

FACTORS OF SUBORDINATE-SUPERORDINATE INTERACTION¹

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ABSTRACT

Two hundred-four crew members and sixty-nine crew commanders of a Titan II Missile Wing completed a battery of instruments measuring subordinate-subordinate role preferences, pressure, and perceptions. After matching subordinate variables with the appropriate superordinate variables, the data were correlated, factored, and rotated for orthogonal simple structure. Of the twelve factors obtained five were identified inclusively with crew commander behavior; three were related to the behavior of the crew members; and four described the interactions between the two realms. Perceptions were found to be primarily a function of observer variance and the roles were found to have much less shaping effect across levels than was expected.

INTRODUCTION

The literature in group dynamics and in the behavioral science applied to organizational behavior is rich in its implications concerning the interactions between behaviors and various hierarchical levels, but it is very limited in reports of explicit studies in this area.

The Ohio State studies of management behavior stated by Hemphill (1950) and continued by Stodghill et al (1962) studied perceptions and expectations of subordinates concerning their superordinates, but did not make any effort to gather data directly from both levels. McGregor did not try to empirically validate his "Theory X" and "Theory Y" assumptions on any level. If he had, he might have had to face up to the reconciliation of conflicting perceptions which it would have entailed.

The closest approximation available to an interactive system is the contingency model by Fiedler (1962). Even this one does not define expected relationships between subordinates and superordinates except in the gross terms of "favorable" and "unfavorable" conditions. In most cases, these terms are reserved for the task characteristics and the physical setting rather than the social interaction.

To fill this need, Sweney (1970, 1971) presented his *Response to Power Model* to establish a role interaction basis for studying the relationships established between superordinates and subordinates. To facilitate research, he developed five instruments to measure various aspects of the six roles: authoritarian, equalitarian, permissive, rebel, critic-cooperator, and ingratiator. The *RPM* model is illustrated in Figure 1.

PROCEDURES

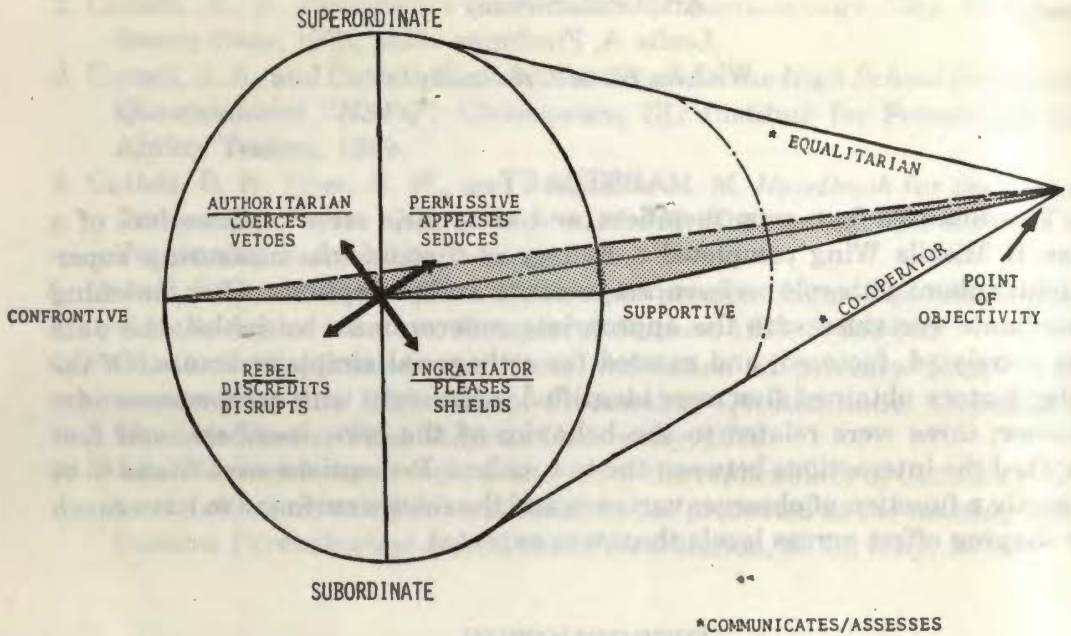
The study was conducted in the 581st Missile Wing with the instruments to measure the *RPM* model.

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RESPONSE TO POWER MODEL

Figure 1

SIMPLE PERSPECTIVE



INSTRUMENTS

The battery of tests included three self report instruments and two rating scales. The *Response to Power Measure* (RPM) is a scale on preference instruments utilizing ninety-six opinionnaire type items to measure the basic values placed upon the six subordinate-superordinate roles.

The *Supervise Ability Scale* (SAS) and the *Responsibility Index* (RI) were developed to measure social desirability pressure to play certain roles as superordinates or subordinates. Each of these two instruments is self ipsatized and hence has negatively correlated scales. Thus, they measure the distribution of superordinate or subordinate role pressure but not the total amount.

The *Supervisor's Role Rating* (SRR) and *Subordinate Behavior Rating* (SBR) are rating scales of superordinates and subordinates by the member of the opposite level. They have ten and twelve three-response items respectively and are scored to reflect the three superordinate roles and the subordinate roles.

SUBJECTS

The subjects for the studies were drawn from the two operations squadrons of the 381st Missile Wing. These units are each composed of thirty-six four-man crews who served extended tours of duty together in missile silos on a schedule involving 24 hours on duty and 48 hours off duty. Thus, they shared an intimate experience with each other which should lend itself to interactional change and to firm perceptions of each other.

ADMINISTRATION

The subjects from each squadron were tested during one of four pre-departure briefings. They met as a group with adequate spacing to insure privacy of

response. The complete battery took an hour. The crew commanders and his subordinates took the same basic battery except for the *Superviseability Scale* and the *Subordinate Behavior Rating* which were not appropriate at the lower levels.

ANALYSIS

After scoring the test, results were arranged in a data matrix in which each subordinate served as an observation; next to his own test data appeared the test data for his particular crew commander. In this way it was possible to obtain correlations between test scores of crew members and crew commanders as well as the relationships within each of these groups. Thus, the data array consisted of thirty-four variables gathered on 204 subordinates and 69 superordinates.

The correlation matrix was factored using a principle component extraction and a Varimax Rotation. The latter was selected over an oblique rotation because of the exploratory nature of the study and the desire for independent factor variance assessments of some of the variables being studied. The selection of the number of factors was not a crucial decision so the fairly quick but conservative "Guttman criterion" was applied.

RESULTS

Twelve factors were extracted before the eigenvalue dropped below 1.00. This also represented a discontinuity in decrements which added credibility to the assumption that this was also a reasonable place to discontinue factoring.

The rotated factors obtained are disclosed in Table 1. Only loadings out of the .20 hyperplane have been identified. On this basis, five of the factors were predominantly related to superordinate variables, three with subordinate variables and four with interactions between the two realms.

Factor 1. This describes an authoritarian vs equalitarian role preference on the part of the crew commanders. It has no ramifications on the subordinate level so it can be assumed to be primarily internalized and irrelevant to the subordinate-superordinate interaction.

Factor 2. This describes an authoritarian vs equalitarian role pressure experienced by the crew commanders. It is augmented by small authoritarian ingratiation loadings from the preference areas. Only one small loading for subordinate behavior was found so that it must be assumed that this also has only minimal or mixed effects upon the interaction process.

Factor 3. This factor involves superordinate true saying response style on the only instrument on which it could be registered. High true saying and low indecisiveness is associated with authoritarianism preference and lack of permissive pressure. No subordinate variables had appreciable loadings and hence this response style was perceived as having limited impact upon the social situation, and could not be associated with any effective ongoing reinforcement treatment by the superordinate.

Factor 4. This factor organizes the subordinate role pressure behaviors of the per crew commanders with their perceptions of their own superordinates (site commanders.) Rebels see their commanders as authoritarians and critics see their commanders as equalitarian. Some slight effect is felt on the level of their subordinates who tend to imitate their roles.

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Factor 5. This factor involves the role pressure of crew commanders for rebelliousness vs ingratiation. It shows that the permissiveness both as a role pressure and role preference are associated with ingratiation. Again only negligible loadings are found on the part of the subordinates. These again suggest trends toward imitative behavior.

Factor 6. This factor organizes the superordinate role preferences of the crew members with their response styles. As on the upper level, true saying is positively related to authoritarianism and negatively related to equalitarianism. No meaningful loadings were found on the superordinate level; so this response style behavior can be considered as having little effect upon the social interaction as measured by the test results.

Factor 7. This is an upward perception of permissiveness by crew members of their crew commanders. Low questioning and low critic and ingratiation role preference seem to be related to the process. Some small loadings on superordinate permissiveness indicates that the perceptions are partially justified but primarily the products of the perceivers' own role needs.

Factor 8. This factor relates subordinate role preferences and role pressures of the crew members with their perceptions of their crew commanders. Rebels see their commanders as authoritarians, and ingratiators see their commanders as equalitarians. There was no direct support for their perception from any of the superordinate role measures of the crew commanders. Again, there were small indications that the subordinate roles were a function of imitation for the crew commanders own subordinate role.

Factor 9. This factor shows a clear interaction between superordinate and subordinate levels. The crew commanders of the critic (favorable) subordinate roles for the crew members seem to be a reflection of the subordinates avoidance for the permissive or ingratiating roles. This suggests that in the close confines of the missile silo, artifice was rather quickly discovered. It is interesting that the role perceptions did not bear any direct resemblance to self described roles of the subordinates.

Factor 10. This factor reflects the tendency of the crew commanders to view their subordinates as either rebel or ingratiating. This is strongly related to actual rebel role preference on the part of the subordinate. These same crew members seemingly failed to prefer an equalitarian role style for themselves.

Factor 11. This factor integrates the upward perceptions of the two levels. Crew commanders who see their bosses (site commanders) as permissive are seen as authoritarians by their subordinates. Those who perceive their site commanders as authoritarians are seen as equalitarians by their crew members. This indicates that the best self measure of a superordinate role is obtained from the rating the person makes of others.

Factor 12. This factor indicates that supportive behavior on the upper level is matched by supportive behavior from the lower level. This allows the subordinates to be less equivocal as measured by the use of the middle response on the *RPM* and to exercise less authoritarian role preference.

TABLE 1
SALIENT LOADINGS OF THE FACTOR MATRIX
SUPERORDINATE FACTORS

Instrument	Scale	Loading
<i>Factor I</i>		
RPM	Authoritarian (Super)	+ .62
RPM	Equalitarian (Super)	-.79
RPM	Critic (Super)	-.22
RPM	Rebel (Super)	+.79
RPM	# of Trues (Super)	+.33
SAS	Permissive (Super)	-.21
<i>Factor II</i>		
RPM	Authoritarian (Super)	+ .35
RPM	Ingratiator (Super)	+.24
SAS	Authoritarian (Super)	+.93
SAS	Equalitarian (Super)	-.78
SAS	Permissive (Super)	-.33
RPM	Rebel (Sub)	+.21
<i>Factor III</i>		
RPM	Authoritarian (Super)	+ .43
RPM	# of Trues (Super)	+.83
RPM	# of Questions (Super)	-.91
SAS	Permissive (Super)	-.21
<i>Factor IV</i>		
RPM	Critic (Super)	-.34
RPM	Authoritarian (Super)	+.81
SRR	Equalitarian (Super)	-.87
SAS	Equalitarian (Super)	-.34
SAS	Permissive (Super)	+.36
RI	Rebel (Super)	+.40
RI	Critic (Super)	-.63
RPM	Rebel (Sub)	-.26
RI	Critic (Sub)	-.30
<i>Factor V</i>		
RPM	Permissive (Super)	+ .27
SAS	Equalitarian (Super)	-.28
SAS	Permissive (Super)	+.52
RI	Rebel (Super)	-.80
RI	Critic (Super)	+.29
RI	Ingratiator (Super)	+.86
RPM	Rebel (Sub)	-.24
RI	Ingratiator (Sub)	-.26

NOTE: (Super) = Superordinate
(Sub) = Subordinate

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TABLE 1--Continued

SUBORDINATE FACTORS

Instrument	Scale	Loading
<i>Factor VI</i>		
RPM	Permissive (Super)	+ .24
RPM	Authoritarian (Sub)	+ .79
RPM	Equalitarian (Sub)	- .65
RPM	Permissive (Sub)	+ .20
RPM	Ingratiator (Sub)	+ .38
RPM	# of Trues (Sub)	+ .92
RPM	# of Questions (Sub)	- .59
<i>Factor VII</i>		
RPM	Ingratiator (Super)	- .22
SAS	Permissive (Super)	+ .27
RPM	Critic (Sub)	- .27
RPM	Ingratiator (Sub)	- .20
RPM	# of Questions (Sub)	- .39
SRR	Authoritarian (Sub)	- .33
SRR	Equalitarian (Sub)	- .42
SRR	Permissive (Sub)	+ .90
<i>Factor VIII</i>		
RPM	Critic (Super)	- .22
RPM	Ingratiator (Super)	- .22
SBR	Rebel (Super)	+ .23
RPM	Equalitarian (Sub)	- .21
RPM	Permissive (Sub)	- .32
RPM	Critic (Sub)	- .56
RPM	Rebel (Sub)	- .48
RPM	Ingratiator (Sub)	- .66
SRR	Authoritarian (Sub)	+ .73
SRR	Equalitarian (Sub)	- .72
RI	Rebel (Sub)	+ .91
RI	Critic (Sub)	- .72
RI	Ingratiator (Sub)	- .76
<i>Factor IX</i>		
SRR	Permissive (Super)	+ .22
SBR	Critic (Super)	+ .86
SBR	Rebel (Super)	- .40
SBR	Ingratiator (Super)	- .32
RPM	Ingratiator (Sub)	- .23
<i>Factor X</i>		
RPM	Authoritarian (Super)	+ .20
SBR	Rebel (Super)	+ .72
SBR	Ingratiator (Super)	- .80
RPM	Equalitarian (Sub)	- .43
RPM	Permissive (Sub)	+ .21
RPM	Rebel (Sub)	+ .52

TABLE 1--Continued

INTERACTION FACTORS

Instrument	Scale	Loading
<i>Factor XI</i>		
RPM	Critic (Super)	+.31
RPM	Authoritarian (Super)	-.41
SRR	Permissive (Super)	+.85
SBR	Critic (Super)	+.24
RPM	Permissive (Sub)	+.35
RPM	Rebel (Sub)	-.22
RPM	Ingratiator (Sub)	+.24
SRR	Authoritarian (Sub)	+.43
SRR	Equalitarian (Sub)	-.33
<i>Factor XII</i>		
RPM	Permissive (Super)	+.71
RPM	Critic (Super)	+.48
RPM	Rebel (Super)	-.30
RPM	Ingratiator (Super)	+.70
RPM	# of Trues	+.36
RPM	Authoritarian (Sub)	-.26
RPM	Critic (Sub)	+.26
RPM	Ingratiator (Sub)	+.23
SUB	# of Trues (Sub)	+.22
RPM	# of Questions (Sub)	-.36

DISCUSSION

This study failed to replicate some of the interactive effects of roles found in earlier research. Differences in the two squadrons which comprised the sample showed different interactional dynamics which tended to cancel each other out in several areas of expected relationships.

The results indicate at least two basic interactional patterns which are possible between each pair of superordinate-subordinate roles. The superordinate who occupies the authoritarian role and the subordinate who occupies the ingratiating role re-enforce each others needs in an adaptive way. This is the long term interaction which would be expected to emerge from the relationship. The authoritarian and rebel roles, however, are also positively correlated with each other because of a pro-active effort to counteract the role held by the other and would be short-term in value. Thus, any two roles of a reactive or adaptive component and a pro-active or counteractive component are in isolation and the analysis into these components will be the primary focus of future research.

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NOTE

¹Research reported here was sponsored by the Life Sciences Division of the Air Force Office of Scientific Research under Contract #2001.