THE EFFECTS OF CONGRUENT AND
INCONGRUENT SOCIAL STRUCTURES
ON GROUP PERFORMANCE

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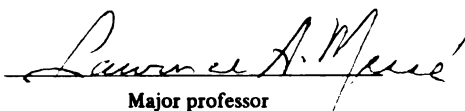1973

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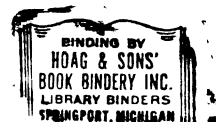on Group Performance**

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ABSTRACT

THE EFFECTS OF CONGRUENT AND INCONGRUENT
SOCIAL STRUCTURES ON GROUP PERFORMANCE

By

John Preston Wilson

The present research investigated the effects of congruent
and incongruent social structures on performance in small groups.
Using a Sentence Completion Test, 144 undergraduates were selected:
36 high safety (and low esteem) males; 36 high safety (and low
esteem) females; 36 high esteem (and low safety) males; 36 high
esteem (and low safety) females. The subjects were constituted into
48 three-person groups homogeneous with regard to sex and motivation
and subjected to an experimental manipulation which placed them in
either a hierarchical or egalitarian social structure. All groups
were given a standardized task, and members' task-oriented behaviors
were coded using Borgatta's IPS coding system.

The first aspect of the study was concerned with the effects
of congruent and incongruent social structures on group productivity.
As predicted, group productivity for males was greatest when function-
ing in the social structure congruent with the predominant motivational
orientation of the members. Esteem-oriented males had significantly
greater productivity in the egalitarian social structure whereas

safety-oriented males had greater productivity in the hierarchical social structure. There were no significant differences in productivity for females due to the nature of the task.

The second part of the study ascertained the effects of congruent and incongruent social structures on member task satisfaction, cohesiveness and anxiety. As predicted, esteem-oriented males were significantly more satisfied with their performance on the task in the egalitarian social structure whereas safety-oriented males had greater task satisfaction in the hierarchical social structure. The results further indicated that esteem-oriented females had greater overall task satisfaction than did the safety-oriented females. Moreover, irrespective of motivational orientation, females were more satisfied with their task performance in the egalitarian social structure.

The results for cohesiveness indicated that irrespective of social structure both male and female esteem-oriented subjects were more cohesive than the safety-oriented subjects. Moreover, the mean cohesiveness scores for esteem-oriented subjects were comparatively larger in the congruent social structure than they were for safety-oriented subjects. It was suggested that the greater cohesiveness of esteem-oriented subjects reflected motivationally based differences in the ability to form such relationships within the group.

The results for anxiety showed that irrespective of motivational orientation, all subjects were significantly less anxious in the egalitarian social structure. The implications of this finding were

discussed and it was suggested that the egalitarian social structure offered a greater opportunity for anxiety reduction than did the hierarchical social structure.

The third portion of the study explored the effects of the imposed social structures on the distribution of task-oriented activity within the group. It was found that safety-oriented groups were significantly more hierarchical than esteem-oriented groups on the distribution of task-oriented activity. Moreover, the distribution of task-oriented activity was more hierarchical for males than for females. Finally, the suggesting of solutions, one manifestation of competence, became more hierarchically distributed during the experiment. The implications of these results were discussed in terms of the evolution of a functional role structure to meet the demands of the situation.

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To Bill Butterfield,

whose unconditional positive regard

ten years ago gave me the encouragement

to complete a Ph.D. in Psychology. Today

I have realized the goal and it is with

the deepest affection that I say a small

thank you for your selflessness and giving,

without which I would not have aspired to

advanced studies.

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CHAPTER I

INTRODUCTION

In recent years the experimental analysis of behavior in small groups has received increased attention. While there are undoubtedly many reasons which account for this phenomenon, one of the most important is simply that much social behavior occurs in small groups. It can be seen, therefore, that the understanding of the different factors which influence small group behavior is of social relevance and heuristic importance.

One area of research which has not been extensively investigated is that of personality and group structure. Perhaps one reason for this is that previous research with personality variables has not produced many significant results. For example, Mann (1959), in his comprehensive review of the literature, found that most correlations between personality variables and group performance were low and often insignificant. In a review of six personality traits affecting group performance, Heslin (1964) found only two, ability and emotional adjustment, to be consistently related to effective performance. Further, in a more contemporary review of small group research, McGrath and Altman (1966) note that in only 16 of more than 250 studies were personality factors of any significant concern.

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It should be noted, however, that the typical approach to much of the unsuccessful research was to assess a single personality trait and measure how it correlated with different dependent variables. Moreover, many of the assessment instruments were of questionable reliability and validity. As McGrath and Altman (1966) note:

> the results are equivocal regarding the effects of personality-social factors on individual and group performance; this equivocation is somewhat in contrast to the attention such variables have received by researchers and consumers. . . . It may be that the confused results are due to a methodological problem. For example, in aptitude and ability measurement, psychologists have well-developed tools whereas in the measurement of personality, attitudes and group cohesion our measurement technology is less advanced [pp. 64-66].

Considering the general lack of success in the study of personality influences upon group performance, it is necessary to question why a single personality variable such as dominance, for example, should be consistently related to group performance on different tasks under different situational demands. Recently, it has been shown by Hackman (1968) and Sorenson (1971) that task demands alone can account for as much as 50% of the variance in performance and the types of interaction profiles within small groups. Thus, if not controlled, task and situational factors might mitigate the effect of personality variables.

Furthermore, there is the question of the conceptualization and measurement of personality. Conceptually, personality refers to a complex set of motivations and identity referrents.[1] It may be seen,

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[1]See Levy, L., *Conceptions of Personality*, for an extensive analysis of different conceptions of personality.

therefore, that measuring only one attribute of a dynamic personality structure through questionable procedures, in effect, ignores the interrelationship which that particular characteristic has with other dimensions of the personality structure. For example, Coopersmith (1967) found high self-esteem to be positively related to intelligence and creativity.

To surmount many of these methodological and conceptual problems, more recent research has attempted to study the effects of homogeneous and heterogeneous groups composed on the basis of personality profile similarities or differences. Moreover, when the personality variables have been conceptualized within an adequate theoretical framework that in some way attempts systematically to define an interrelated set of personality attributes, the proportion of significant findings increases.[2] Furthermore, while it is clear that group composition, task demands and situational factors all interact to affect group processes and performance, the nature of these interactions remains unknown. In an excellent review of the literature on the effects of personality and group composition, Shaw (1971) states:

> We have just begun the analysis of group composition effects. It is already clear that such effects are far more complex than they appear to be initially. We may hazard a guess that interpersonal compatibility is the basic variable in group composition; *the large task facing group dynamicists is the theoretical analysis of interpersonal relations so that the compatibility-incompatibility of individuals can be identified* [p. 231, italics mine].

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[2]Some examples include research on cognitive complexity (Tuckman, 1964, 1967; Stager, 1967) and motivational levels (Aronoff and Messé, 1970).

In a similar review of the effects of group compositional variables upon productivity in small groups, Steiner (1972) writes:

> Although dispositional qualities affect members' ratings of their satisfaction with group experiences and outcomes, evidence concerning the impact of such variables on actual productivity is sparse and contradictory. The effect of dispositional heterogeneity on performance may be expected to depend upon task demands. When an adequate role system is available to guide collective action, dispositional qualities may have little effect on outcomes. In the absence of a role system, heterogeneity may either promote or inhibit task motivation and the solution of organizational problems [p. 127].

Steiner's position raises some important questions: What is an adequate role system for individuals of varying personality dispositions? Do individuals of different personality and motivational orientations prefer or evolve different role systems and organizational structures? If so, what effects does the role system have upon productivity, member satisfaction, cohesiveness, anxiety and other factors jointly influenced by personality characteristics and the organizational structure?

Some insight into the nature of what constitutes an adequate role system may be found in the theoretical conceptualization of personality by Maslow (1965, 1970) and Hampden-Turner (1970). In his seminal work *Eupsychian Management*, Maslow argues that the question of the "best" organizational structure is one that gratifies the predominant psychological needs of the individuals within it. Based upon the hierarchical conceptualization of human motivation, Maslow conceives of different organizational and role structures for individuals functioning at different levels in the need-hierarchy.

Thus, the ideal social structure (Eupsychian) is one which maximizes the possibility of need relevant gratification so that an individual can function at an optimal level. Thus, as a consequence of need relevant gratification both the individual and the social structure benefit in synergistic ways. From Maslow's theorizing it may be expected, therefore, that the most functional social structure for individuals strongly safety-oriented would be different in most respects than for persons strongly esteem-oriented.

The implications of this model for organizational structuring have wide-ranging consequences which involve virtually all aspects of human behavior. If, for example, a social structure was organized in an eupsychian way that enabled each individual to receive gratification of his prepotent need state, then effects of such a social system would be widespread in terms of psychological functioning. Among the more positive individual changes likely to develop would be increased mental health, less destructiveness and hostility, greater creativity and productiveness, more spontaneity, trust, empathy and cooperation, as well as increased synergy towards commonly shared values and ideals.

Research by Blake, Mouton, Barnes and Greiner (1964) supports this idea. They found substantial changes in an industrial plant as the result of managerial grid seminars which were designed to enhance interpersonal communication skills, competency in dealing with emotional problems, and general managerial abilities. As a consequence of these seminars to promote personal effectiveness, the following

changes were reported in the company: (1) 26% increase in the number of managers reporting superior quality decisions; (2) 22% increase in the number of managers reporting that their supervisor was more open and informative; (3) 24% increase in the number of managers · reporting stronger group effort; (4) 26% increase in the number of managers reporting intense, lively group discussion; (5) a significant increase in aid to minority group children of company employees; (6) 49% of all managers reporting more effective relationship with superior; (7) controllable costs were reduced with substantially greater profits realized; (8) the productivity per man hour increased significantly.

Although there were probably other factors besides the intensive managerial encounter sessions responsible for some of the changes reported, follow-up research by Greiner (1965) revealed that changes in the most improved managers continued to have widespread effects in terms of management-employee relations. The most improved managers had more cohesive relationships with workers and were more influential and respected. Clearly, the results of Blake *et al.* indicated that increased psychological competency within the managerial level of the industry had widespread effects in terms of the nature of interpersonal relationships as well as personal and job satisfaction. In a very real sense the plant became more eupsychian.

In a brilliant but little known work, *Radical Man,* Hampden-Turner has proposed a model of psycho-social development which synthesizes many theories of personality and motivation. In many ways

Hampden-Turner's model is similar to that of Maslow and other epigenetic personality theorists (e.g., Erikson, 1968; White, 1959).

Explication of Hampden-Turner's model of psycho-social development is useful because it has important implications for understanding the impact of personality development upon formation and development of social structures as well as the consequences of these structures on various aspects of behavior. Hampden-Turner conceives of personality development as a process in which the personality structure of the individual changes with time as the result of experiences with others and the environment (see Figure 1). As Hampden-Turner states:

> With continual revolutions of the intersecting cycles [of two individuals] it is possible for perceptions to be improved, identities strengthened and invested competence to be confirmed. It is possible for each party to the interaction to receive support and information from the other, so that every segment of the two cycles is enhanced and developed. This being so, one may think of each cycle as a helix spiraling upwards and of the model as a double helix [1970, p. 32].

With respect to the relationship between the level of psycho-social development and the social structure of formal systems, Hampden-Turner states that for each segment of the cycle of development there is a corresponding structure in formal social structures. Thus, it can be seen that there is an isomorphism between the level of personality development and the structure of organizations.[3] Hampden-Turner writes:

> It is because these structures are designed to fit men and their needs that the structures themselves must develop, or

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[3]See Chapter VI of *Radical Man* for a more detailed account of this process.

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Man exists freely
a) through the quality of his PERCEPTION
b) the strength of his IDENTITY

i) Each will attempt to
INTEGRATE the FEEDBACK
from this process into
mental matrices of
developing COMPLEXITY

c) and the synthesis of
these into his anticipated
and experienced COMPETENCE.

h) and through a *dialectic*
achieve a HIGHER SYNERGY

d) He INVESTS this with
intensity and *authenticity*
in his human environment

g) He seeks to make a SELF-
CONFIRMING, SELF-TRANSCENDING
IMPACT upon the other(s)

e) by periodically SUSPENDING
his cognitive structures
and RISKING himself

f) in trying to BRIDGE
THE DISTANCE to the other(s)

Figure 1

Hampden-Turner Model of Psycho-Social Development[a]

[a]See Chapter III of *Radical Man* for a more extensive discussion of the theory.

more accurately, must be developed in order to support higher
and higher levels of psycho-social development. . . . Hence,
in order for a group to develop psycho-socially, structures
must be periodically reformed to reflect the increasing growth
in social relationships [p. 129].

Analysis of Hampden-Turner's model suggests that when social
structures are not functionally related to the personality develop-
ment of the individual, they will be changed in ways that are more
congruent with the personality structure. Thus, from the theoretical
formulations of Maslow (1965) and Hampden-Turner (1970) it may be
seen that the question of the optimally functional social structure
can be approached by defining the level of personality development
of the persons within it. Moreover, if the level of personality
development influences what is perceived to be the appropriate type
of social structure to regulate various forms of social behavior,
then it would be expected that persons functioning at approximately
the same level of development would prefer social structures congruent
with their personality needs. Therefore, the nature, organization
and predominant values of these social structures would vary with the
prepotent motives and values of the individuals comprising them.
Recent research on the relationship between personality development
and political behavior supports this argument. Knutson (1972), for
example, found that individuals functioning at the esteem and self-
actualizing levels of Maslow's hierarchy of needs preferred political
systems and policies that were more democratic than authoritarian in
structure, exhibited strong faith-in-people, were lower in anxiety,
felt competent in most aspects of their behavioral functioning, and

had low scores on measures of anomie and dogmatism. The opposite findings were reported for persons functioning at the levels of physiological and safety needs.

Similar results were found by Haan, Smith and Block (1968) in a study of students participating in the Berkeley revolts at the University of California. As measured by Kohlberg's moral development scale, a significant number of the revolt leaders were found to be functioning at the highest levels of moral development, social contract and individual conscience. Although there are differences in conceptualization, these two levels of moral development closely parallel the self-esteem and self-actualizing levels of motivation as described by Maslow (1970). These students saw inequities and injustices in the prevailing bureaucratic structure and sought to change it so that they had a much greater input into the governing of the university system. Certainly, the level of moral development of these students was significantly related to the perceived need to change the university's organizational structure.

In a similar study of student activists at Boston University, Doress (1968) found that left-wing student activists, as opposed to right-wing student activists, were significantly less dogmatic and authoritarian, and they engaged in less perceptual narrowing and defensiveness. Also, the left-wing activists scored significantly higher on measures of existentiality, dominance, self-actualization, sensitivity to feelings, achievement motivation, independence, flexibility, inner-directedness, and moral freedom. Further, the

results indicated that the left-wing students were more likely to demonstrate their political beliefs through active participation and attempts to change political social structures in a way consonant with their world view and philosophy.

Although the studies reviewed above focused on the relationship of personality factors and political behavior, they raise broader questions as to the effects of incongruent social structures on the personality, interpersonal relationships and the motivation of the individuals within them.

The purpose of the present investigation was to ascertain empirically the effects of social structures that were either congruent or incongruent with the motivational characteristics of the persons within them. Specifically, the research studied the effects of congruent and incongruent social structures on productivity, task satisfaction, cohesiveness, and anxiety in small groups.

The Effects of Personality, Group Structure and Other Factors on Performance in Small Groups

While much of the research investigating the effects of personality on small group processes has been disappointing, a number of studies have shown that personality does have a significant influence upon group structure.

Personality Characteristics and Group Performance

One of the earliest studies demonstrating the effects of motivational factors upon group performance was that of Schutz (1955).

He postulated that three needs, inclusion, control and affection, could explain an individual's interaction with other persons, since one of these three basic need states was predominant.

On the basis of need characteristics, Schutz (1955) formed groups that were either compatible or incompatible on need-orientation. Controlling for intelligence, Schutz predicted that need compatible groups would be more productive than need incompatible groups on the three tasks of varying degrees of difficulty. The most difficult task demanded a division of labor to coordinate a military-type of plotting problem. The second task was an intercept problem and required little coordinated effort. The third task was a decoding problem and logical exercise. The results confirmed the hypothesis and found that compatible groups were more productive than incompatible ones and the effect increased with the difficulty of the task. Schutz's study is especially important since it points to the role motivational factors play in effective group interaction and implies that when there is need gratification, productivity and performance are increased.

In a somewhat similar study, Smelser (1961) studied the relationship of dominance-submissiveness and role effectiveness. He hypothesized that persons who are compatible with respect to dominance would perform better on a task demanding mutual cooperation, since role compatibility is less anxiety-provoking than role incompatibility. Subjects were selected on the basis of their dominance scores on the CPI scale, and assigned roles (dominant or submissive) that were

either compatible or incompatible with their dominance or submissiveness characteristics. The results indicated that dominant-submissive congruent roles were most effective in performing the task, producing higher scores than groups in which the roles were incongruent.

Altman and Haythorn (1967b) failed to confirm the general results of Smelser's study. Homogeneous and heterogeneous dyads were composed on the basis of needs for achievement, affiliation and dominance. It was predicted that dyads homogeneous for either need achievement or need affiliation would be more compatible and perform better than heterogeneous groups of the same composition. The results indicated that homogeneous need affiliation dyads performed better then heterogeneous ones. Surprisingly, however, heterogeneous need achievement dyads outperformed homogeneous ones. Moreover, homogeneous need dominance dyads were found to be more compatible and performed better than heterogeneous need dominance dyads, contrary to Smelser's findings.

The contradictory results of Smelser (1961) and Altman and Haythorn (1967b) suggest that the relationship between group performance and personality is a complex one. While undoubtedly there are personality variables which mediate performance in small groups, the assessment of a single personality trait is unlikely to yield significant results, as Mann (1959) has noted. If, however, a larger, interrelated set of personality variables had been defined, then the contradictory results might be understood. For example, dominance may correlate positively with self-esteem, achievement motivation and

needs for power. Thus, in the case of Altman and Haythorn's study, the homogeneous need achievement groups may have had more within group competition to gain peer recognition or a position of dominance in the group. If this were true, then the competition among the members might have diminished their actual performance.

Mussen and Porter (1959), taking multiple factors into consideration, found that subjects who were rated as effective group leaders scored higher in need for affiliation and achievement on the TAT than the other group members, as well as having stronger feelings of adequacy and fewer negative self-concepts.

In a somewhat similar approach, Hoffman and Maier (1961) formed four-person groups that were either homogeneous or heterogeneous on the basis of profile similarities as measured by the Guilford-Zimmerman Temperament Survey. The groups were given a discussion task which demanded a creative solution. The results indicated that the heterogeneous groups produced more creative solutions than the homogeneous groups. Hoffman and Maier explained their results by suggesting that since heterogeneous groups possess a diversity in personality types, they therefore bring a wider range of information to the task which they implement in solving the problem. Although this explanation has merit, it has been criticized by Steiner (1972) on the basis that Hoffman and Maier failed to test whether or not diversity of personality types is in fact correlated with a wider variance in task-relevant viewpoints.

Cohesiveness and Group
Performance

Cohesiveness has been studied primarily as an independent

variable in research on group performance (Lott and Lott, 1965).

Since the present study was concerned with cohesiveness as a depen-

dent variable, a review of the studies relevant to group performance

is appropriate here.

Several studies have investigated the effects of cohesiveness

upon group productivity. Although the definitions of cohesiveness

are often vague and poorly operationalized, the results, for the

most part, are consistent.[4]

Goodacre (1951) assessed the degree of cohesiveness among

Army Squads and found a moderately strong, positive correlation

between cohesiveness and actual performance on the military range.

In other studies of military situations, Hemphill and Sechrest (1952)

found that more cohesive aircraft crews had a higher success rate

in bombing accuracy than less cohesive crews. A similar finding was

reported by Strupp and Hausman (1953) who found that cohesive main-

tenance crews were more productive in servicing aircraft equipment.

The results from studies in industrial settings closely

parallel those from other types of field research. Seashore (1955),

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[4]Lott and Lott (1965), in an excellent review of the effects
of cohesiveness upon task performance, note that the data are
equivocal. The problem with many of the studies, however, is that
the measures of productivity and cohesiveness varied greatly between
experiments with little correspondence in the operational definitions
of the variables under consideration.

in a study of an industrial work group, found consistently higher productivity among highly cohesive work groups. Moreover, he also found that there was less anxiety among cohesive groups, more interaction and awareness of production norms. Similar findings were reported by Van Zelst (1952) and Speroff and Kerr (1952) in which groups of skilled laborers, formed on the basis of sociometric choice, tended to accomplish more work at a lower cost and labor turnover rate than groups where there was less cohesiveness. Similar results are also summarized in Katz and Kahn (1967) who noted that productivity, satisfaction[5] and worker morale are high when there is cohesiveness and acceptance of organizational goals.

The importance of these field studies is that they indicate that production and performance were superior when there was cohesiveness within the work group. Although the studies do not detail the exact nature of the group's social structure, the high degree of cohesiveness suggests that an adequate role system had been established which successfully met the demands of the situation.

In a laboratory study on cohesiveness and group interaction, Lott and Lott (1961) formed groups composed of either friends or strangers from campus organizations. Assessments were made at the

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[5]Katz and Kahn (1967), in a review of the literature on job satisfaction and productivity, note that satisfaction is *not* positively related to higher productivity. The problem essentially entails an adequate definition of satisfaction, i.e., satisfaction with what aspects of the job or task situation.

beginning of group meetings to ascertain attraction to the other group members by rating the extent to which each person liked the other person. A cohesiveness measure was derived by averaging the dyadic ratings. The groups were then given a discussion task and the gross frequency of communication between pairs was recorded. The results indicated a moderately positive correlation (r = .42) between cohesiveness and the amount of communication within the group.

Personality Characteristics, Social Structure and Group Performance

There are several major studies, although not directly concerned with the relationship between personality variables and group performance measures per se, which have important implications for understanding the effects of different social structures upon group interactional processes.

Haythorn, Couch, Haefner, Langham, and Carter (1956) composed four-person groups on the basis of authoritarianism as measured by the F-scale. In all, four types of groups were formed: (1) high F leader, high F followers; (2) high F leader, low F followers; (3) low F leader, high F followers; (4) low F leader, low F followers. The groups were given a human relations task and observers recorded the interaction processes within the groups. In analyzing the effects of authoritarian and egalitarian leadership styles, Haythorn *et al.* found highly authoritarian leaders (high F) to be less concerned with group approval, more autocratic, and less sensitive to other group

members than the less authoritarian leaders (low F). It was further noted that high F followers, as opposed to low F followers, were more satisfied with the autocratic leader. Moreover, followers of the low F leader were rated as having more influence and inputs into the discussion. The results of this study are especially important since they indicated that authoritarian followers were most satisfied in the hierarchical social structure with an autocratic leader. In contrast, the less authoritarian followers preferred a more democratic social structure in which they had more influence.

In an extension of the work of Haythorn *et al.* (1956b), Shaw (1959b) constituted four-person groups of the same types used in the Haythorn *et al.* study and assigned them to either a centralized or decentralized communication network. Shaw hypothesized that groups with highly authoritarian members would have better performance and a greater degree of satisfaction in the centralized communication network whereas the nonauthoritarian members would have superior performance and satisfaction in the decentralized network. The results of the study failed to confirm the hypothesis and were further confounded by intelligence differences among the members. Nonetheless, the data were in the predicted direction.

One of the interesting aspects of Shaw's (1959b) research is that it suggests that there might be a relationship between the personality characteristics of the group members and a particular type of social structure that is most suited to accomplishing the task at hand. The question, most simply, is whether or not the social

structure of the group makes any difference in regard to the
personality characteristics of the members and their ability to
function effectively within it. If so, a need-relevant social
structure should facilitate higher levels of productivity, per-
formance, cohesiveness, efficiency and member satisfaction since
the social structure maximizes the possibility of basic need
gratification.

In a partial test of this hypothesis, Morse and Reimer (1956)
studied the effects of changes in the organizational structure of a
large corporation. Using four equivalent clerical units of the
company, two types of organizational structures were implemented.
The autonomy program was designed to increase employee decision-
making in management whereas the hierarchical program was created to
increase upper-level decision-making by the company. Measures of
employee morale, productivity, and turnover rate were made before,
during, and after the experimental changes were introduced into the
organization. Morse and Reimer hypothesized that increased partici-
pation in decision-making would increase employee satisfaction and
productivity whereas a decreased involvement would reduce satisfac-
tion and the motivation to produce for need-related reasons.

The results are most interesting. There was a significant
increase in satisfaction with both supervisors and the company in
general for the employees in the autonomous condition. In contrast,
there was a significant decrease in satisfaction for the hierarchical
group. Furthermore, it is interesting to note that of 23 clerical

employees who terminated employment for personal reasons, 19 of them were from the hierarchically-controlled program. The results also indicated that there was an increase in productivity for both groups but the effect was significantly greater for the hierarchically-controlled group.

To study the relationship between personality factors, the type of experimentally changed organizational structure (hierarchical or autonomous) and employee satisfaction, Tannebaum and Allport (1956) further investigated the corporation reported in Morse and Reimer's (1956) study. Tannebaum and Allport hypothesized that if an individual was suited for either the hierarchical or autonomous organizational structure, his attitudes towards the company would be favorable. On the other hand, when an employee was mismatched and placed into an organizational structure incompatible with his personality disposition, his attitudes towards the company would be unfavorable and his personal satisfaction low.

Assessments were made to determine whether or not the employees were suited for either the hierarchical or autonomous organizational structure. A scale was administered to the subjects which essentially ascertained whether the employee was oriented towards self-reliance, autonomy, striving for personal competency and initiative versus dependency, preference for defined role, lack of responsibility and submission to authority figures.

The results have strong implications with respect to the question of optimally functional social structures. It was found

that 76% of the individuals suited for the autonomous program wanted it to last a long time as compared with 36.7% of the unsuited employees, a highly significant difference. There were no significant differences for the hierarchical program but the data were in the predicted direction. Moreover, the combined data revealed that irrespective of which program the employees were participating in, suited employees preferred that they keep the organizational structure as implemented in the experimental change. Similarly, the combined data for satisfaction with the program operation indicated that 59.8% of the suited, as opposed to 48.6% of the unsuited, were satisfied with their organizational structure and their roles within it. Finally, an overall measure of liking for the experimental program revealed that 80.0% of the suited, contrasted with 65.2% of the unsuited, felt a strong liking and general sense of satisfaction with the program, a highly significant difference.

While the results of Tannebaum and Allport (1956) are suggestive of the conditions necessary for individual satisfaction within different types of organizational structures, their measures of suitability and unsuitability for the hierarchical and autonomous program were very global. Their assessment scale seemed to measure certain traits or personality dimensions that were polar opposites, such as striving for independence and responsibility versus dependency and submission to authority. In short, their conceptualization of suitability was limited in its theoretical scope and utility.

Cross-Cultural Research on Personality, Social Structure and Group Performance

Recently, there have been several cross-cultural studies demonstrating the role of personality factors on the development of different types of social structures. In two naturalistic studies, Aronoff (1967, 1970) found that different motivational levels can affect the nature of emergent social structures. Using Maslow's (1970) hierarchical conceptualization of motivation, he found that persons strongly safety-oriented typically worked in groups with authoritarian leadership and hierarchically arranged social structures. In contrast, persons strongly esteem-oriented tended to have democratically shared leadership and egalitarian social structures. From an exclusion of a number of alternative hypotheses, Aronoff argued that the motivational characteristics of the members led them to structure the work group to provide satisfaction for their pre-potent needs. Moreover, in a follow-up study, Aronoff (1970) found that when esteem motivated persons entered into the hierarchical work unit, it changed towards an egalitarian one in which they could have more input into the processes governing their group.

In a cross-cultural study on personality characteristics and preferred leadership climates, Meade (1967) replicated Lippitt and White's (1958) classic study of effective leadership styles. Groups composed of 6 ten-year-old Hindu males participated in the study which subjected them to either a democratic or authoritarian leadership

style over a six week period. Measures of morale and productivity
were taken over the six week period and the results were in direct
opposition to the Lippitt and White findings. Morale measures revealed
fewer absences from the group meetings and a greater number of boys
wishing to continue the experiment for the authoritarian condition.
Meade argued that the authoritarian family structure of the Indian
family mitigated against the development of autonomous behavior
patterns in the children. Furthermore, previous research (Singh and
Wherry, 1963) has found the Indian culture oriented towards security
concerns, given the pervasive poverty, disease, unemployment and
general environmental conditions that fail to meet safety needs.
Meade concluded that the authoritarian leadership style was most
suited to the personalities of the Indian boys since their productivity,
morale and cohesiveness were highest with such leadership.

Other cross-cultural research gives additional support to
the findings of the studies described above. Whyte (1963) found
Peruvians to be generally mistrustful and to have low faith-in-people.
In a follow-up study, Williams, Whyte and Green (1966) categorized
Peruvian workers as either high, medium or low in basic level of
trust and measured preferences for, and satisfaction in, various
leadership climates. The results indicated that subjects rated low
in level of trust preferred authoritarian leadership whereas subjects
rated high in level of trust preferred a more democratic and partici-
pative atmosphere.

The results of these studies from two very different cultures, India and Peru, closely parallel Aronoff's (1967) findings from naturalistic studies in the West Indies and suggest that a positive relationship exists between personality dispositions and the type of social structure in which the individual prefers to work.

Cognitive Complexity and Group Structure and Performance

Similar results to those found naturalistically have been found in experimental studies by Tuckman (1964, 1967), who investigated the relationship between the level of cognitive complexity, as described by Harvey, Hunt, and Schroeder (1961) and emergent social structure. In the first study, 12 three-person groups were formed whose members were homogeneous in that their cognitive systems were at one of four levels ranging from concrete to abstract. The results indicated that the degree of emergent social structure (hierarchical-egalitarian) was inversely related to the level of cognitive complexity. In a follow-up study (1967), three-person groups were formed so that half of the groups had the opposite composition. The groups were then given two tasks, one demanding more structure than the other for best performance. The results indicated that in the task demanding less structure, groups composed primarily of cognitively abstract persons outperformed groups with the opposite composition. No significant differences were found in performance on the other task.

In a similar study, Stager (1967) formed 20 four-person groups in which the level of cognitive complexity was varied across the four groups. Stager hypothesized that the degree of cognitive complexity would significantly affect decision-making processes and interpersonal relationships among the group members. The specific hypotheses were as follows: (1) as the percentage of members of a high conceptual level increases in the group there will be a decrease in group structure since the roles are not well defined; (2) in groups in which all the members are of a high conceptual level there will be more conflict generated than in groups in which the conceptual level varies; (3) as the percentage of members of a high conceptual level increases there will be more generating of alternative solutions to the task; (4) the extent of search for novel information will increase as the percentage of high conceptual members increases.

The groups were given a task of making a tactical decision on a military-type invasion problem. Intelligence and level of dominance were controlled in each group. The results confirmed all of the hypotheses and added evidence to the role which cognitive factors play as a personality variable affecting performance in small groups.

More recently, Mitchell (1972) found cognitive complexity positively related to group performance. Sixteen 3-person groups were formed in which eight groups had leaders of high cognitive complexity while the other eight groups had leaders of low cognitive complexity. The groups were given four tasks, two discussion tasks and two problem-solving tasks. Intelligence was controlled across the

group leaders. The results indicated that the group which had leaders of high cognitive complexity had significantly better performance than the groups which had leaders of low cognitive complexity.

Motivational Orientation
and Group Performance

In a more recent study, Aronoff and Messé (1971) empirically determined the influence of personality upon social structures. Operationalizing social structure in small groups as the distribution of task-oriented communicative acts, Aronoff and Messé composed five-person groups homogeneous with respect to either safety or esteem motivation, and found that groups developed types of social structures similar to those found naturalistically (Aronoff, 1967). Scoring the interpersonal behavior with Borgatta's (1965) IPS scoring system, the structure of safety-oriented groups was found to be hierarchical while that of esteem-oriented groups was found to be egalitarian.

Messé, Aronoff and Wilson (1972) found that these same motivational variables mediate the process of role differentiation in small groups. Arguing that motivation influences what factors are perceived to be relevant in determining role differentiation, three-person groups were formed that were homogeneous for either safety or esteem motivation. The results indicated that leadership in esteem-oriented groups was determined by personal manifestations of task competence whereas leadership in safety-oriented groups was related to external attributes of status.

Theoretical Implications

From the studies discussed above, it is clear that
personality factors, when adequately conceptualized, influence
various aspects of group functioning. In particular, the results
of Tuckman (1964, 1967), Aronoff (1967, 1970), Aronoff and Messé
(1971), have gone beyond Tannebaum and Allport's (1956) research to
demonstrate that groups develop social structures that are compatible
with both the motivational and cognitive orientations of their
membership. These findings are of major importance to social scien-
tists concerned with designing and implementing organizational
structures of optimal effectiveness for the social setting in which
they exist in that proper group structuring has consequences affecting
individual behavior ranging from positive mental health to work pro-
ductivity. Moreover, the research mentioned above confirms that the
optimal relationship between the individual and the group is complex
and must take into consideration personality, motivational orientation,
cognitive complexity and the demands of the situation. A remaining
question, however, is to ask about the consequences of an inappropriate
social structure upon the behavior of the group members.

The results of the Morse and Reimer (1956) study indicated
that employee morale, overall satisfaction with the organization,
and productivity increased for persons working in the autonomous con-
dition. However, productivity increased significantly more for the
employees in the hierarchical condition, but they also were less

satisfied than were the persons in the autonomous group. Moreover, Tannebaum and Allport (1956) found that when persons were appropriately suited for either the hierarchical or autonomous organization, they expressed a greater degree of satisfaction with their supervisor and the company and wished to remain in the organizational structure for which they were suited.

Using Maslow's conceptualization of personality and motivation it can be argued that when organizations are structured in such a way as to be need gratifying, the individual is then capable of functioning at an optimal level of performance. In short, what this means is that the person is free to utilize his abilities, skills and competencies to the fullest extent and subsequently maximize the possibility of need-relevant gratification. As this process occurs the individual naturally experiences greater satisfaction with all aspects of his behavior, particularly in the work situation where this satisfaction manifests itself in increased productivity, efficiency, group cohesiveness and solidarity, reduced anxiety and acceptance of the organization. On the other hand, an organizational or social structure that fails to meet the needs of its members is frustrating and inhibits the possibility of maximal need gratification. Consider, for example, those individuals who were unsuited for the autonomous organizational structure in Tannebaum and Allport's (1956) study. From Maslow's theorizing it is logical to postulate that they were safety-oriented, i.e. generally apprehensive, anxious, mistrustful, dependent and had strong feelings of personal inadequacy. In fact, Tannebaum and

Allport's data revealed essentially this constellation of personality characteristics. Those employees preferring the hierarchical program were more conforming, wanted less responsibility, were less empathic, favored rigid adherence to rules, were more dependent and afraid to take risks that involved initiative. It may be argued, therefore, that the autonomous organizational structure, by its very nature, exacerbated anxiety over playing a greater role in decision-making and assuming more responsibility, since those were the very things they attempted to avoid because of perceived personal inadequacies. Clearly, a hierarchical social structure would have been more appropriate for these persons since it is less ambiguous, has definite divisions of labor, demands less personal input, responsibility and decision-making.

By way of contrast, however, those individuals suited for the autonomous program endorsed personal responsibility, liked to develop creative and imaginative ways of accomplishing things, strove for independence of action, were interested in other workers' feelings, and believe in the idea of equal responsibility. Certainly, these personal attributes are characteristic of esteem-motivation in which gratification comes through achievement, recognition, mastery and competency in social and task-oriented activity. It is reasonable, therefore, that they preferred the autonomous program since it enabled them to function at a level that was congruent with their psychological needs. Moreover, it is not too difficult to see how a hierarchical organization would tend to have a stifling and repressive effect upon

their behavior since esteem-related incentives were not present. To submit to management's decisions without adequate consideration of one's own opinions, suggestions and ideas is frustrating in that it requires a level of psychological functioning which is often incongruent with one's motivational goals.

Another reason why the hierarchical social structure may be more appropriate for safety-oriented persons is because the structuring of the group reduces role uncertainty, offers predictability and decreases the level of anxiety or general arousal. From the theoretical perspective of optimal levels of stimulation (Fiske and Maddi, 1961), social situations which are ambiguous, unstructured or lacking in normative prescriptions may increase the arousal level of safety-oriented persons to a strongly inhibiting level that interferes with effective use of cognitive, motor and behavioral coping skills available in the repertoire of the individual. Given the generally high anxiety level of safety-oriented persons (Wilson and Aronoff, in press), it is reasonable to assume that they seek out or impose structure in ambiguous situations such that they can maintain an optimal arousal state and hence function at a level consistent with their prepotent need level. On the other hand, egalitarian social structures appear appropriate for esteem-oriented persons since there is less role structuring and more opportunity for manifestations of competence since the situation offers the opportunity for multiple inputs to the task. A hierarchical social structure, in contrast, is inhibiting since it generates a high arousal level over

not being able to act in ways congruent with the prepotent motivational orientation. In such a situation the optimal level of arousal is exceeded and the esteem-oriented person attempts to restructure the situation in a way congruent with esteem-oriented functioning.

Therefore, it may be argued that the consequence of an organizational structure incongruent with the motivational orientation of the members is dissatisfaction resulting from the frustration and inability to actualize need-relevant gratification. Thus, when an organizational structure is incongruent with the predominant motivation orientation of its members, the organizational structure and the individuals within it function below an optimally desirable level. In tangible terms what this means is that employee productivity, efficiency, morale, cohesiveness and satisfaction fall well below their highest potential. Argyris (1957) has commented similarly:

> Bringing together the evidence regarding the impact of formal organizational principles upon the individual, we must conclude that there are some basic incongruencies between the growth trends of a healthy personality in our culture and the requirements of formal organization. If the principles of formal organization are used as ideally defined, then the employees will tend to work in an environment where (1) they are provided minimal control over their work-a-day world, (2) they are expected to be passive, dependent, subordinate, (3) they are expected to have a short-time perspective, (4) they are induced to perfect and value the frequent use of a few superficial abilities, and (5) they are expected to produce under conditions leading to psychological failure.
> All of these characteristics are incongruent to the ones healthy human beings are postulated to desire. They are much more congruent with the needs of infants in our culture.

Thus, it can be seen that the very structure and functioning of many organizations is psychologically counter-productive. Moreover, Steiner (1972), in a useful conceptualization, notes that actual productivity in a group (organization) is equal to potential productivity minus losses due to faulty group process, where process refers to "the actual steps taken by an individual or group when confronted by a task" (1972, p. 9). Within the framework of the present analysis it may be argued that an incongruent social structure leads to faulty group process. In the case of safety-oriented persons in an egalitarian or autonomous organizational structure, their anxiety and feelings of personal inadequacy could be aroused to such a degree that it interferes with effective group functioning. On the other hand, esteem-oriented persons in a hierarchical condition could be similarly inhibited since the structure limits their capacity to gain esteem through manifestations of competence, mastery and achievement. As a consequence, therefore, productivity, satisfaction, group cohesiveness and other products of interactional processes could decrease since the maximally gratifying situation does not occur or only occurs infrequently. Furthermore, over a period of time it would be expected that the individuals would either change the social structure, as in Aronoff's (1970) study, or leave it out of frustration.[6] One possible explanation for why 19 of 23 persons left the

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[6]Davis (1969) makes a distinction between formal and operative group structures. Social structures which emerge within an already established formal social structure are called operating structures. He states: "Operating structures may indeed be partly a function of

hierarchical organization in Morse and Reimer's (1956) study is because their basic psychological needs were not met.

The purpose of the present study, therefore, was to investigate the effects of experimentally imposed social structures that were either congruent or incongruent with the motivational orientation of the group members, and to examine the effects of these structures upon productivity, task satisfaction, cohesiveness, and anxiety. Homogeneous three-person groups of safety- and esteem-oriented persons were formed and subjected to an experimental manipulation which placed them in both hierarchical or egalitarian social structures.

These experimental conditions generated the following hypotheses:

1. When a social structure is imposed on a group that is incongruent with the predominant motivational orientation of the group members, there will be less group productivity than when the social structure is congruent with the predominant motivational orientation of the group members.

2. When the social structure is incongruent with the predominant motivational orientation of the group members,

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the formal structure, but they are also a response to the actual demands of the task, people, and setting in which the performance-supporting interaction takes place. *When the formal structure is insufficient (out of date, unrealistic, or inefficient) operating structures are especially likely to develop"* (p. 93, italics mine).

there will be less cohesiveness, less satisfaction with the task, and more anxiety. When the social structure is congruent with the predominant motivational orientation of the group, there will be more satisfaction with the task, more cohesiveness, and less anxiety.

3. When subjected to a social structure that is incongruent with the predominant motivational orientation of the group members, there will be an attempt to change it in the direction of a more congruent one. For safety-oriented groups this will be hierarchical and for esteem-oriented groups, egalitarian. If the social structure is congruent with the predominant motivational orientation of the group members there will be no attempt to change it.

CHAPTER II

METHOD

Selection of Subjects

Male and female subjects were recruited through an advertisement in the university newspaper, *The State News*, soliciting for undergraduates interested in earning money by participating in motivational research. The advertisement presented a number of times and places where assessment interviews were held. In response 605 undergraduate students appeared for an interview.

During the assessment, which lasted for approximately one hour, the Aronoff Sentence Completion Test (SCT, Aronoff, 1972) was given to ascertain the extent to which the subjects were concerned with safety or esteem needs. Previous research has demonstrated both the reliability and the validity of the assessment instrument (Messé, Aronoff and Wilson, 1972; Wilson and Aronoff, in press). Six coders working in pairs scored the responses to the SCT by recording each time a person expressed concern for safety or esteem needs. A person's total scores on each motive dimension across the 40 items were used as indices of the level of motivational orientation. The interjudge reliabilities (as measured by the product-moment correlation coefficients) for the three sets of coder pairs

ranged from .70 to .93 with means of .75 and .75 for safety and esteem scores, respectively.

Subjects were selected by the criteria that they were in the upper fifteenth percentile for one motive and lower fifteenth percentile for the other motive, as scored by both coders. In all, 144 persons participated in the study: 36 strongly safety-oriented males; 36 strongly esteem-oriented males; 36 strongly safety-oriented females; and 36 strongly esteem-oriented females. All selected subjects were paid $2.50 for their one hour of participation in the group task.

Design

Subjects were studied in three-person groups, homogeneous with regard to both sex and motivational orientation (either safety or esteem). There were 24 groups of each motivational orientation, with 12 groups in the hierarchical condition and 12 groups in the egalitarian condition. Thus, examination of these independent variables required a factorial design whose dimensions were 2 (motivational orientation: safety or esteem) X 2 (type of social structure imposed: hierarchical or egalitarian) X 2 (sex: male or female) factorial design.

Setting and Tasks

The experiment was conducted in an observation room which permitted video-taping of the group sessions. Upon arrival the

subjects were taken on a tour of the television control room and shown the technical apparatus used in the study and introduced to the equipment operators who were referred to as behavioral technicians. In addition, they also were shown briefly a bogus "Behavioral Rating Form for Group Interactional Processes," which showed a diagram of the experimental room, the table where the subjects worked, and a who-to-whom matrix of communication channels, as well as different classifications of behavioral activity, such as "Shows Leadership." The experimenter informed the subjects that the "Behavioral Rating Form" was being used by the "behavioral technicians" to measure certain aspects of their behavior. Questions were then answered about the technical equipment only and the subjects then proceeded to the experimental room. In the experimental room, the experimental assistant seated the subjects around a rectangular table which was located in the middle of a carpeted room. The three chairs were arranged around the table so that one person (seat B) always faced the wall, located approximately 8 feet away, that contained a one-way mirror and window slots for the television cameras. The remaining subjects sat in seats A and C to the right and left of the person in seat B, facing each other with their profiles to the camera. All the necessary materials for the task were located on a small, round side table.

As the subjects entered the experimental room, the experimental assistant assigned each a seat, and then imposed either an

hierarchical or egalitarian situation. In the hierarchical situation

the experimental assistant said:

> The task which you are about to do is best handled by having
> certain roles within the group. Based on the tests which all
> of you took last fall (experimental assistant queries to see
> if they remember), _____ (name of subject randomly
> selected) has particularly outstanding leadership ability.
> Therefore, (name of subject), we would like you to assume the
> leadership responsibility for this group and take command of
> the task which you are about to do. It is important that you
> maintain this leadership role throughout the entire experi-
> ment. Please note that (name of "behavioral technician") will
> be observing your behavior on the Behavioral Rating Form.
> Are there any questions? Remember it is essential to the
> experiment that you stay in the roles that I have assigned to
> you.

The experimenter then handed the instructions to the person

chosen as the leader. The leadership seat was systematically varied

between seat A and seat C in the hierarchical condition.[7]

In the egalitarian condition, the experimental assistant

said:

> The task which you are about to do is best handled by having
> certain roles within the group. Based on the test which all
> of you took last fall (experimental assistant queries to see
> if they remember), it was found that all of you have particularly
> outstanding leadership ability. In fact, that is why you are
> here together as a group. Therefore, we want you to share
> equally the leadership responsibility for the task which you
> are about to do. What this means is that each of you should
> play equally important roles, contributing equally your ideas,
> suggestions and talents to the task at hand throughout the
> experiment. Please note that (name of "behavioral technicians")
> will be observing your behavior on the Behavioral Rating Form
> to see just how well you do this. Are there any questions?
> Remember it is essential to the experiment that you stay in the
> roles that I have assigned to you.

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[7]Messé, Aronoff and Wilson (1972), in a similar study,
found seats A and C to be leadership positions.

The instructions were then placed face down in the middle of the table and the experimental assistant informed the subjects of his return at the end of the experiment and left.

The instruction sheet gave the directions for the experiment and read as follows:

In this study we are trying to find out how groups produce creative solutions to the problems which confront them. In future years more and more important decisions will be made by individuals working together in groups, pooling their collective resources and abilities to solve problems. It will also be necessary to produce high quality products, ideas, policies, and decisions in a relatively short period of time. Therefore, we would like you to work together as a group to produce a creative solution to the problem detailed below.

1. On the side table you will find a photograph of a modern architectural building. Study the design for a minute or so paying special attention to the structural composition of the building.

2. Using the construction materials on the side table, your job, as a group, is to build a model of this building. Before beginning your work, spend about 5 to 10 minutes discussing how to go about this task.

3. *Your goal as a group is to construct as much of the model as you possibly can within the 1 hour time period.* Keep in mind that we are interested in both the *quality* and *quantity* of your work and are comparing your final product to that of other groups. The group doing the best job will receive an extra $1.00 per person.
   Note: You should keep track of the time and your rate of progress.

4. *It is very important that you keep the roles assigned to you by the experimental assistant.* Throughout the experiment we will be measuring how successful you are in keeping these roles on the "Behavioral Rating Form." The group which is most successful in keeping their assigned roles will receive an additional bonus of $2.00 per person.

5. Please keep the end of the table clear of materials so that we can make an unobstructed record of the experiment.

Coding and Analysis

The preceding procedures permitted the observation of the social interaction of the 48 groups in different conditions which included discussion, planning and building of the model. Eight coders, unaware of the nature of the study, were trained in the use of Interaction Process Scores (IPS) (Borgatta and Crowther, 1965). They used videotapes made of each group to observe the behavior of the subjects during the tasks.

Two coders scored every group using six task-oriented categories of behavioral acts: procedural suggestion (6), suggests solution (7), gives opinion (8), gives orientation (11), draws attention (12), and asks for opinion (13). The interjudge reliability for the coder pairs ranged from .78 to .99, with a mean of .94.

A proportion score was computed for the IPS categories. This proportion was the percentage of a task-oriented activity (e.g. procedural suggestion) for a group member during the experiment. The social structure of the group was assessed by calculating for each group the standard deviation for each IPS activity. Thus, in a perfectly egalitarian group there would be no deviation whatsoever, since each group member would have the same proportion scores (.33). In hierarchical groups, however, the deviation would be much greater since one person dominated the activity. Therefore, the greater the deviation score, the more hierarchical was the group's social structure.

Other Measures:
Group Productivity

Both quantitative and qualitative measures of group

productivity were made. The quantity measure consisted of count-

ing the number of pieces of building materials used in the con-

struction of the model. The qualitative measure was made by taking

a photograph of the final product assembled and having two judges,

unknowledgeable at to the purpose of the study, rate the extent to

which the model approximated the actual building on various criteria,

such as number of floors completed, scaling, detail and exactness

of design. Interjudge reliability for the quality measure as

estimated by the product-moment correlation coefficient was .94.

Cohesiveness, Task Satisfaction
and Anxiety

At the termination of the experiment the subjects were given

the Personal Reaction Inventory (PRI) which assessed the degree of

cohesiveness, task satisfaction and anxiety within the group. The

(PRI) consisted of 30 items, 10 per scale, and asked the subjects

to rate their degree of agreement with each item on a seven-point

Likert scale.[8]

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[8]Anderson (1972) developed an earlier version of the (PRI)
in which factor analysis was used to determine the three factors
adapted for use in the (PRI).

Intelligence and Cognitive
Complexity

In addition to the (SCT) given during the initial assessment interview, the Thorndike Verbal Vocabulary Test to ascertain IQ was administered. The test is a 20-item test that has a .85 correlation with a full scale Weschler Adult Intelligence Scale (Miner, 1964). Cognitive complexity was assessed by the Individual Topical Inventory (ITI) (Tuckman, 1967), which measures four levels of cognitive complexity ranging from concrete to abstract.

Since the subjects were randomly assigned to groups in the two types of social structures, it was not expected that there would be significant differences in intelligence and cognitive complexity between conditions. However, the analysis of variance revealed that esteem-oriented subjects had a higher mean IQ score than did safety-oriented subjects. Moreover, male subjects had significantly higher IQ scores than did females and subjects in the egalitarian condition had significantly higher IQ scores than did subjects in the hierarchical condition. Appendix C contains Table C-3 which indicates that the mean differences were accounted for by a low within group variance, given that the mean IQ for motivation, sex and social structure were less than one point apart. Furthermore, Tables C-4, C-5 and C-6 indicated that there were no correlations between IQ and productivity.

CHAPTER III

RESULTS

The results are organized into three sections. The first

section contains the results of the analysis of variance which

examines the effects of congruent and incongruent social structures

on productivity for safety- and esteem-oriented males and females.

Following next are the analyses of variance which report the effects

of congruent and incongruent social structures on member task satis-

faction, cohesiveness and anxiety. The third section contains the

analysis of variance which examines the effects of the imposed social

structures on the distribution of task-oriented activity within the

group.

Analysis of Variance for
Motivational Orientation,
Social Structure and Sex
for Productivity

Tables 1 and 2 summarize the results of 2 (motivational

orientation: safety or esteem) X 2 (social structure: hierarchical

of egalitarian) X 2 (sex: male or female) analysis of variance for

productivity. Table 1 summarizes the results of the analysis of

variance for productivity and indicates a significant interaction

between motivational orientation, social structure and sex.

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Table 1

Analysis of Variance of Motivational Orientation X
Social Structure X Sex for Productivity (Quantity)

Source	df	MS	F
Motivational Orientation (A)	1	17252.17	< 1
Social Structure (B)	1	12936.42	< 1
Sex (C)	1	1633.42	< 1
A X B	1	21674.91	< 1
A X C	1	3816.25	< 1
B X C	1	1343.99	< 1
A X B X C	1	286752.18	8.38*
Within Cell	40	34216.62	
Total	47		

* $p < .01$

Table 2

Mean Group Productivity Scores for Safety- and Esteem-
Oriented Males in Hierarchical and Egalitarian
Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	513.83	376.83
Esteem	353.35	594.00

As predicted from hypothesis 1, tests of simple effects (Winer, 1962) confirmed that there were significant differences in the mean level of productivity for safety- and esteem-oriented males in hierarchical and egalitarian social structures (F = 6.25, df = 1,40; p < .025). Table 2 presents the mean productivity scores for males and indicates that the level of productivity was significantly higher for esteem-oriented males in the egalitarian condition (F = 5.62, df = 1,40; p < .05). No significant differences were found in the level of productivity for safety-oriented males, although the results were in the predicted direction. Table 3 summarizes the mean productivity scores for females which indicates that there were no significant differences in the level of productivity for safety- and esteem-oriented females. Appendix D contains the analysis of variance for the quality of the productivity and indicates that there were no significant effects, although the results were in the predicted direction, especially for males.

Table 3

Mean Group Productivity Scores for Safety- and Esteem-
Oriented Females in Hierarchical and Egalitarian
Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	380.33	514.67
Esteem	548.17	458.33

Analysis of Variance for
Motivational Orientation,
Social Structure and Sex
for Task Satisfaction,
Cohesiveness and Anxiety

Tables 4-8 summarize the results of 2 (motivational orientation: safety or esteem) X 2 (social structure: hierarchical or egalitarian) X 2 (sex: male or female) analysis of variance for task satisfaction, cohesiveness and anxiety.

Table 4 summarizes the results of the analysis of variance for task satisfaction and reveals a significant main effect for motivation, social structure and sex as well as a significant interaction between the three factors. Tests of simple effects confirmed that there were significant differences in task satisfaction for safety- and esteem-oriented males in the hierarchical and egalitarian social structures (F = 7.86, df = 1,40; p < .01). As predicted in hypothesis 2, the mean task satisfaction scores for esteem-oriented males were higher in the egalitarian condition (F = 10.25, df = 1,40; p < .005). No significant differences in mean task satisfaction were found for safety-oriented males in the hierarchical and egalitarian conditions although the results were in the predicted direction. However, a marginally significant simple effect for social structure revealed that irrespective of motivational orientation, the mean task satisfaction scores for male subjects were higher in the egalitarian condition (F = 2.96, df = 1,40; p < .10), as Table 5 indicates.

Table 4

Analysis of Variance of Motivational Orientation X
Social Structure X Sex for Task Satisfaction

Source	df	MS	F
Motivational Orientation (A)	1	1220.09	12.87***
Social Structure (B)	1	1474.09	15.55***
Sex (C)	1	800.34	8.44*
A X B	1	866.99	9.14**
A X C	1	216.74	2.29
B X C	1	216.75	2.29
A X B X C	1	9645.33	101.73***
Within Cell	40	94.81	
Total	47		

* $p < .01$
** $p < .005$
*** $p < .001$

Table 5

Mean Group Task Satisfaction Scores for Safety- and
Esteem-Oriented Males in Hierarchical and
Egalitarian Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	51.00	49.55
Esteem	49.22	55.22

Table 6 presents the mean task satisfaction scores for females. Tests of simple effects confirmed that irrespective of social structure, the mean task satisfaction scores for esteem-oriented females were higher than that for safety-oriented females (F = 13.00, df = 1,40; p < .001). Further, the significant main effect for social structure revealed that irrespective of motivational orientation, the mean task satisfaction scores for female subjects were higher in the egalitarian condition (F = 14.88, df = 1,40; p < .001).

Table 6

Mean Group Task Satisfaction Scores for Safety- and
Esteem-Oriented Females in Hierarchical and
Egalitarian Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	50.00	53.16
Esteem	52.83	59.89

Table 7 summarizes the results of the analysis of variance for cohesiveness. Inspecting Table 7, it can be seen that there was a significant main effect for motivation and a significant interaction for motivation, social structure and sex. The main effect for motivation indicated that irrespective of social structure, esteem-oriented subjects were more cohesive than safety-oriented

subjects. Tests of simple effects did not confirm within motive

differences for the two types of social structure. Appendix D

summarizes the mean cohesiveness scores for the groups.

Table 7

Analysis of Variance of Motivational Orientation X
Social Structure X Sex for Cohesiveness

Source	df	MS	F
Motivational Orientation (A)	1	1912.70	10.51**
Social Structure (B)	1	513.50	2.82
Sex (C)	1	609.20	3.34
A X B	1	379.70	2.08
A X C	1	93.50	< 1
B X C	1	18.20	< 1
A X B X C	1	1262.00	6.93*
Within Cells	40	182.00	
Total	47		

* $<$ .05
** $<$ .005

Table 8 summarizes the results of the analysis of variance

for anxiety. Examination of Table 8 indicates a significant main

effect for social structure. Irrespective of social structure,

safety- and esteem-oriented subjects were less anxious in the

egalitarian social structure. Appendix D contains the mean anxiety

scores for the subjects. Further, inspection of Table 8 reveals a significant main effect for sex which indicated that esteem-oriented females had lower anxiety scores than did safety-oriented females. No significant differences were found in the mean anxiety scores for safety- and esteem-oriented males.

Table 8

Analysis of Variance of Motivational Orientation X
Social Structure X Sex for Anxiety

Source	df	MS	F
Motivational Orientation (A)	1	188.02	< 1
Social Structure (B)	1	3622.69	15.07**
Sex (C)	1	963.02	4.01*
A X B	1	77.52	< 1
A X C	1	609.19	2.53
B X C	1	.02	< 1
A X B X C	1	276.00	1.15
Within Cell	40	240.34	
Total	47		

* $p < .06$
** $p < .001$

Analysis of Variance for
Sex, Motivational Orientation,
Social Structure and Time
for Task-Oriented Activity

Tables 9-15 summarize the results of 2 (sex: male or female)
X 2 (motivational orientation: safety or esteem) X 3 (time block:
1st 20 minutes, 2nd 20 minutes, 3rd 20 minutes) analysis of variance
of deviation scores for each of the IPS categories within the groups.[9]

Table 9 summarizes the results of the analysis of variance
for the composite leadership activity (hereafter referred to as LA).
LA is an index of the overall leadership proportion contributed by
an individual in the group. The index was derived by averaging the
proportions for each IPS category and then taking the mean of the
proportions across the task-oriented categories.[10]

Examination of Table 9 indicates a significant main effect
for motivation. The deviation score of LA for safety-oriented groups
(.15) was significantly more hierarchical than those for esteem-
oriented groups (.12). Table 9 also indicates that there was a sig-
nificant main effect for social structure. Irrespective of motiva-
tional orientation, the deviation scores for subjects in the
egalitarian social structure were significantly less hierarchical than
were the scores for subjects in the hierarchical social structure.

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[9]IPS category (13) *Asks Opinion* was omitted since there
were very few scores in the category across the groups.

[10]IPS category (7) *Suggests Solution* was omitted since pre-
vious research (Aronoff and Messé, 1971) has shown this category
to be a followership activity as well as a leadership activity.

Table 9

Analysis of Variance of Sex X Motivational Orientation
X Social Structure X Time for IPS Category
Leadership Activity

Source	df	MS	F
Between Subjects			
Sex (A)	1	.0098	1.16
Motivational Orientation (B)	1	.0292	3.46*
Social Structure (C)	1	.0281	3.33*
A X B	1	.0223	2.64
A X C	1	.0112	1.32
B X C	1	.0004	< 1
A X B X C	1	.0002	< 1
Error	40	.0084	
Within Subjects			
Time (D)	2	.0005	< 1
A X D	2	.0023	1.53
B X D	2	.0021	1.36
C X D	2	.0004	< 1
A X B X D	2	.0006	< 1
A X C X D	2	.0014	< 1
B X C X D	2	.0013	< 1
A X B X C X D	2	.0013	< 1
Error	80	.0015	
Total	143	.0015	

* $p < .07$

Table 10 summarizes the results of the analysis of variance for IPS category (6) *Procedural Suggestion* and indicates a significant main effect for sex. The deviation score for males (.15) indicates that they had a greater hierarchical distribution of procedural suggestions than did the females (.11). Further inspection of Table 10 reveals a significant interaction between motivational orientation and time. Tests of simple effects did not confirm significant differences over the time blocks.

Table 11 summarizes the results of the analysis of variance for IPS category (7) *Suggests Solution*. The significant main effect for time indicated that the deviation scores for *Suggests Solution* was more hierarchical across the three time periods from .15 to .18 to .20.

Table 12 summarizes the results of the analysis of variance for IPS category (8) *Gives Opinion*. The significant main effect for sex indicated that deviation scores for males (.20) was significantly more hierarchical than those for females (.14). Further inspection of Table 12 shows that there was also a main effect for motivation. The results indicated that safety-oriented groups (.19) were significantly more hierarchical than esteem-oriented groups (.15).

Table 13 summarizes the results of the analysis of variance for IPS category (11) *Gives Information* and indicates that there was a main effect for social structure. The deviation score for groups in the hierarchical condition (.17) was significantly more hierarchical than for groups in the egalitarian condition (.13). Further

Table 10

Analysis of Variance of Sex X Motivational Orientation
X Social Structure X Time for IPS Category
Procedural Suggestion

Source	*df*	*MS*	*F*
Between Subjects			
Sex (A)	1	.0620	9.81**
Motivational Orientation (B)	1	.0041	< 1
Social Structure (C)	1	.0088	1.40
A X B	1	.0107	2.64
A X C	1	.0150	2.37
B X C	1	.0092	1.45
A X B X C	1	.0014	< 1
Error	40	.0063	
Within Subjects			
Time (D)	2	.0015	< 1
A X D	2	.0012	< 1
B X D	2	.0098	3.14*
C X D	2	.0031	< 1
A X B X D	2	.0028	< 1
A X C X D	2	.00097	< 1
B X C X D	2	.0065	2.11
A X B X C X D	2	.0012	< 1
Error	80	.0031	
Total	143		

*$p < .05$
**$p < .005$

Table 11

Analysis of Variance of Sex X Motivational Orientation
X Social Structure X Time for IPS Category
Suggests Solution

Source	df	MS	F
Between Subjects			
Sex (A)	1	.0000	< 1
Motivational Orientation (B)	1	.0182	1.98
Social Structure (C)	1	.0056	< 1
A X B	1	.0148	1.61
A X C	1	.0015	< 1
B X C	1	.0044	< 1
A X B X C	1	.0032	< 1
Error	40	.0092	
Within Subjects			
Time (D)	2	.0318	5.71*
A X D	2	.0007	< 1
B X D	2	.0004	< 1
C X D	2	.0054	< 1
A X B X D	2	.0018	< 1
A X C X D	2	.0018	< 1
B X C X D	2	.0135	< 1
A X B X C X D	2	.0012	2.42
Error	80	.0058	
Total	143		

* $p < .005$

Table 12

Analysis of Variance of Sex X Motivational Orientation
X Social Structure X Time for IPS Category
Gives Opinion

Source	df	MS	F
Between Subjects			
Sex (A)	1	.1475	10.17**
Motivational Orientation (B)	1	.0502	3.46*
Social Structure (C)	1	.0000	< 1
A X B	1	.0383	2.64
A X C	1	.0018	< 1
B X C	1	.0074	< 1
A X B X C	1	.0364	2.51
Error	40	.0145	
Within Subjects			
Time (D)	2	.0025	< 1
A X D	2	.0101	2.03
B X D	2	.0023	< 1
C X D	2	.0021	< 1
A X B X D	2	.0010	< 1
A X C X D	2	.0048	< 1
B X C X D	2	.0064	1.26
A X B X C X D	2	.0023	< 1
Error	80	.0050	
Total	143		

* $p < .07$
** $p < .005$

Table 13

Analysis of Variance of Sex X Motivational Orientation
X Social Structure X Time for IPS Category
Gives Information

Source	*df*	*MS*	*F*
Between Subjects			
Sex (A)	1	.0028	< 1
Motivational Orientation (B)	1	.0077	< 1
Social Structure (C)	1	.0430	4.71**
A X B	1	.0015	< 1
A X C	1	.0018	< 1
B X C	1	.0002	< 1
A X B X C	1	.0001	< 1
Error	40	.0092	
Within Subjects			
Time (D)	2	.0043	1.36
A X D	2	.0072	2.67*
B X D	2	.0025	< 1
C X D	2	.0127	4.68**
A X B X D	2	.0018	< 1
A X C X D	2	.0021	< 1
B X C X D	2	.0057	1.81
A X B X C X D	2	.0085	3.15**
Error	80	.0027	
Total	143		

* $p < .07$
** $p < .05$

examination of Table 13 shows that there was a significant interaction between social structure and time. Tests of simple effects for males revealed that the deviation scores for *Gives Information* was more hierarchical in the hierarchical social structure than in the egalitarian condition (F = 6.20, df = 1,35; p < .05). Although there was also a significant interaction between sex, motivational orientation, social structure and time, tests of simple effects did not confirm any significant differences.

Table 14 summarizes the results of the analysis of variance for IPS category (12) *Draws Attention* and reveals that there were no significant effects.

Table 15 summarizes the results of the analysis of variance for IPS category *Residual*, which is comprised of the non-task oriented activity within the group. Examination of Table 15 indicates a significant main effect for social structure in which the deviation scores of residual activity were more hierarchical in the hierarchical condition than for the egalitarian condition.

Table 14

Analysis of Variance of Sex X Motivational Orientation
X Social Structure X Time for IPS Category
Draws Attention

Source	df	MS	F
Between Subjects			
Sex (A)	1	.0213	1.59
Motivational Orientation (B)	1	.0315	2.37
Social Structure (C)	1	.0298	2.22
A X B	1	.0142	1.06
A X C	1	.0130	< 1
B X C	1	.0028	< 1
A X B X C	1	.0004	< 1
Error	40	.0134	
Within Subjects			
Time (D)	2	.0015	< 1
A X D	2	.0052	< 1
B X D	2	.0095	1.78
C X D	2	.0056	1.05
A X B X D	2	.0042	< 1
A X C X D	2	.0066	1.24
B X C X D	2	.0042	< 1
A X B X C X D	2	.0000	< 1
Error	80	.0053	
Total	143		

Table 15

Analysis of Variance of Sex X Motivational Orientation
X Social Structure X Time for IPS Category
Residual

Source	df	MS	F
Between Subjects			
Sex (A)	1	.0083	1.25
Motivational Orientation (B)	1	.0092	1.39
Social Structure (C)	1	.0397	4.65*
A X B	1	.0000	< 1
A X C	1	.0198	2.32
B X C	1	.0000	< 1
A X B X C	1	.0004	< 1
Error	40	.0085	
Within Subjects			
Time (D)	2	.0036	< 1
A X D	2	.0014	< 1
B X D	2	.0011	< 1
C X D	2	.0040	< 1
A X B X D	2	.0037	< 1
A X C X D	2	.0049	1.15
B X C X D	2	.0027	< 1
A X B X C X D	2	.0085	2.00
Error	80	.0043	
Total	143		

* $p < .05$

CHAPTER IV

DISCUSSION

The results for the most part support the hypothesis that
group productivity decreases when safety- and esteem-oriented persons
are placed into social structures incongruent with their motiva-
tional orientation and increases in motivationally congruent social
structures. Furthermore, there was also support for the hypothesis
that task satisfaction is greater in motivationally congruent social
structures than in motivationally incongruent social structures.
Partial support was found for the hypothesis that there is greater
cohesiveness and less anxiety in social structures congruent with
motivational orientation. The results did not confirm the hypothesis
that social structures which are incongruent with motivational
orientation will be changed to be congruent.

The Effects of Congruent and Incongruent Social Structures on Group Productivity

The results generally support hypothesis 1 for males and
clearly indicate that group productivity was greatest when functioning
in the social structure congruent with the predominant motivational
orientation of the members. As predicted in hypothesis 1, esteem-
oriented males were significantly more productive in the egalitarian

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social structure whereas safety-oriented males were more productive
in the hierarchical social structure, even though the results were not
significant.

The results are consistent with Maslow's (1970) theory of
motivation and point to the conditions which are most appropriate
for the gratification of prepotent motive states. However, when
subjected to social structures that are incongruent with the motiva-
tional orientation of the members, the group must engage in a process
to establish a functional role structure. Esteem-oriented persons in
a hierarchical social structure are confronted with a situation that
limits their ability to demonstrate competency since a leader has been
appointed to direct the group's activity on the task. By employing
Steiner's (1972) formula of group productivity, it can be seen that
the imposition of a hierarchical social structure on esteem-oriented
persons causes losses due to faulty group process, which in turn
diminishes the actual productivity of the group since there is an
ineffective utilization of the resources available within the group.
Moreover, it is likely that the incongruent social structure leads to
conflict within the group over the leadership role itself. Previous
research (Messé, Aronoff and Wilson, 1972) has shown that leadership
in esteem-oriented groups is primarily a function of manifest competency
with the task. It is unlikely, therefore, that the other group members
would accept passively the appointed leaders position. Rather, it
is more likely that they would compete for the leadership role, a
process which involves conflicting ideas, opinions and suggestions

regarding the accomplishment of the task. The net result of such intragroup conflict over the appropriate group structure is a reduction in the level of productivity since the internal demands of the group interfere with effectively meeting the external demands of the task.

By way of contrast, it may be seen the level of productivity of safety-oriented persons in an egalitarian social structure also decreases for reasons of ineffective group process. Being placed into an egalitarian social structure raises the anxiety level of the safety-oriented person in respect to his ability to perform the task adequately. This high level of anxiety motivates the safety-oriented individual to introduce more structure and predictability into the situation by having a leader emerge to direct the group activity. However, the time spent in role differentiation reduces the capacity of the group to accomplish the task during the one hour experiment.

While it can be seen that incongruent social structures affect productivity by causing ineffective group process concerned with role differentiation, congruent social structures, on the other hand, facilitate effective group process and performance. It can be seen, therefore, that esteem-oriented persons in an egalitarian social structure are able to manifest competence, give suggestions, opinions and solutions which bring gratification from active participation in the task. Furthermore, in the absence of conflict over the appointed leadership position, the group members can actualize more of their individual talents to achieve collectively a higher degree of productivity.

Analogously, safety-oriented persons function more productively in a hierarchical social structure since the appointed leadership position structures the situation in such a way as to reduce anxiety by defining which person is responsible for coordinating the group's efforts. In this situation, the group members are able to use their abilities more effectively because their anxiety does not inhibit their performance. Hence, productivity losses due to faulty group process are minimized.

The results also indicated that there were no significant differences in the quality of the productivity for the congruent and incongruent social structures. It is interesting to note, however, that the results were in the predicted direction. The problem was simply that there was so much variance in the architectural style, scaling and overall quality of the models that as a function of other variables, the existing differences were masked.

The results for the female subjects were not significant. One reason for this can be found in the nature of the task itself, which required planning, coordination and building of a scale model out of plastic blocks. In debriefing the female subjects, approximately 70% reported that they had no previous experience with the blocks and commented to the effect their brothers played with such materials as children. This may suggest that the task was male-oriented, that is, one defined through socialization as appropriate for males but not for females. Given that this is so, it can be argued that the demands of the task mitigated against the motivational

orientation as a determinant of performance. Consequently, there may have been less ego-involvement on the task perceived as more male oriented. On the other hand, if the task were sex-related for females, or one free of a sex bias, then it would be expected that the motivational factors would play a more significant role in determining the group's performance in hierarchical and egalitarian social structures.

The Effects of Congruent and Incongruent Social Structures on Task Satisfaction, Cohesiveness and Anxiety

Task Satisfaction

The results strongly support hypothesis 2 and indicate that task satisfaction was greatest in the congruent social structure. As predicted in hypothesis 2, esteem-oriented males were significantly more satisfied with their performance on the task in the egalitarian social status whereas safety-oriented males had higher task satisfaction in the hierarchical social structure, although the results were not significant. Moreover, the results indicated that both safety- and esteem-oriented males had more task satisfaction in the egalitarian condition.

Extending the analysis from the preceding section, it can be seen that when safety- and esteem-oriented individuals were in the motivationally congruent social structures their group process was more effective in meeting the external demands of the task. It is reasonable, therefore, that with the establishment of a functional group structure they were able to accomplish more of the task at hand, and hence feel more satisfied with their work.

The fact that both safety- and esteem-oriented males had a higher mean score in the egalitarian condition is interesting. However, the marginally significant difference is difficult to interpret, especially since the mean score of the esteem-oriented group ($\overline{X}$ = 55.22) is much larger than that for safety-oriented groups ($\overline{X}$ = 49.22), and probably accounts for the difference between the hierarchical and egalitarian conditions.

The results on task satisfaction for the females are different than those for the males and closely parallel the results on productivity. Irrespective of social structure it was found that the esteem-oriented females were more satisfied with their performance on the task. Moreover, the females were more satisfied in the egalitarian condition irrespective of motivation. Considering that the task was perceived by the females to be a male-oriented activity with which they had little experience, it is logical that there would be greater satisfaction in the egalitarian condition since they could work more effectively in building the model. The experimental manipulation which appointed a leader in the hierarchical condition in essence appointed an incompetent person to coordinate a task for which she had few, if any, acquired skills. In contrast, however, three persons working together could produce more ideas and solutions to accomplish the task. Thus, this ability to more successfully generate ideas in the egalitarian condition would lead to greater satisfaction.

The finding that esteem-oriented females were more satisfied across social structures may reflect the motivational orientation

itself, that is, their desire to do the best job possible despite inexperience with task. Hence, their greater sense of satisfaction may be a manifestation of higher self-esteem and self-acceptance of realistic limitations. On the other hand, safety-oriented females may have reported less satisfaction out of their anxiety and feelings of personal inadequacy which could have been exacerbated through their inability to perform the task adequately.

Cohesiveness

The results for cohesiveness gave partial support to hypothesis 2, and indicated that irrespective of social structure, both male and female esteem-oriented subjects were more cohesive than safety-oriented subjects. Moreover, the mean cohesiveness scores for esteem-oriented subjects were comparatively larger in the congruent social structure than they were for safety-oriented subjects, although the results were not significant.

The fact that esteem-oriented subjects were more cohesive across social structures can be explained by motivationally based differences. According to Maslow (1970), esteem-oriented persons have prior gratification of their lower needs of safety and affiliation and as a consequence are more trusting of others. Given that this is true, the higher cohesiveness scores for esteem-oriented individuals may represent a greater ability to form cohesive relationships than is the case with safety-oriented persons, who are characteristically anxious, mistrustful and dependent. Thus, considering the

nature of the task, the anxiety and strong sense of personal inadequacy of the safety-oriented persons could have influenced their willingness to discuss openly their ideas regarding the task, thereby decreasing the probability of forming a cohesive group.

Anxiety

The results for anxiety failed to support hypothesis 2 and indicated that irrespective of motivational orientation all subjects were significantly less anxious in the egalitarian social structure. Furthermore, the results indicated that esteem-oriented females were significantly less anxious than were the safety-oriented females, a finding consistent with previous research (Wilson and Aronoff, in press).

The lower anxiety scores for subjects in the egalitarian social structure raise an important question about the nature of the imposed structure itself: What are the characteristic features of this type of role system which reduce anxiety? The most obvious characteristic of the egalitarian social structure, especially as it was experimentally imposed in this study, is that it creates an expectation that the members will contribute equally to the task, which in turn alleviates the leadership responsibility from a particular individual. While it is evident that a leader will eventually emerge in the egalitarian condition, especially for safety-oriented groups, the perceived expectation of equal input on the task creates a situation in which the subjects initially share their respective ideas regarding

the task. Thus, through the initial group activity of problem solving, anxiety over performance may have been reduced substantially. By way of contrast, however, the hierarchical situation demands that one individual direct the group's activity while the other members follow his suggestions. In this hierarchical situation the opportunity for multiple inputs on the task are minimized, a fact which may create some confusion and greater anxiety among the other group members as to how much they should participate in the task. However, in the egalitarian condition, the experimenter strongly demands that every-one participate on the task. Thus, while there might be differences in the degree of participation, merely doing so may make the subjects feel that they are performing their roles correctly.

The Effects of Congruent and Incongruent Social Structures on Task-Oriented Activity

The results did not support hypothesis 3, which predicted that social structures incongruent with motivational orientation would be changed to be congruent with the predominant orientation. Differences in task-oriented activity were found for motivational orientation, type of social structure and sex of the subjects.

The results did support previous research which found the social structure of safety-oriented groups to be more hierarchically arranged than that of esteem-oriented groups (Aronoff, 1967; Aronoff and Messé, 1971). Consistent with these findings, the present study indicated that the social structure of safety-oriented groups was

more hierarchical than that for esteem-oriented groups for IPS

categories (8) *Gives Opinion,* and LA, the composite leadership score.

Although these results are not a direct confirmation of hypothesis 3,

they do give support to the idea that safety- and esteem-oriented

groups evolve social structures congruent with the basic motivational

orientation of the members.

Differences in the degree of hierarchy for the groups were

also found for the hierarchical and egalitarian social structures.

The results indicated that males were more hierarchical in the

hierarchical condition than in the egalitarian condition for IPS

category (11) *Gives Information,* and for the residual non-task-

oriented activity. Thus, it would seem that the giving of informa-

tion and the socio-emotional activity were behaviors emitted by one

individual in the hierarchical social structure. It must be asked,

however, why these particular IPS activities were more hierarchical

than other task-oriented activities. Perhaps one explanation if

that giving information is an activity concerned primarily with the

passing of objective information and is not, in all probability, as

much of a leadership act as is *Procedural Suggestion* or *Gives Opinion.*

It could be argued, therefore, that one person gave "objective

information" and residual non-task-oriented behaviors in the role of

a socio-emotional leader as opposed to a task-oriented leader, a

common separation of leadership roles in small groups (Bales, 1970).

Differences between males and females were also found for

the task-oriented activity. Males were significantly more hierarchical

than females on IPS categories (6) *Procedural Suggestion,* and (8) *Gives Opinion.* Given the females' unfamiliarity and inexperience with the task, it is reasonable that they were more egalitarian since they could accomplish the task more effectively by "brainstorming" their respective ideas. On the other hand, the males had more familiarity and competence with the task such that a hierarchical social structure could develop to successfully execute the problem. Moreover, it is interesting to note that the suggesting of solutions, one manifestation of task competence, became more hierarchical from the beginning to the end of the experiment. This increased hierarchy for *Suggests Solution* may reflect the process of role differentiation in which the group establishes a functional social structure to meet the contingencies of the situation.

Summary and Implication for Future Research

The present research suggests a number of studies for future investigation. While the productivity, task satisfaction and cohesiveness were greater for safety- and esteem-oriented persons in the congruent social structure, it must be kept in mind that the experiment was of a temporal duration of one hour. Outside of the experimental laboratory, however, most groups are typically constituted for longer periods of time, such as in an industrial work team. Therefore, to facilitate a greater understanding of the relationship between personality, social structure and group performance, it

would be appropriate to study homogeneous groups of safety- and esteem-oriented persons longitudinally in both naturalistic and experimental settings. For example, the basic parameters of the present study could be extended to measure productivity, task satisfaction, cohesiveness and changes in social structure over a period of ten weeks or longer. Thus, if motivational factors are a major determinant of group structure, productivity and personal satisfaction within a particular type of social structure, then the ten-week period would provide an opportunity to study extensively these aspects of group functioning.

In a similar way it would be fruitful to study the relationship between motivational orientation, social structure and group performance in an industrial setting. Homogeneous work crews could be formed, subjected to different organizational structures, and studied over time for productivity, morale, personal and job satisfaction, absenteeism, psychosomatic illness and other variables of theoretical and applied interest. The advantage of such a study over previous research by Morse and Reimer (1956) is that precise measurements of the motive states could be made and examined as to their effect upon different aspects of the organization. Clearly, the results from such a study would be of importance to Maslovian theory and to the understanding of human productivity and need gratification.

In a broader perspective, it must be realized that the world is not neatly divided into homogeneous groups of the same motivational disposition. There are many other facets of personality

which significantly influence the development of group structures and performance in them. In this vein, then, it can be seen that cognitive and intellectual factors are of major importance. Therefore, future research could be undertaken to determine the importance of intelligence and cognitive complexity within groups homogeneous or heterogeneous on motivational orientation. Moreover, cognitive, motivational and intellectual variables could be varied systematically across different social situations and task demands to ascertain the interactive nature of these factors and the relative variance in behavioral performance for which each accounts.

In a more applied context, education is a major area in which the results of the present study are of direct relevance. For many years controversy has waged over what should be the appropriate degree of structure for the classroom. The results of this study suggest that the question can be approached by defining the predominant motivational orientation of the students. For example, students who are strongly esteem-oriented may function more effectively in an egalitarian class structure in which they have some responsibility for the design of the course and the manner in which they learn. Such a situation might enable the esteem-oriented student to creatively risk himself in the process of self-discovery and intellectual mastery. On the other hand, safety-oriented students may prefer hierarchical classroom situations which clearly define how they shall learn in a highly structured way. In this more structured

situation the safety-oriented individual may feel more secure, less anxious and therefore more capable of enjoying the learning process.

In conclusion, the results of the present study have demonstrated the importance of motivation and social structure as important factors related to group performance. By studying the consequences of experimentally imposed social structures which are congruent and incongruent with the predominant motivational orientation of the group members, it becomes possible to determine the behavioral effects these structures have on member productivity and group characteristics.

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APPENDICES

APPENDIX A

EXPERIMENTAL INSTRUCTIONS

EXPERIMENTAL INSTRUCTIONS

(Instructions to subjects at beginning of experiment)

INSTRUCTIONS

(Read aloud)

In this study we are trying to find out how groups produce creative solutions to the problems which confront them. In future years more and more important decisions will be made by individuals working together in groups, pooling their collective resources and abilities to solve problems. It will also be necessary to produce high quality products, ideas, policies and decisions in a relatively short period of time. Therefore, during the next hour we would like you to work together as a group to produce a creative solution to the problem detailed below.

1. On the side table you will find a photograph of a modern architectural building. Study the design for a minute or so paying special attention to the structural composition of the building.

2. Using the construction materials on the side table, your job, as a group, is to build a model of the building. Before beginning your work, spend about 5 to 10 minutes discussing how to go about this task.

3. *Your goal as a group is to construct as much of the model as you possibly can within the 1 hour time period.* Keep in mind that we are interested in both the *quality* and *quantity* of your work and are comparing your final product to that of other groups. The group doing the best job will receive an extra $1.00 per person.
   Note: You should keep track of the time and your rate of progress!

4. *It is very important that you keep the roles assigned to you by the experimenter.* Throughout the experiment we will be measuring how successful you are in keeping these roles on the "Behavioral Rating Form." The group which is most successful in keeping their

assigned roles will receive an additional bonus of $2.00 per person.

5. Please keep the end of the table clear of materials so that we can make an unobstructed record of the experiment.

APPENDIX B

QUESTIONNAIRES

APPENDIX B

QUESTIONNAIRES

QUESTIONNAIRE I

(Administered to all subjects during "interview")

Date: _____

Name: _____

Below are forty incomplete sentences. Read and complete each one.
If the suggested word occurs in the middle of the line, place it
wherever you wish.

1. I should like to

2. Most important

3. My appearance

4.   good mood

5. When I am not treated right, I

6. If I could only

7. My head

8. The people who work for me

9. The main driving force in my life is

10. Other people are

11. If I could change anything, I

12. For sure

13.   last

14. The more involved one gets

15. For me, the best

16. As a child, I

17. A friend

18. I will fight when

19.   care

20. It's fun to daydream about

21.   valuable possession

22. A stranger

23. When told to keep my place, I

24. Dormitory living

25. When an animal is wild,

26. If I were in charge

27. Being

28. People think I am

29. I don't like

30. What bothers me most

31.   continually

32. To me, people

33. If I am put under pressure

34. I am happy when

35.   broke   , then

36. I want

37. The future

38. The people I like best

39. When I can't do something, I

40. Tests like this

QUESTIONNAIRE II

(Administered to all subjects during "interview")

INDIVIDUAL - TOPICAL INVENTORY

(Form A)

Name _____   School _____

Instructions

You will be given some situations and topics to which we would like you to respond. The responses are given in pairs. You are to choose *one response from each pair*. Choose the response that most closely fits your opinion of feeling and indicate your choice by circling the letter "A" or "B" corresponding to the response chosen. Always choose *one member of each pair*. Never choose both members of the pair and do not skip over any of the pairs. If you agree with both, choose the one you agree with most strongly. If you do not agree with either, choose the one you find the least disagreeable of the two.

Example:

Here is an example of the way the questions will be asked and the way they should be answered. The manner in which you will indicate your choice between the two given responses is illustrated below:

When I am confused . . .

Pair No.

	(i)	
Ⓐ		B
I try to find a solution and end the confusion.		I completely ignore the fact I am confused.

	(ii)	
A		Ⓑ
I break out into a nervous sweat.		I remain calm at all times.

How to respond:

First: Decide which response you agree with most.

Second: Indicate which response you agree with most by circling the identifying letter. Thus, if in comparing the first pair of statements, you agree with the statement, "I try to find a solution and end the confusion," more than with the statement, "I completely ignore the fact that I am confused," you would circle the letter "A" (above the chosen statement). Having chosen one (never both, never neither) statement from the first pair of statements, you would then move on to the second pair. If, in considering the second pair, you find that you agree more with the statement, "I remain calm at all times," (as compared to the statement, "I break out into a nervous sweat"), you would circle the letter "B."

On the pages that follow there are 36 different pairs of responses. There are six pairs to a side of a page and pairs appear on *both sides of the pages.* You are to select one response from each pair, the one that more accurately shows your opinion or feelings, and record your choice by circling the letter indicating the statement chosen. Be frank and indicate, in each case, your true feeling or opinion or the reaction which you actually would make in the situation. Do *not* indicate how you *should* feel or act; rather, indicate how you *do* feel and act.

Make sure that you are aware of the situation or topic that each pair of responses refers to. You will find the situation or topic identified at the top of each page. All items on the page refer to the situation or topic appearing at the top of that page.

When you are finished, your paper should contain 36 circles. Check back and make sure that you have made 36 choices, no more, no less.

Remember: (1) Respond only once for each pair; that is, choose *one* member of the pair, never both, never neither. Indicate your choice by circling either "A" or "B."

(2) Items appear on both sides of the page.

(3) When you are finished you should have made 36 circles.

Work at your own rate of speed but work straight through the inventory without stopping. Once you have completed a page do not return to it.

YOU MAY BEGIN

I. Imagine that someone has criticized you. Choose the response from each pair that comes closest to your feelings about such criticism. Indicate your choice by circling either "A" or "B."

When I am criticized . . .

Pair No.

(1)

A
I try to take the criticism, think about it, and value it for what it is worth. Unjustified criticism is as helpful as justified criticism in discovering what other people's standards are.

B
I try to accept the criticism but often find that it is not justified. People are too quick to criticize something because it doesn't fit their standards.

(2)

A
I try to determine whether I was right or wrong. I examine my behavior to see if it was abnormal. Criticism usually indicates that I have acted badly and tends to make me aware of my own bad points.

B
It could possibly be that there is some misunderstanding about something I did or said. After we both explain our viewpoints, we can probably reach some sort of compromise.

(3)

A
I listen to what the person says and try to accept it. At any rate, I will compare it to my own way of thinking and try to understand what it means.

B
I feel that either I'm not right, or the person who is criticizing me is not right. I have a talk with that person to see what's right or wrong.

(4)

A
I usually do not take it with good humor. Although, at times, constructive criticism is very good, I don't always think that the criticizer knows what he is talking about.

B
At first I feel that it is unfair and that I know what I am doing, but later I realize that the person criticizing me was right and I am thankful for his advice. I realize that he is just trying to better my actions.

(5)

A
I try to ask myself what advantages this viewpoint has over mine. Sometimes both views have their advantages and it is better to combine them. Criticism usually helps me to learn better ways of dealing with others.

B
I am very thankful. Often I don't see my own errors because I am too engrossed in my work at the time. An outsider can judge and help me correct the errors. Criticism in everyday life usually hurts my feelings, but I know it is for my own good.

(6)

A
It often has little or no effect on me. I don't mind constructive criticism too much, but I dislike destructive criticism. Destructive criticism should be ignored.

B
I try to accept and consider the criticism. Sometimes it has caused me to change myself; at other times I have felt that the criticism didn't really make much sense.

2. Imagine that you are in doubt. Choose the response from each pair that comes closest to your feelings about such doubt. Indicate your choice by circling either "A" or "B."

When I am in doubt . . .

Pair No.

(7)

A	B
I become uncomfortable. Doubt can cause confusion and make one do a poor job. When one is in doubt he should ask and be sure of himself.	I find myself wanting to remove the doubt, but this often takes time. I may ask for help or advice if I feel that my questions won't bother the other person.

(8)

A	B
I don't get too upset about it. I don't like to ask someone else unless I have to. It's better to discover the correct answer on your own.	I usually go to someone who knows the correct answer to my question. Sometimes I go to a book which will set me straight by removing the doubt.

(9)

A	B
I first try to reason things out and check over the facts. Often I approach others to get ideas that will provide a solution.	I think things over, ask questions, and see what I can come up with. Often several answers are reasonable and it may be difficult to settle on one.

(10)

A	B
I realize that I'll have to decide on the correct answer on my own. Others try to be helpful, but often do not give me the right advice. I like to judge for myself.	I usually try to find out what others think, especially my friends. They may not know the answer, but they often give me some good ideas.

(11)

A	B
I look over the problem and try to see why there is a doubt. I try to figure things out. Sometimes I just have to wait awhile for an answer to come to me.	I try to get some definite information as soon as possible. Doubt can be bad if it lasts too long. It's better to be sure of yourself.

(12)

A	B
I consider what is best in the given situation. Although one should not rush himself when in doubt, he should certainly try to discover the right answer.	I act according to the situation. Sometimes doubt can be more serious than at other times and many of our serious doubts must go unanswered.

3. Imagine that a friend has acted differently toward you. Choose the response from each pair that comes closest to your feelings about such an action. Indicate your choice by circling either "A" or "B."

When a friend acts differently toward me . . .

Pair No.

(13)

A
I am not terribly surprised because people can act in many different ways. We are different people and I don't expect to understand all his reasons for acting in different ways.

B
I am usually somewhat surprised but it doesn't bother me very much. I usually act the way I feel toward others. People worry too much about others' actions and reactions.

(14)

A
I find out why. If I have done something wrong I will try to straighten out the situation. If I think he's wrong, I expect him to clear things up.

B
I feel that I may have caused him to act in a different way. Of course, he may have other reasons for acting differently which would come out in time.

(15)

A
I first wonder what the trouble is. I try to look at it from his viewpoint and see if I might be doing something to make him act differently toward me.

B
It is probably because he has had a bad day, which would explain this different behavior; in other cases he may just be a changeable kind of person.

(16)

A
It is probably just because something is bothering him. I might try to cheer him up or to help him out. If these things didn't work I would just wait for him to get over it.

B
I try to understand what his different actions mean. I can learn more about my friend if I try to figure out why he does things. Sometimes the reasons may not be very clear.

(17)

A
There has to be a definite reason. I try to find out this reason, and then act accordingly. If I'm right I'll let him know it. If he's wrong, he should apologize.

B
I usually let him go his way and I go mine. If a friend wants to act differently that's his business, but it's my business if I don't want to be around when he's that way.

(18)

A
I don't get excited. People change and this may cause differences. It is important to have friends, but you can't expect them to always be the same.

B
I like to get things back to normal as soon as possible. It isn't right for friends to have differences between them. Whoever is at fault should straighten himself out.

4. Think about the topic of people in general. Choose the response from each pair that comes closest to your thoughts about people. Indicate your choice by circling either "A" or "B."

This I believe about people . . .

Pair No.

A	(19)	B
Whatever differences may exist between persons, they can usually get along if they really want to. Although their ideas may not agree, they probably still have something in common.		People can learn from those who have different ideas. Other people usually have some information or have had some experience which is interesting and can add to one's knowledge.

A	(20)	B
People can act in all sorts of ways. No single way is always best, although at certain times a particular action might be wiser than others.		Each person should be able to decide the correct thing for himself. There are always a few choices to be made and the individual himself is in the best position to pick the right one.

A	(21)	B
Some people think they know what's best for others and try to give advice. These people shouldn't make suggestions unless asked for help.		There are certain definite ways in which people should act. Some don't know what the standards are and therefore need to be straightened out.

A	(22)	B
I can tell if I am going to get along with a person very soon after meeting him. Most people act either one way or another and usually it is not difficult to say what they are like.		It's hard for me to say what a person is like until I've known him a long time. People are not easy to understand and often act in unpredictable ways.

A	(23)	B
People have an outside appearance that usually isn't anything like what can be found on the inside, if you search long and hard enough.		Each person is an individual. Although some people have more good or bad points than others, no one has the right to change them.

A	(24)	B
People can be put into categories on the basis of what they're really like. Knowing the way a person really is helps you to get along with him better.		People are unlike one another in many respects. You can get along with people better and better understand them if you are aware of the differences.

5. Think about the general topic of leaders. Choose the response from each pair that comes closest to your thoughts about leaders. Indicate your choice by circling either "A" or "B."

Leaders . . .

Pair No.

A	(25)	B
Leaders do not always make the right decisions. In such cases, it is wise for a man to look out for his own welfare.		Leaders are necessary in all cases. If a leader cannot make the right decisions another should be found who can.

A	(26)	B
Leaders cannot provide all the answers. They are like other people --they have to try to figure out what action is necessary and learn from their mistakes.		Leaders make decisions sometimes without being sure of themselves. We should try to understand this and think of ways to help them out.

A	(27)	B
I like a leader who is aware of how the group feels about things. Such a leader would not lead any two groups in exactly the same way.		A person should be able to put his confidence in a leader and feel that the leader can make the right decision in a difficult situation.

A	(28)	B
There are times when a leader shouldn't make decisions for those under him. The leader has the power to decide things, but each man has certain rights also.		A leader should give those under him some opportunity to make decisions, when possible. At times, the leader is not the best judge of a situation and should be willing to accept what others have to say.

A	(29)	B
Some leaders are good, others are quite poor. Good leaders are those who know what is right for the men under them. These leaders deserve the respect of every man.		Leaders cannot be judged easily. Many things go to make up good leadership. Most people fall short in some way or another, but that is to be expected.

A	(30)	B
Leaders are needed more at certain times than at others. Even though people can work out many of their own problems, a leader can sometimes give valuable advice.		Some people need leaders to make their decisions. I prefer to be an individual and decide for myself, when possible. Most leaders won't let you do this.

6. Imagine that someone has found fault with you. Choose the response from each pair that comes closest to your feelings about such a situation. Indicate your choice by circling either "A" or "B."

When other people find fault with me . . .

Pair No.

(31)

A	B
It means that someone dislikes something I'm doing. People who find fault with others are not always correct. Each person has his own ideas about what's right.	It means that someone has noticed something and feels he must speak out. It may be that we don't agree about a certain thing. Although we both have our own ideas, we can talk about it.

(32)

A	B
I first wonder if they are serious and why they have found fault with me. I then try to consider what they've said and make changes if it will help.	If enough people point out the same fault, there must be something to it. I try to rid myself of the fault, especially if the criticizers are people "in-the-know."

(33)

A	B
They have noticed something about me of which I am not aware. Although criticism may be hard to take, it is often helpful.	They are telling me something they feel is correct. Often they may have a good point which can help me in my own thinking. At least it's worthwhile to consider it.

(34)

A	B
I may accept what is said or I may not. It depends upon who is pointing out the fault. Sometimes it's best to just stay out of sight.	I accept what is said if it is worthwhile, but sometimes I don't feel like changing anything. I usually question the person.

(35)

A	B
I like to find out what it means; since people are different from one another, it could mean almost anything. A few people just like to find fault with others but there's usually something to be learned.	There is something to be changed. Either I am doing something wrong or else they don't like what I'm doing. Whoever is at fault should be informed so that the situation can be set straight.

(36)

A	B
I don't mind if their remarks are meant to be helpful, but there are too many people who find fault just to give you a hard time.	It often means that they're trying to be disagreeable. People get this way when they've had a bad day. I try to examine their remarks in terms of what's behind them.

CHECK AND MAKE SURE THAT YOU'VE CHOSEN ONE MEMBER OF EACH PAIR
(A TOTAL OF 36 CIRCLES)

QUESTIONNAIRE III

(Administered to all subjects during "interview")

NAME _____   AGE _____

EDUCATION _____   DATE _____

INSTRUCTIONS

Please look first at the word in capital letters on each line. Then look at the other words in smaller type and circle the ONE of these words which comes closest in meaning to the one in capital letters.

EXAMPLE

BEAST   1. afraid   2. words   3. large   4. animal   5. bird

IMPORTANT: Do only one line at a time, and please take each line in order. If you do not know the answer, guess and go on to the next answer. No one is expected to know all the answers. If you make a wrong guess, it will not be subtracted from your score.

SPACE	1. school	2. noon	3. captain	4. room	5. board
LIFT	1. sort out	2. raise	3. value	4. enjoy	5. fancy
CONCERN	1. see clearly	2. engage	3. furnish	4. disturb	5. have to do with
BROADEN	1. efface	2. make level	3. elapse	4. embroider	5. widen
BLUNT	1. dull	2. drowsy	3. deaf	4. doubtful	5. ugly
ACCUSTOM	1. disappoint	2. customary	3. encounter	4. get used	5. business
CHIRRUP	1. aspen	2. joyful	3. capsize	4. chirp	5. incite
EDIBLE	1. auspicious	2. eligible	3. fit to eat	4. sagacious	5. able to speak
PACT	1. puissance	2. remonstrance	3. agreement	4. skillet	5. pressure
SOLICITOR	1. lawyer	2. chieftain	3. watchman	4. skillet	5. maggot	6. constable

95

ALLUSION   1. aria   2. illusion   3. eulogy   4. dream   5. reference

CAPRICE   1. value   2. a star   3. grimace   4. whim   5. inducement

ANIMOSITY   1. hatred   2. animation   3. disobedience   4. diversity   5. friendship

EMANATE   1. populate   2. free   3. prominent   4. rival   5. come

MADRIGAL   1. song   2. mountebank   3. lunatic   4. ribald   5. sycophant

CLOISTERED   1. miniature   2. bunched   3. arched   4. malady   5. secluded

ENCOMIUM   1. repetition   2. friend   3. panegyric   4. abrasion   5. expulsion

PRISTINE   1. flashing   2. earlier   3. primeval   4. bound   5. green

TACTILITY   1. tangibility   2. grace   3. subtlety   4. extensibility 5. manageableness

SEDULOUS   1. muddied   2. sluggish   3. stupid   4. assiduous   5. corrupting

APPENDIX C

RESULTS FOR COGNITIVE COMPLEXITY

AND INTELLIGENCE

Table C-1

Analysis of Variance for Motivational Orientation
X Social Structure X Sex for Cognitive Complexity

Source	df	MS	F
Motivational Orientation (A)	1	3.07	1.75
Social Structure (B)	1	1.17	< 1
Sex (C)	1	1.17	< 1
A X B	1	2.99	1.71
A X C	1	2.77	1.58
B X C	1	7.00	4.00*
A X B X C	1	2.58	1.47
Within Cell	136	1.75	
Total	143		

* p < .05

Table C-2

Mean Cognitive Complexity Scores for Males
and Females within Hierarchical and
Egalitarian Social Structures

Sex	Social Structure	
	Hierarchical	Egalitarian
Males	2.55	2.61
Females	2.40	3.11

Table C-3

Analysis of Variance for Motivational Orientation
X Social Structure X Sex for IQ

Source	df	MS	F
Motivational Orientation (A)	1	8.02	4.22*
Social Structure (B)	1	11.10	5.84*
Sex (C)	1	10.03	5.28*
A X B	1	.62	< 1
A X C	1	3.34	1.76
B X C	1	.16	< 1
A X B X C	1	4.09	2.15
Within Cell	136	1.90	
Total	143		

* $p < .05$

Table C-4

Correlations Between IQ and Productivity for
Safety- and Esteem-Oriented Males and Females

Motivational Orientation	Sex	
	Male	Female
Safety	.03	.26
Esteem	.06	-.04

Table C-5

Correlations Between IQ and Productivity for
Safety- and Esteem-Oriented Males in Hierarchical
and Egalitarian Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	.45	-.14
Esteem	-.14	.22

Table C-6

Correlations Between IQ and Productivity for
Safety- and Esteem-Oriented Females in Hierarchical
and Egalitarian Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	.07	.35
Esteem	.33	-.21

APPENDIX D

NON-SIGNIFICANT RESULTS FOR PRODUCTIVITY (QUALITY)

AND MEAN COHESIVENESS AND ANXIETY SCORES

Table D-1

Analysis of Variance for Motivational Orientation
X Social Structure X Sex
for Productivity (Quality)

Source	df	MS	F
Motivational Orientation (A)	1	111.02	< 1
Social Structure (B)	1	82.69	< 1
Sex (C)	1	93.52	< 1
A X B	1	88.35	< 1
A X C	1	284.19	2.33
B X C	1	154.43	1.27
A X B X C	1	164.49	1.35
Within Cell	40	121.79	
Total	47		

Table D-2

Mean Quality Ratings for Safety- and Esteem-Oriented Males
in Hierarchical and Egalitarian
Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	26.00	23.50
Esteem	14.33	19.16

Table D-3

Mean Quality Ratings for Safety- and Esteem-Oriented Females
in Hierarchical and Egalitarian
Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	15.67	18.67
Esteem	16.16	22.00

Table D-4

Mean Group Cohesiveness Scores for Safety- and
Esteem-Oriented Males in Hierarchical and Egalitarian
Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	46.44	47.00
Esteem	49.55	54.16

Table D-5

Mean Group Cohesiveness Scores for Safety- and
Esteem-Oriented Females in Hierarchical and Egalitarian
Social Structures

Motivational	Social Structure	
	Hierarchical	Egalitarian
Safety	50.00	50.05
Esteem	51.55	55.05

Table D-6

Mean Group Anxiety Scores for Safety- and
Esteem-Oriented Males in Hierarchical and Egalitarian
Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	32.67	24.44
Esteem	31.28	27.94

Table D-7

Mean Group Anxiety Scores for Safety- and
Esteem-Oriented Females in Hierarchical and Egalitarian
Social Structures

Motivational Orientation	Social Structure	
	Hierarchical	Egalitarian
Safety	36.44	31.39
Esteem	33.50	26.94