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WORK ROLE PERCEPTIONS:
THEIR AFFECTIVE AND BEHAVIORAL CONSEQUENCES

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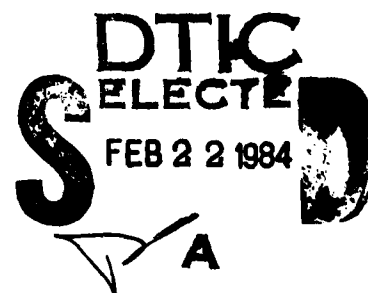
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The role perceptions of fifty-eight engineers in a medium size industrial organization were related to their performance, job satisfaction, and affective responses to their role. The first concept of interest was role compliance-- the extent to which the engineers described their own role behavior in line with what their supervisor or their peers believed should be done. Role compliance was found to influence job satisfaction and affective responses to the job directly and to moderate the relationship between motivational force, as described by (continued)		

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Expectancy Theory, and performance or effort. The second concept of interest was the degree to which the role possessed motivational potential as described by Hackman and Oldham (1974). The results indicated that the motivational potential of the task impacted both directly and indirectly on job satisfaction and affective responses to the job, but only indirectly on performance. The results were discussed in light of the need for accurate communication of role requirements and the effects of expanding the motivational potential of a job. This report is fifth in a 1975-1976 series entitled "Sources and Effects of Accurate Work Perceptions."

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Work Role Perceptions:

Their Affective and Behavioral Consequences

Most theories of behavior in organizations stress that an organization is a system of roles (Greene and Organ, 1973). At the level of the individual within the organization, the role system translates into a set of specific demands which guide his behavior. The extent to which he does or does not conform to the role demands depends, at the very minimum, upon his perception of that role and the degree to which he is both able and motivated to comply with what he perceives to be asked of him.

Those who have focused upon the process of individual performance have concentrated on the directional properties of role perceptions (Gavin, 1970; Lawler and Porter, 1967; Lawler and Suttle, 1973; Porter and Lawler, 1968; Terborg, 1975). In the most general sense, the amount of effort an individual puts into his work is seen as a function of the motivational force provided by the work environment. However, his effort leads to effective performance only if he accurately perceives what he is supposed to do (i.e., his role). If his work role perception is not accurate, it is reasoned, the effort he puts into his job will be misdirected and will not result in effective performance. Thus, role perceptions serve to direct behavior, and accurate role perceptions become a necessary, but not sufficient, condition for effective role performance.

Although the performance model is straight-forward in the way it depicts the function of role perceptions in performance behavior, its simplicity is deceptive primarily because what is meant by role perceptions and role perception accuracy has been difficult to deal with. The present study was designed within the framework of the performance model and deals with some

of the issues associated with role perceptions.

Work Role Perceptions

Without exception, models of role behavior assume that some subset of individuals within the organization (and sometimes outside the organization, e.g., the family or customers) convey to the role incumbent what is expected of him. The individual receives the sent role from others and responds to it (Katz and Kahn, 1966). His response is then fed back to the role senders and the cycle repeats itself. Given this process, individuals vary on the degree to which they accurately perceive what is expected of them (role accuracy) and on the degree to which they comply to the expected role (role compliance) (Greene and Organ, 1973). However, from the standpoint of performance, compliance is the more important of these two for two reasons. First, if one is to perform effectively, he must not only know what he is to do (role accuracy), but he must also do it. Secondly, if one complies to the role demands, it can be assumed that he accurately perceived them. Thus, from a more pragmatic standpoint, the presence of role compliance implies role accuracy. Research tends to bear this out. Using a group of 142 managers and their supervisors, Greene and his colleagues (Greene, 1972; Greene and Organ, 1973) found that role accuracy and role compliance were highly correlated ($r = .79$) but that role accuracy affected performance and satisfaction only through its effect on role compliance.

To distinguish between role accuracy and role compliance and to conclude that role compliance is the condition necessary for work effort to be properly guided clarifies problems that have existed with the definition of role perceptions in the performance model. Role perceptions have been defined on the basis of one or both of two descriptions. The first description is that

of what the role incumbent feels that he "should do" in the job. The second asks for him to describe what he "actually does" on his job. For both measures, the role incumbent's perceptions are compared to those of his supervisor (the role sender) or to some idealized description of the role. Terborg (1975) reviewed the literature for those studies which considered role perceptions as moderators of the relationship between effort and performance and concluded that the stronger moderating effects were always found when role perceptions were defined using the incumbent's description of what he actually did rather than what he should do. He termed the latter descriptions role definitions.

The stronger association observed for role definitions becomes quite understandable when the previously mentioned concepts of role accuracy and role compliance are considered. Since role definitions are based upon the incumbent's description of what he actually does, when these descriptions are subtracted from the sent role, the resulting difference resembles quite closely, role compliance. On the other hand, the difference between a sent role and an incumbent's description of what he should do is role accuracy. It will be recalled that the work of Greene (Greene, 1972; Greene and Organ, 1973) clearly demonstrated that role compliance was more closely associated with performance and was the necessary condition for the possibility of effective role behavior. Therefore, it is not surprising that role definitions are the more appropriate construct (Terborg, 1975). The present study will investigate the moderating effects of role compliance on the relationships between work motivation, effort, and work performance.

Sources of Work Role Perceptions

To conclude that role compliance is the concept of interest for the determination of properly directed roles immediately begs the question:

Compliance with whom or with what? Only two sources have been used as standards to which the role incumbent's compliance has been compared. These are his supervisor (Gavin, 1970; Greene, 1972; Greene and Organ, 1973) and expert opinion of what constitutes correct role behavior (Lawler and Porter, 1968; Lawler and Suttle, 1973; Porter and Lawler, 1967; Terborg, 1975). In the case of the research of Lawler and his colleagues (Lawler and Porter, 1967; Lawler and Suttle, 1973; Porter & Lawler, 1968), a personality trait scale designed to measure very global characteristics of inner and other directedness was used and it was assumed that managers who were inner directed were more accurate perceivers of their role. The relatively weak support for the moderating effect of role compliance found in studies using the inner-other directed scale has been attributed to the weakness of this very general scale as a measure of role compliance (Heneman, and Schwab, 1972; Terborg, 1975). The remainder of the research cited above defined the comparison standard in much more concrete behavioral terms.

The second general source of role perceptions is the set of persons with whom the role incumbent interacts on the job. It is clear that the role incumbent's immediate superior is an extremely important member of this set of role senders. The supervisor often judges performance and doles out rewards to the individual as well as directs his behavior.

Often, supervisors' job descriptions do not agree with the subordinates' descriptions (see for example, Hackman and Lawler, 1971). However, since overall performance of role incumbents often is satisfactory in spite of the disagreements between supervisor and subordinate job descriptions, it is reasonable to expect that compliance with co-workers may be just as important or, in some settings, perhaps more important than accuracy with the supervisor. Furthermore, perceptual responses such as felt role conflict

should result as a function of the degree of discrepancy between supervisor and co-worker demands and the role incumbent's compliance with both sets of role senders. Therefore, compliance with co-workers will be explored along with that of supervisors as it relates to affective, behavioral, and motivational responses.

Total Work Setting Perceptions

Job perceptions to this point have been defined as specific duties or behaviors associated with the job. At a more abstract level, the job presents the role incumbent with stimuli which create perceptions of other specific job features which may not have direct behavioral referents. For example, the amount of feedback provided in the job setting is a work setting characteristic important for behavior but one which has no specific behavior requirements for the role incumbent. Like job duties, it can be expected to influence the effectiveness of the role incumbent's behavior. It is our purpose to explore the effects of these job features which possess few direct behavior referents as well as the specific job duties. The inclusion of these job features stems from the theoretical importance of such features in both a direct and moderating capacity in influencing work motivation, behavior, and affective responses on the job.

The theoretical rationale for a concern for less behaviorally anchored job features is provided by Hackman and Oldham's (Hackman and Oldham, (1974, 1975) theory of the motivational potential of an immediate work setting. According to them, a job possesses a certain potential for motivating the role incumbent to perform effectively. This potential is based upon the job's capability of influencing the individual to work hard for the rewards associated with doing the job, not just for rewards given by others on the job for good performance.

The job characteristics which comprise the motivational potential are based upon the concept of intrinsic motivation of Deci (1974) and De Charms (1968). Hackman and Oldham (1974) argue that jobs contain more motivational potential to the extent that they possess greater amounts of autonomy, task identity, and feedback.

The job's motivational potential should affect attitudes and behavior in two ways. First, as used by Hackman and Oldham, this affect is a direct one. Since those who are on jobs with high motivational potential have a greater probability of receiving intrinsic rewards from performing effectively on the job, the mean level of performance should be higher for those on such jobs than for persons on jobs with low motivating potential. Therefore, motivational potential should relate directly to job behaviors, perceptions, and affective responses to the job.

Secondly, the motivating potential of the job should moderate the relationship between the effort an individual does or intends to put into his job and his performance on it. This conclusion is based upon the assumption that on jobs with low as contrasted with high motivation potential, performance will be lower and the range in performance will be less due to the tendency for a depressing effect on performance for those who would be highly motivated. In job settings with high motivational potential, the range in performance should be greater and, since this range increase would be due to higher performance from highly motivated individuals rather than lower performance from persons lower on motivation, the mean difference described above for the two groups should also occur.

Schneider (1975) presents an excellent case for the moderating hypothesis in his interpretive review of the organizational climate literature. He argues that in organizations for which there is a climate that encourages the

display of individual differences, correlations should be found between individual differences and performance. On the other hand, climates which suppress individual differences should not create conditions for their correlation with performance and should produce lower levels of performance due to the tendency of work settings to establish standards of performance closer to the lower common denominator of performance. Thus, freedom to use abilities should tend to raise mean performance levels as well as strengthen individual difference-performance correlations. Schneider (1975) presents both theoretical (Argyris, 1957; Cronbach, 1957; McGregor, 1960; Mischel, 1968) and empirical (Andrews, 1967; Forehand, 1968; Fredricksen, Jensen, and Beaten, 1972) support for this position.

Two assumptions are required to generalize from Schneider's organizational climate position to the more specific task environment concept of motivational potential. The first is that a task environment with a high motivational potential represents an environment which encourages the expression of individual differences. An inspection of Hackman and Oldham's (1974) defining characteristics for high motivational potential indicates that such an environment should be more able to encourage individual differences effects on performance than one low on motivational potential. Feedback, task identity and autonomy all allow for persons to respond at their own level to the task. Furthermore, the whole task relevant theory from which this model was derived emphasizes the opportunity for individual expression (Hackman and Lawler, 1971).

Second, in order to compare the organizational climate interpretation to the specific task setting, individual differences in perceptions must be assumed to operate the same as individual differences in abilities. That is, cognitive perceptions of reward contingencies and of preferences

for job outcomes which are used to index the job incumbent's preferences for different levels of performance must be assumed to be legitimate individual differences. Since the major levels of the model on which the cognitive view of motivation expressed here is based (the Expectancy Theory model) hinges on the assumptions that individuals differ on their preferences for performance levels, such an assumption appears reasonable. Therefore, it is hypothesized that motivational potential will act as a moderator of the relationship between performance and individual preferences for performance levels.

Method

Sample

The study was conducted on members of an engineering unit in a medium sized manufacturing industry located in the midwest. The focal engineers were engaged primarily in engineering tasks rather than supervising other engineers. The sample included several types of engineers (electrical, industrial, mechanical, etc.), but they divided into two major classes. By far the more numerous were "process" engineers--those whose jobs involved designing new manufacturing processes and/or redesigning old processes. The remainder were "product development" engineers. As the name implies, they were concerned with the development of new products. The two classes were combined for the purposes of this study because of the small number of product development engineers and because of the fact that there were not major differences between the groups on the variables of interest to this investigation.

Of the 80 engineers eligible to participate in the study, 58 responded. These 58 engineers were asked to give the names of fellow engineers (hereafter referred to as peers) to whom they went for answers to questions about

their job and with whom they interacted informally (e.g., with whom they ate lunch). Also, their supervisors were asked to describe the engineering jobs of those under them and to rate the performance of each of their engineers. Data from other engineers and from supervisors were not available for all 58 participants in the study. Therefore, results which require responses from peers and/or supervisors are based upon less than 58 people.

Procedure

Engineers reported to a conference room in groups of no more than eight persons during a two day period. At this time, the researchers explained the general purpose of the study, told what would be done with the data, and insured the participants that their individual responses would be kept confidential by the Purdue staff. They were also told that participation was voluntary and that they could decide at any time not to participate in the study. One person did take this option after looking at the questionnaire. Finally, questionnaires were distributed, and participants took approximately one hour to complete them. Engineers and supervisors who could not be scheduled during the two days of data collection completed questionnaires on their own time and mailed them directly to Purdue.

Measures

Performance: Performance measures for each engineer were based upon his supervisor's rating on twelve items. These items were broken down into three major divisions: Engineering Performance, Administrative Performance, and Overall Performance. Overall Performance was rated on a single five-point scale by choosing one of the following alternatives: Inferior, Below Average, Average, Above Average, Superior. The items composing each of the

first scales are listed in Figure 1 (see Appendix B for the complete scale). Internal consistency reliabilities based upon coefficient alpha were $r = .84$ for Engineering Performance and $r = .82$ for Administrative Performance. Most performance analyses reported will use all three measures.

Effort: Two effort measures, also based upon supervisors' ratings, were used. The first was the sum of four items listed in Figure 2. The internal consistency of these items based upon coefficient alpha was $r = .80$. The second effort measure simply asked for the supervisor's estimate of the number of hours the engineer worked each week on the average. Across all engineers, the average number of hours reported by the supervisors was $\bar{x} = 45$ with a standard deviation of $s.d. = 4.5$.

Commitment to the Organization: Commitment was measured by the sum of six items selected from a thirteen item scale developed by Porter and Smith (1970). These items showed an internal consistency reliability of $r = .80$. For each item in the scale, the engineers rated the degree to which they agreed with the item on a seven point scale with anchors ranging from Strongly Disagree to Strongly Agree.

Job Satisfaction: The Job Descriptive Index (Smith, Kendall, and Hulin, 1969) was used to assess satisfaction with five dimensions of the job--Supervision, Pay, Promotions, Co-workers, and the Work Itself. This scale has had widespread use and has been shown to possess good psychometric properties of reliability and validity. For all analyses, the five scales will be used separately with no attempt to create an overall satisfaction score by summing across the five scales.

Performance Motivation: The model of motivation used has been termed the Expectancy Model (Mitchell, 1974). It assumes motivation is a function of three components. The first is the individual's expectancy that if he

Figure 1: Items Used to Measure Performance¹

A. Engineering Performance

1. Meets deadlines
2. Turns out high quality work
3. Makes appropriate use of available personnel
4. Keeps costs at a minimum
5. Chooses methods, processes, and designs which are realistic
6. Has innovative/creative technical ideas

B. Administrative Performance

1. Develops good working relationships with others
2. Completes necessary paperwork efficiently
3. When necessary, can be counted on to perform liaison work with other departments in order to maintain overall efficiency
4. Can be counted on to work outside channels when necessary in order to get job done successfully
5. Can be counted on to troubleshoot and meet emergencies when the occasion arises.

¹

All items were rated on a 6 point scale with 1 equalling "Never True" and 6 equalling "Always True".

Figure 2: Items Used to Assess Effort¹Items

1. How energetic is he?
 - a. Always appears "dead tired"
 - b. Appears somewhat slow and plodding in his actions
 - c. Normally alert
 - d. More on his toes than most
 - e. Exceptionally wide awake, a real "goer"
2. Does he make good use of his time on the job?
 - a. Rarely makes good use of his time; he does not work hard or concentrate
 - b. Sometimes makes good use of his time, but usually takes it easy
 - c. About half the time he makes good use of his time
 - d. He usually makes good use of his time
 - e. He always makes good use of his time
3. How often does he give up family or other off-the-job activities to work on his job either in the evenings or on weekends?
 - a. Almost never
 - b. Once every month or so
 - c. Once or twice a month
 - d. Once a week
 - e. More than once a week
4. All things considered, how much effort does he put into his job?
 - a. Very little effort, he doesn't really put much into this job
 - b. Slight amount of effort, but not very often and not very much, needs occasional prodding
 - c. Above average effort, usually appears to be trying
 - d. Quite a bit of effort, he tries pretty hard
 - e. A very great deal of effort, he tries as hard as he possibly can. He puts out 100% of the time

¹ To score all items: a = 1, b = 2, c = 3, d = 4, and e = 5

puts forth a given level of effort, he will reach a given level of performance. In other words, it is the connection he sees between the effort he puts out and the level of performance he will obtain on the job. If he sees a good connection, he should be more willing to work hard than if, no matter how hard he works, he believes his performance level will be the same. To measure expectancies, the engineers were asked to state the probability that a given level of effort (either high, average, or low) would lead to a given level of performance (again high, average, or low). Thus, nine subjective probabilities were obtained, one for each of the possible effort-to-performance level pairs (high effort leads to high performance, high effort leads to average performance, high effort leads to low performance, average effort leads to high performance, etc.).

Next, valence measures were obtained. A list of twenty-four outcomes (both positive and negative) were generated based upon typical rewards used in organizational research and upon interviews with the engineers. Ratings were obtained for each outcome on the degree to which each was desirable or undesirable to them. To increase the reliability of these ratings, the twenty-four items were clustered into nine more general items. Figure 3 lists these clusters, the items that comprised them, and the internal consistency reliability based upon coefficient alpha for each cluster. Although the clustering produced higher reliabilities than the typical expectancy theory procedure of using a single item, the obtained reliabilities for some clusters still were not high.

The degree of association between rewards and performance was based upon subjective probabilities that a given level of performance led to a given reward. This measure was much the same as the expectancy measure. However, for instrumentalities, each level of performance was associated with a

Figure 3: Job Outcomes Used in the Study

Outcomes

A. PAY (Coefficient Alpha = .68)

1. Earn enough money to be able to afford non-essentials on occasion without worrying about their cost.
2. Receiving a salary increase for doing a good job.
3. Earn a good living.
4. Earn enough just to get by each month.

B. AUTONOMY (Coefficient Alpha = .70)

1. A high degree of freedom to set work priorities as you see fit.
2. Being able to set or extend within reason deadlines for completion of projects for which you are responsible.
3. Having your work schedule set up primarily by your supervisor.
4. Having little or no say about which projects are assigned to you.

C. SECURITY (Coefficient Alpha = .34)

1. Worry about losing your job.
2. Feeling that your job is very secure.

D. RECOGNITION (Coefficient Alpha = .27)

1. Receiving awards, letters, praise or other honors from the company for doing a good job.
2. Receiving a salary increase for doing a good job.

E. PROMOTION (Coefficient Alpha = .45)

1. Rapid promotion within the company.
2. Remain in your position for several years before being considered for a major promotion.

F. FRIENDSHIP (Coefficient Alpha = .59)

1. Developing close friendships with other engineers in your work unit.
2. Developing a close friendship with your supervisor.

G. FEEDBACK (Coefficient Alpha = .49)

1. Receiving criticism from your supervisor.
2. Receiving complaints from people using some machine, procedure, or system which you designed or planned.
3. Having your supervisor tell you he is very satisfied with your performance.

Figure 3 (Continued)

Outcomes

H. ACCOMPLISHMENT (Coefficient Alpha = .16)

1. Overcoming especially difficult technical problems on a project assigned to you.
2. Feeling little sense of accomplishment.

I. JOB DEMANDS ON TIME (Coefficient Alpha = .63)

1. Working long hours--weekends and evenings.
2. Often thinking about your job when you are home.
3. Usually being able to put your family ahead of work demands.

reward, such as high pay, and not three levels of pay. As with valences, composite scores were formed for the nine reward categories.

Finally, the model views motivation as equal to the expectancy that effort will lead to performance multiplied by the extent to which performance leads to rewards. Symbolically, this becomes:

$$\text{Motivation} = E \sum_{i=1}^9 I_i V_i \text{ where}$$

E = the expectancy that effort leads to performance

I_i = the instrumentality of performance for attainment of reward i ,

and V_i = the desirability of reward i to the individual.

Although a large body of literature exists on this view of motivation (see Mitchell, 1974 for a review), there are still many questions as to what is the best way to measure the E s and the I s. The method chosen here was to subtract two probabilities to estimate E and I_i . In the case of the expectancy measure, the reported probability that low effort would lead to high performance was subtracted from the probability that high effort would lead to high performance. It was reasoned that if the person saw a large difference between the two, he should see a connection between effort and performance. On the other hand, if little difference existed, he should not alter his behavior because it would have little effect on his judged performance. For example, if someone saw a .9 probability that if he put forth high effort, he would be a high performer, but also saw a .9 probability that low effort would lead to high performance, in this setting, he should conserve his energy and not put in high effort. If, on the other hand, low effort had only a .1 probability of leading to high performance, he should put forth effort if he desires to be a high performer (see Ilgen and Peters,

1975, for a more complete discussion of this rationale and data to support it). Therefore, motivation was defined as:

$$\text{Motivation of person}_j = (P_{\text{high effort leads to high performance}} - P_{\text{low effort leads to high performance}}) \left(\sum_{i=1}^9 P_{\text{high perf leads to reward}_i} - P_{\text{low perf leads to reward}_i} V_i \right)$$

Job Descriptions

The engineers were asked to describe the extent to which they performed certain behaviors in their job and/or certain factors were present in their job. These job descriptions were based upon extensive interviews with engineers in order to develop a list of job facets which covered most of the jobs and which described jobs in terms the engineers were accustomed to using. Figure 4 contains a list of the job description items. It shows that the items were classified in two ways. The first dealt strictly with job duties. The second involved aspects of the job not related to specific duties or behaviors, but comprising elements of Hackman and Oldham's (1974) motivational potential concepts. Although the items do not sample their components of motivational potential completely, it was felt that the items do tap many of the essential characteristics of motivational potential.

Peer Nominations and Discrepancy Scores: The engineers were asked to nominate two sets of peers with from one to three peers in each set. The first, termed the technical peer, was that individual(s) to whom he went for technical advice. The only restrictions placed upon the engineer's selection of this person (or persons) was that he (or they) could not be his supervisor and had to be members of his immediate work group. For the second peer, the social peer, the engineer selected a member (or members) of his immediate work group, excluding his supervisor, with whom he frequently interacted socially, e.g., with whom he took coffee breaks, ate lunch, etc.

Figure 4: Job Description Items Categorized According to Job Duties
and Motivating Potential

<u>ITEMS</u>	<u>CLASSIFICATION</u>	
	<u>Job Duties</u>	<u>Motivating Potential</u>
1. Basically, an engineer in this job spends much of his time planning the best use of equipment and materials.	X	
2. Engineers on this job investigate problems of a basic and fundamental nature which may not be undertaken for specific practical application.		X
3. It is important for engineers in this job to keep informed about competitive products and activities.	X	
4. Simplifying production methods is an important aspect of this engineering job.	X	
5. Supervisors recognize a good engineering job and will congratulate you for a good job.		X
6. Close personal friendships develop between engineers.		X
7. Engineers on this job develop working models (prototypes) of new instruments or processes.	X	
8. For the most part, engineers on this job are well aware of how well they are doing on their job.		X
9. Performing liaison work with departments and personnel to maintain overall efficiency of process or equipment production is an essential duty for engineers on this job.	X	
10. In this position, engineers prepare initial specifications for equipment installation.	X	
11. Supervisors will furnish technical assistance on especially difficult engineering problems.		X
12. Engineers in this position evaluate performance of present materials, designs, methods, processes, products, equipment.	X	
13. Selling ideas to people is an essential skill for engineers holding this job.	X	
14. Engineers on this job are allowed to arrange their work priorities with minimum interference from their supervisor.		X
15. Overall, an engineer in this position can earn as much or more than a person with comparable qualifications in another organization.		X

Figure 4 (Continued)

ITEMS	CLASSIFICATION	
	Job Duties	Motivating Potential
16. Engineers set up pilot projects to develop and test new processes and equipment designs.	X	
17. Planning the best use of personnel is an aspect of this engineering position.	X	
18. Engineers on this job work with customers' representatives to suggest equipment and process modification.	X	
19. Engineers on this job often are to develop original technical ideas.		X
20. Engineers on this job play an important role in controlling expenses.	X	
21. Preparing and making technical recommendations and proposals accounts for a great deal of the time on this particular engineering job.	X	
22. Engineers on this job attend seminars, symposia and colloquia to keep abreast of current developments.		X
23. Trouble shooting and meeting emergencies are familiar aspects of this engineering job.	X	
24. These engineers must know how to set up priorities on projects and sub-projects.	X	
25. Developing good working relationships with subordinates is crucial for engineers on this job.		X
26. Being this type of engineer often consists of tracking down materials, checking on orders and calling for supplies.	X	
27. Engineers on this job often work weekends and nights to meet deadlines.		X
28. The most competent engineers are often selected for management positions.		X
29. Engineers on this job are able to learn and improve their skill on the job.		X
30. Engineers on this job work outside the normal channels in order to insure that a project is completed according to schedule.	X	
31. Being out-of-town overnight is sometimes required of engineers on this job.		X

Figure 4 (Continued)

<u>ITEMS</u>	<u>CLASSIFICATION</u>	
	<u>Job Duties</u>	<u>Motivating Potential</u>
32. Engineers on this job do very routine work.		X
33. Servicing manufacturing plants is required of these engineers.	X	
34. Engineers on this job keep logs, write memos and engage in similar administrative work.	X	
35. Engineers in this job receive interesting and challenging projects.		X

Identical Job Description items were filled out by the nominated peers as well as the focal engineer's supervisor. In cases for which more than one peer was nominated as a technical or social peer, the job description used for an item was the average of the responses from those nominated.

To create variables which reflected the similarity of the descriptions between the engineer and his supervisor and his self-selected peers, a D^2 statistic was used. In this case, the difference between the engineer's response to an item and the response of the other person(s) of interest was squared. The item D^2 s were then summed across all items of interest to give a total discrepancy score for that category. Recall that two categories were used--Job Duties and Motivation Potential. The larger the ED^2 for Job Duties or for Motivation Potential between the engineer and the other person such as his supervisor, the less they agree upon the duties or motivation potential of the job.

Role Ambiguity and Conflict: The measure developed and used by House (House & Rizzo, 1971) was used to measure job or role ambiguity. In addition, a measure of the amount of conflict felt in a role was also measured. Here, conflict is felt when different demands are being placed on the engineer. It was expected that those who disagreed with others on what they were to do would also experience more conflict. Role conflict was measured on the scale developed by House.

Results

Performance Model: Figure 5 presents the general performance model discussed in the introduction. Table 1 shows the intercorrelations of the effort and performance measures as well as the strength of several links in the model of Figure 5. The intercorrelations of the performance measures indicate that all three measures are very similar. To what extent these

Figure 5: Performance Model of Work Behavior



Table 1. Zero Order Correlations of Motivational Force, Effort,
and Performance Measures Related to the Performance Model

(N = 46)

	1	2	3	4	5	6
1. Engineering Performance						
2. Administrative Performance	.81**	----				
3. Overall Performance	.76**	.77**	----			
4. Effort Rating	.74**	.73**	.81**	----		
5. Hours Worked	.38**	.51**	.55**	.63**	----	
6. Motivational Force	.25	.37**	.49**	.48**	.23	----

* $p \leq .05$

** $p \leq .01$

high correlations were due to similar levels of performance on both engineering and administrative performance, or to supervisor's inability to conceptually separate these two types of behaviors, or to biases filling out the scale, cannot be determined. However, later analyses show that in some circumstances, engineering and administrative performance relate differentially in a systematic and theoretically meaningful way to other variables, so the two scores were not combined.

The correlation between the two measures of effort was less strong ($r = .63$) than the intercorrelations of performance measures. Part of the lower correlation was due to a restriction in variance on the hours worked measure rather than a greater degree of independence of the two aspects being rated. Therefore, the effort rating appeared to be a better index of effort than the number of hours worked per week, and the latter was excluded from the remainder of the analyses.

The combination of links 2 and 3 of Figure 5 are represented by the effort-performance correlations of Table 1. In all cases, the correlations are extremely high and positive although the correlations tend to be higher for the effort rating than for hours worked. Given the model, a high correlation presumably would indicate that constraints did not strongly influence the effort to performance link. However, an alternative explanation appears more reasonable. That is, that supervisors, who rate both effort and performance, find it extremely difficult to separate the two concepts. Thus, ratings of effort and performance for a given individual and rated by the same observer will tend to be highly correlated. It seemed reasonable to conclude that the supervisors were in essence treating the effort rating as another form of a performance rating.

The extent to which effort and performance were seen as very similar to supervisors would be reflected by the extent to which hypothesized patterns of relationships with effort tended to follow the hypothesized performance relationships more than the effort ones when different relationships were predicted for the two measures. The last row of Table 1 lends mixed support for the conclusion that effort and performance ratings shared a common performance dimension. From Figure 5, it would be predicted that Motivational Force would be more highly correlated with effort than with performance. Table 1 shows that the magnitude of Motivational Force's correlations with two measures of performance were not significantly less than its correlation with effort.

The effects of role compliance as a constraint in the performance model was investigated by comparing the correlations of motivational force with effort and performance for individuals high on compliance to those low on it. Table 2 reports these comparisons for compliance with supervisors, technical peers and social peers. Recall that role compliance was defined as the sum of the squared differences between the focal engineer's description of a job behavior required by him and the description of the comparison person. The total sample was divided into thirds on the basis of role compliance scores. Those in the lowest one-third were called the high compliance group and those in the upper one-third the low compliance one. Approximately fifteen persons made up each group. When individuals at the point of petitioning the groups had exactly the same compliance score, the split was made at the more extreme point where individual scores differed. Therefore, each one-third was comprised of fifteen, eleven, and ten for compliance with supervisors, technical, and social peers, respectively. In some cases, the ns were smaller if there were more than one individual with

Table 2. Effort and Performance Correlations with Motivational Force
for Engineers High and Low on Role Compliance with their Supervisor,
Technical Peer, and Social Peer

Performance and Effort	Role Compliance with Supervisor		Role Compliance with Technical Peer		Role Compliance with Social Peer	
	High (N=15)	Low (N=14)	High (N=12)	Low (N=9)	High (N=10)	Low (N=7)
1. Engineering Performance	.48*	.24	.40	.56	.44	.28
2. Administrative Performance	.58*	.40	.66**	.64	.54	.34
3. Overall Performance ^{a,c}	.68**	.08	.71**	.50	.77**	.05
4. Effort Rating	.40	.33	.70**	.72*	.59*	.45
5. Hours Worked ^c	.38	-.02	.59*	.11	.72**	.01

* $p \leq .05$

** $p \leq .01$

^a Moderated prediction held for supervisor ($p \leq .05$)

^b Moderated prediction held for Technical Peer ($p \leq .05$)

^c Moderated prediction held for Social Peer ($p \leq .05$)

^d Correlation coefficient was significantly greater than total

sample r of line 6 in Table 1. ($p \leq .05$)

the same critical score.

Due to the fact that effort and performance ratings do tap the same concept, partial or part correlations were not used to measure the degree of linear relationship between force and performance with effort held constant. Holding effort constant would have held valid performance variance constant rather than variance in performance covarying with effort.

The moderating effect of role compliance received partial support for compliance with supervisors and with social peers, but not with technical peers. High complying engineers with their supervisors and social peers performed in line with their motivational force significantly more than low complying ones. For social peers, the same relationship held for the number of hours worked in a week. It should be pointed out that although the latter moderated effect was not predicted by the model, it is consistent with the conclusion that the effort measures obtained from supervisors were contaminated with a major halo effect.

The general pattern of correlations observed for supervisors and social peers also fit the moderated interpretation. It is noted that for all effort and performance measures, the motivational force-behavior correlations were higher for high compliers than for low. Although the data did not strongly support the moderating effect of role compliance in the performance model, some support did appear for it and the general pattern of the results was very supportive, although this pattern must be interpreted with caution due to the lack of statistical significance for some of the combinations. Nevertheless, when the high compliance individuals are considered without regard to the comparisons to other groups, it should be noted that the magnitude of the correlations between an expectancy theory measure of motivational force and both performance and effort is extremely high. Correlations of this

magnitude are rarely found with expectancy theory research.

Role Perceptions Effects on Beliefs and Affect: Compliance with others' role expectations were compared to the focal engineer's job satisfaction and beliefs about the conflict he felt in his role, the amount of ambiguity he experienced in it, and his commitment to the organization. Table 3 shows that only one satisfaction measure, satisfaction with supervision, correlated with compliance for all three comparison persons, although satisfaction with pay and promotion were significantly correlated with role compliance for two on the three persons and were nearly significant for the third ($p \leq .10$). The lack of a significant correlation with work was consistent with a reward view of satisfaction. Since the rewards the engineers received from doing the work were mediated by them and not by others, it is reasonable to expect that work satisfaction would not be influenced by compliance with others. On the other hand, satisfaction with co-workers was expected to be related to compliance with peers.

Table 3 also shows that beliefs about the role demands, role ambiguity and role conflict, only related to compliance with the supervisor and in this case, only role ambiguity significantly correlated with it in the predicted direction. Since supervisors had more power over the engineers, it was predicted that more conflict and ambiguity should be felt when they did not comply with him than with the others.

Motivational Potential: To investigate the effects of the job's motivational potential on beliefs, behaviors, and job satisfaction, it (motivational potential) was investigated as both a direct and indirect influence on them. To avoid the problem of relating self reports of motivational potential to self reports of beliefs and satisfaction, the original intention was to use supervisor descriptions of motivational potential to describe it.

Table 3. Role Compliance Correlations with Satisfaction
and Belief Measures

	Role Compliance With:		
	Supervisor (N=46)	Technical Peer (N=38)	Social Peer (N=30)
1. Job Descriptive Index			
a. Work Itself	-.01	-.03	-.06
b. Supervision	-.38**	-.46**	-.61**
c. Pay	-.35**	-.53**	-.25
d. Promotion	-.22	-.36*	-.32*
e. Co-workers	-.06	-.19	-.11
2. Role Ambiguity	-.29*	-.01	-.12
3. Role Conflict	-.11	-.02	.26
4. Commitment to the Organization	-.05	-.24	.10

* $p \leq .05$

** $p \leq .01$

However, supervisors rated most jobs as extremely high in motivational potential and there was very little variance in their ratings. Since the engineers themselves provided less inflated ratings and discriminated more on this measure, it was decided to use their ratings to measure motivational potential. In one instance, analyses were reported in which both high ratings by supervisors and focal engineers were used to isolate those individuals who were assumed to be on jobs very high in motivational potential from those on jobs very low in it.

Table 4 shows that motivational potential had a very consistent positive relationship to all but one measure of job satisfaction, with both measures of responses to the role, and to commitment. The only job satisfaction measure not associated with it was satisfaction with co-workers. Theoretically, this dimension of the job should be least associated with the motivational potential concept. Performance and effort measures, on the other hand, showed no direct linear relationship with motivational potential as seen by the role incumbents.

Motivational potential also was hypothesized to moderate the relationship between motivational force and behavior ratings obtained from supervisors. Table 5 provides two sets of correlations related to this prediction. The first used motivational potential as perceived by the focal engineers as a moderator. The second used the discrepancy in motivational potential descriptions between superiors and the focal engineers. Recall that supervisor descriptions of motivational potential were very high and there was very little variance in these ratings. Therefore, similar ratings (a low ED^2) between supervisors and their engineers occurred when the engineer saw his job as high on motivational potential and so did his supervisor. Dissimilar ratings were primarily due to lower ratings by engineers and high ratings by their

Table 4. Correlations of Engineers' Ratings of Motivational Potential
with Behaviors, Beliefs, and Satisfaction

<u>Variable</u>	<u>Correlation with Motivational Potential Rating</u>
Supervisor Rating of: ^a	
Engineering Performance	.22
Administrative Performance	.22
Overall Performance	.25
Effort Rating	.25
Hours Worked	.06
Job Descriptive Index ^b	
Work Itself	.51**
Supervision	.51**
Pay	.34**
Promotion	.52**
Co-Workers	.21
Role Ambiguity ^b	.49**
Role Conflict ^b	-.26*
Commitment ^b	.25*

^a N = 46

^b N = 58

* $p \leq .05$

** $p \leq .01$

Table 5. Motivational Potential of the Work Setting as a Moderator
of the Correlation Between Motivational Force and Effort and Performance Measures

	Self Ratings of the Motivational Potent- tial of the Job		Discrepancy of Self Rating of Motivational Potential with Super- visor's Rating	
	Highest 1/3 (N=17)	Lowest 1/3 (N=11)	Similar (N=14)	Dissimilar (N=13)
Engineering Performance	.04	.30	.37	.47
Administrative Performance	.31	.39	.51*	.55*
Overall Performance	.50*	.24	.80**	.31
Effort Rating	.54**	.30	.58*	.50
Hours Worked	.17	-.10	.54*	.25

supervisors. Therefore, the similar groups represented high motivational potential and both the engineer and the supervisor agreed on it. The data of Table 5 shows moderate support for the moderating effect of motivational potential. However, although the pattern held up for both overall performance and effort ratings, the correlations of interest were only significantly different for overall performance under the condition where both supervisors and subordinates agreed on the degree of motivational potential.

The final set of analyses related satisfaction to role ambiguity and conflict. Although these correlations are inflated due to the response-response mode, the pattern of observed correlation was as predicted (see Table 6). Conflict and ambiguity were not desired states as was predicted.

Discussion

Role perceptions were shown to influence work behaviors and work related attitudes in both a direct and an indirect fashion. These influences, in general, were consistent with earlier predictions. The discussion that follows considers first the direct, then the indirect or moderated relationships.

Direct Effects of Role Perceptions

Jobs vary in their potential for involving those on the job in the task at hand. To influence the job incumbent, the involving features, that is, the motivating potential, of the job must be perceived by the role incumbent; once perceived, the perceptions should lead to affective and behavioral consequences (Hackman and Oldham, 1974). Using those job description items which most closely tapped the major dimensions of Hackman and Oldham's motivational potential concept, the data clearly indicated that the perception of motivational potential features in the job co-varied with affective responses to the job. Satisfaction with four of five job dimensions measured with the

Table 6. Correlations of Role Ambiguity and Conflict Ratings
with Job Satisfaction (N=58)

Job Descriptive Index	<u>Role Ambiguity</u>	<u>Role Conflict</u>
Work Itself	.50**	-.41**
Supervision	.60**	-.39**
Pay	.03	.07
Promotion	.37**	-.39**
Co-Workers	.06	-.02

J.D.I. correlated significantly with the job incumbent's rating of motivational potential as measured in this study.* The pattern of these correlations also supported the motivational potential construct. Both Work Itself and Supervision correlated very highly with motivational potential ($r = .51$ for both). Since motivational potential is construed as a characteristic of the job design, satisfaction with Work Itself should be associated with it. The supervisor's influence on the motivational potential of the job also would be expected to influence satisfaction with him. Recall that performance feedback was one of the three dimensions of motivational potential. Although in the strictest sense, the feedback, to be a job characteristic, must come from the task itself, Hackman and Oldham (1974, 1975) recognized that others in the work setting, specifically the supervisor, play a major role in providing performance feedback. Furthermore, supervisors may influence the motivational potential of a subordinate's job by assignment to jobs that are higher in it and/or by expanding the job and giving more autonomy to the individual. Graen and his colleagues (e.g., Dansereau, Graen, and Haga, 1975) have clearly demonstrated that supervisors do influence the roles of subordinates in this fashion by selecting some as informal assistants to share in the leadership function. House (1971, 1973) also incorporated a similar construct by recognizing that leaders influenced subordinate motivation by assigning them to jobs with higher intrinsically motivating characteristics.

The remainder of the satisfaction correlations with motivational potential implied that the reward system for the engineers was such that those on jobs with higher motivational potential were more likely to be promoted, and were not more likely to receive higher salaries. Finally, motivational potential

* It should be noted that motivational potential was assessed by summing those items on a job description index that were similar to the three dimensions of motivational potential described by Hackman and Oldham (1974). The measure was not the same as that defined by them and measured by their instrument described in Hackman and Oldham, 1975.

was not correlated with co-worker satisfaction. Since the construct has no reference to interpersonal relations with co-workers, the lack of any correlation is consistent with it.

To complete the cognitive reactions to the job as related to motivational potential, three beliefs about the job and the engineer's relationship to the job were measured. These were: Role Conflict, Role Ambiguity, and Commitment to the Organization. These results all support the general positive effect of having jobs with high motivational potential for professionals. It is of interest that perceiving the job as being higher on motivational potential and, therefore, on autonomy did not lead to greater feelings of role ambiguity; in fact, the opposite occurred. This supports Schuler (1975) who concluded that there is no support for any positive benefits of ambiguous roles.

Although the motivational potential data strongly supported the conclusion that jobs perceived to be high in it are associated with greater commitment to the organization, higher job satisfaction, and lower role conflict and ambiguity, two cautions must be interjected. First, the sample consisted of college graduates working on professional jobs. Such a group should hold the value orientation most likely to be positively influenced by jobs high on motivational potential (Blood and Hulin, 1967; Hulin, 1971; Hulin and Blood, 1968). Therefore, any generalizations from this sample to other jobs must consider the extent to which the other sample is likely to conform to a general ethic which accepts involving work as a positive feature of a job.

The second caveat is that motivational potential was perceived motivational potential which may or may not have reflected the actual job characteristics as assessed by independent observers. Since both the measures of this construct as well as the attitudes and beliefs were obtained from the same

individuals, the correlations observed would tend to be higher than if motivational potential were rated by someone other than the engineers. Nevertheless, the results are consistent with the view that perceptions of the job are preconditions for affective responses to it and beliefs about it.

The second role concept variable was less subject to the problem of common method bias discussed above. Here the role related variable incorporated an external observer by assessing the degree of agreement between the focal engineer and his supervisor, technical peer, or social peer on the specific behaviors required on his job. It was assumed that those whose descriptions of what they did on the job were consistent with the comparison person of interest would be more likely to receive rewards mediated by that comparison person and less likely to experience feelings of role ambiguity and role conflict. In general, the correlational results support this interpretation. However, there were several exceptions to this. First, compliance with supervisors did not lead to greater satisfaction with promotions (although the correlation approached significance $r = -.22, p \leq .10$) or with role conflict. The lack of an effect for the latter may have been due to the fact that the role conflict measure taps conflict among behaviors within the role (e.g., quality vs. quantity) as well as conflicting demands from others. The former would not be expected to correlate with compliance.

Compliance with technical and social peers did not significantly correlate with satisfaction and belief measures as frequently as was the case for supervisors. These results were consistent with a reward interpretation. Since it is unlikely that either set of peers controlled as many rewards as did the supervisor, the lower frequency of significant correlations is not unexpected.

In conclusion, the two major role concepts of interest, perceived motivational potential of the role and compliance with others on the job, appeared

to influence attitudes and beliefs in different fashions. Perceptions of higher degrees of motivational potential in the job were associated with more positive attitudes and beliefs about the job as well as greater expressed commitment to the organization. It appeared that jobs perceived to be high on skill variety, task identity, and task significance created a general milieu to which the job incumbent reacted very favorably. Reactions to the role, his supervisor, and the major rewards of pay and promotion were more favorable under this condition. It is also of interest that satisfaction with co-workers which, theoretically, should be relatively independent of the dimensions of motivational potential, was not correlated with it. On the other hand, the effect of compliance with supervisors and peers appeared to depend on the extent to which the other mediated rewards. Compliance with the supervisor, who presumably influenced more rewards than did peers, was more strongly associated with satisfaction and beliefs than was compliance with either of the other two sets of peers.

To investigate the effect of role perceptions on job behaviors, both motivational potential and compliance measures were correlated with supervisory ratings of effort and performance. None of the correlations between role concepts and behaviors rated by supervisors were significant. The interpretation of these data relies upon the moderated effects of role variables and is treated in the following section.

Moderated Effects of Role Variables

Role compliance was expected to moderate the relationship between motivational force as defined by Expectancy theory and performance, since compliance should indicate the extent to which the individual performed the behaviors others expected him to perform. In other words, role compliance was considered a measure of the way in which effort was directed; only if effort were directed

to the appropriate behaviors, would increases in effort lead to increases in performance. The pattern of results for both compliance with supervisors and with social peers tended to support the moderated predictions. However, in several cases, the moderated effects were not strong enough to produce statistically different correlations between the high and low compliance groups in spite of the fact that the overall pattern of relationships was as predicted.

The lack of a significant difference was due to the low power of the comparisons between correlations which was a function of the small sample sizes when the sample was divided into thirds on role compliance. Even under the most favorable conditions of fifteen individuals in each group for high and low compliance with the supervisor, a very large difference between correlations was required to produce a significant difference between correlations at the $p \leq .05$ level. With group sizes usually less than these, the required difference in r_s was, of course, even greater.

A second issue was the fact that role compliance as a measure of direction of effort should have moderated the motivation-to-performance relationships but not the motivation-to-effort ones. For compliance, this was the case, only the overall performance relationship with motivation was moderated by compliance and the two effort correlations were not (see Table 2). However, for social peers, the motivation-to-effort relationship was also moderated by role compliance. Likewise, the pattern of correlations tended to be the same for both effort and performance. This was most likely due to the fact that supervisors found it difficult to distinguish between effort and performance. Thus, given the difficulty in distinguishing these two, the measure of effort apparently tended to be another measure of performance and, as such, also showed the same relationship with role compliance.

Motivational potential also was predicted to moderate motivation-to-performance relationships but for different reasons than role compliance. In this case, it was assumed that jobs higher on motivational potential created an environment or climate in which individual differences would have a greater impact on performance. Schneider (1975) reported such an effort of organizational climate on the relationship between ability and performance; the present study extends this to motivation. Table 5 supported the general pattern of the moderated relationship but only for overall performance was the correlation for those on jobs with high motivational potential significantly greater than for those jobs with low motivational potential. This occurred only when both the engineer and his supervisor agreed that the job was high on motivational potential. Yet, since the power of these statistical tests was low as mentioned earlier, the general pattern and the generally strong correlations between motivational force and both effort and performance measures was seen as moderate support; the opposite conclusion that motivational potential has no influence on the ability of motivation to influence performance certainly does not seem justified, given these data.

Given the strength of the moderated data, generalizations must be made with some caution. However, the overall pattern of the results and the magnitude of the correlations under conditions of high compliance and high motivational potential were very encouraging. They suggested that future concerns for the effects of expectancy theory variables on work performance should look closely at the degree to which role perceptions are in line with role expectations. To the extent that the two are not in line, the individual is likely to be frustrated in his attempt to convert his effort into effective performance. In such cases, it may be necessary to provide training for focal persons to bring role perceptions in line with role expectations and/or

to provide supervisory learning aimed at communicating role expectations more effectively to subordinates.

The motivational potential data implied that jobs do differ in their ability to provide the opportunity for motivation to impact on performance and that, under favorable conditions, motivation can be highly related to performance indices. The significance of this for job design is obvious.

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