55%
_____ I give myself 50% and my partner 50%
_____ I give myself 55% and my partner 45%
_____ I give myself 60% and my partner 40%
_____ I give myself 65% and my partner 35%
_____ I give myself 70% and my partner 30%
_____ I give myself 75% and my partner 25%
_____ I give myself 80% and my partner 20%
_____ I give myself 85% and my partner 15%
_____ I give myself 90% and my partner 10%
_____ I give myself 95% and my partner 5%
_____ I give myself 100% and my partner 0%

APPENDIX E

LOW MAINTENANCE-RELEVANT INSTRUCTIONS

LOW MAINTENANCE-RELEVANT INSTRUCTIONS

(E is seated in a room where the S has been instructed to report for an experiment. When the S arrives, E says:)

Hello. Are you here for motivation research? (If the S answers in the affirmative, E says:)

Please take the seat on the other side of the partition. (E points to the partition.)

(A minute or so after the subject arrives, E says:) I will be back in a few minutes.

(E leaves experiment room, goes to the room where the confederate is waiting, signals the confederate that the subject has arrived, and returns to the experiment room. The confederate enters the experiment room about a minute after the experimenter returns. E then says to the confederate:)

Please sit down at this table (E indicates the remaining seat at the partitioned table).

(E, addressing both the S and the confederate, says:) Please do not communicate with one another in any way. As you

know, you have volunteered to participate in a study dealing with motivation. During this session, your task will be to solve sixty multiplication problems. You will have twenty minutes to do this. That is a rate of three problems per minute. The problems will be given to you through this tape recorder. (E points to the tape recorder on the table in the front of the room.)

I will now give each of you an answer sheet. (E gives an answer sheet to both the subject and the confederate.)

We are having you use headphones so that you will not be bothered by extraneous noises. You will have ten seconds to work the problem in your head and another ten seconds to mark the answer on your answer sheet. We realize that this is a difficult task, but we would like you to do your best.

Here is an example of how the problems will be presented:

4 × 12 equals (pause) A. 8, B. 38, C. 48, D. 28

Are there any questions?

We are going to pay you at a group rate of ten cents for every right answer. This money will be divided up after you are both finished and we have scored your answer sheets.

If there are no questions, please begin.

(E turns on the tape recorder, leaves the room, and returns after twenty minutes.)

I am now going to collect and score your answer sheets. This will take approximately five minutes. When I have finished scoring your answer sheets, we will continue with the rest of the study. Since, for the next part of the study, it will be necessary for one of you to leave the room, would you please come with me to the room where you will be working. (E indicates that he is addressing the confederate, without mentioning her name. E then leaves with the confederate, goes with her to the calculating room, waits there for five minutes, and then returns to the experiment room. E says to S:)

You have been selected by chance to divide the group's earnings. I am now going to give you a reward distribution sheet. (E gives the S a reward distribution sheet.)

In the appropriate place, write down the following information: You got 27 problems right out of 60. That is a rate of 1.4 problems right per minute.

Your partner got 9 problems right out of 60. That is a rate of .4 problems right per minute.

At ten cents for every right answer, you as a group have earned $3.60. Please indicate on your reward distribution sheet how this money should be divided. (E waits for S to fill out the reward distribution sheet, picks it up, pays her the appropriate amount of money, and says to her:)

Please sign this voucher. (E indicates to S the appropriate place for her to sign her name.)

Now, would you please take a minute to fill out this questionnaire? When you have finished, you may leave. (E waits for S to complete the questionnaire, picks it up, and just as S is leaving says:)

Thank you very much for your cooperation during this study.

APPENDIX F

TABLES OF MEANS

TABLES OF MEANS

Table 13

Desirability Ratings:
Group Members × Confederates

Confederate	Group Member		
	Subjects	Confederates	
1	1.21	3.00	2.11
2	1.32	3.18	2.25
	1.27	3.09	2.18

Table 14

Sociometric Rankings:
Group Members × Confederates

Confederate	Group Member		
	Subjects	Confederates	
1	2.05	3.84	2.95
2	2.08	3.77	2.92
	2.07	3.80	2.93

Table 15

Best Ideas:
Group Members × Confederates

Confederate	Group Member		
	Subjects	Confederates	
1	2.50	5.00	3.75
2	2.54	4.86	3.70
	2.52	4.93	3.72

Table 16

Relative Contribution:
Group Members × Confederates

Confederate	Group Member		
	Subjects	Confederates	
1	23.71	4.46	14.08
2	23.22	7.11	15.17
	23.46	5.79	14.63

Table 17

Allocations:
Group Members × Confederates

Confederate	Group Member		
	Subjects	Confederates	
1	22.05	11.71	16.88
2	21.09	14.82	18.06
	21.67	13.27	17.47

Table 18

Socio-Emotional Scores:
Allocations × Confederates

Confederate	Allocations		
	Equal	Unequal	
1	-.01013	.00344	-.00376
2	.00260	-.03850	-.01753
	-.00344	-.01795	-.01065

Table 19

Sociometric Rankings:
Allocations × Confederates

Confederate	Allocations		
	Equal	Unequal	
1	2.12	2.08	2.10
2	2.10	2.00	2.05
	2.11	2.04	2.08

Table 20

Allocations:
Socio-Emotional Scores × Maintenance-Relevance

Socio-Emotional Scores	Maintenance-Relevance		
	High	Low	
High	50.00	37.50	43.75
Low	15.63	33.75	24.69
	32.81	35.63	34.22