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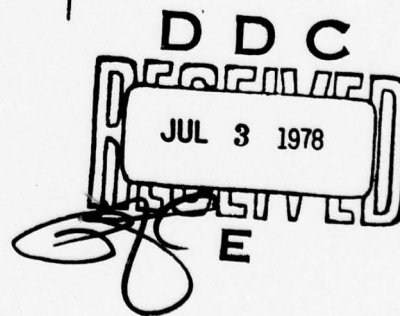
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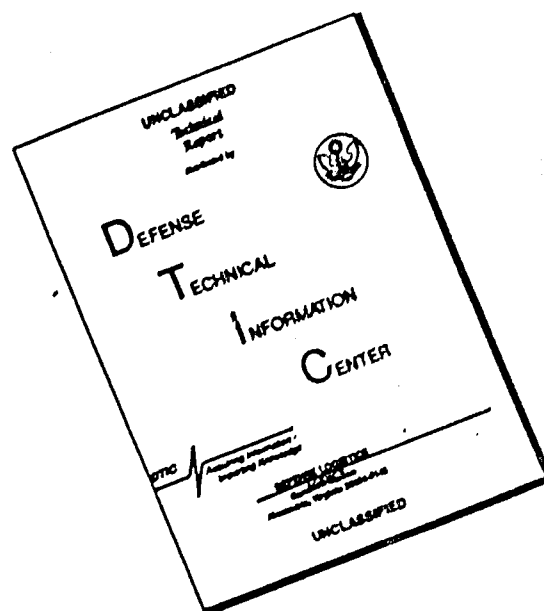
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RELATIONSHIPS BETWEEN JOB COMPLEXITY AND  
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A TEST OF MODERATING EFFECTS.

10 Ralph/Katerberg Jr.

Peter W. Hom

Charles L. Hulin

9 University of Illinois  
Technical Report, 78-1

11 May 1978

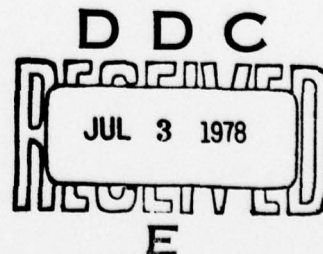
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17. ABSTRACT (Continue on reverse side if necessary and identify by block number)  ➤ Measures of job complexity, job attitudes, withdrawal intentions, and reenlistment decisions were collected from 484 National Guardsmen. The moderator effects by job contextual factors on the relationships between job complexity and dependent measures were investigated. Complexity of the job was positively and strongly related to all dependent variables, and little evidence for moderators was found using two methods. Implications for these results are discussed in terms of recent research on moderator effects. ➤			



### Abstract

Measures of job complexity, job attitudes, withdrawal intentions, and reenlistment decisions were collected from 484 National Guardsmen. The moderator effects by job contextual factors on the relationships between job complexity and dependent measures were investigated. Complexity of the job was positively and strongly related to all dependent variables, and little evidence for moderators was found using two methods. Implications for these results are discussed in terms of recent research on moderator effects.

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The complexity or scope of a job has been positively related to an employee's job satisfaction, internal work motivation, job involvement, organizational commitment, work attendance, and job performance (Hackman & Lawler, 1971; Hackman & Oldham, 1976; Stone, 1976; Stone, Mowday, & Porter, 1977; Stone & Porter, 1975; Steers & Spencer, 1977; Rousseau, 1977; Umstot, Bell, & Mitchell, 1976). Concurrently, several personal characteristics have been considered as moderators of such relationships in order to enhance the effects of job characteristics on workers' affective and behavioral reactions to their jobs. Although studies that have examined the moderating effects of alienation from work, endorsement of the Protestant Work Ethic, urban versus rural socialization or residence, need for achievement and autonomy, and higher order need strength have shown inconsistent or mixed results (Brief & Aldag, 1975; Hulin, 1971; Hulin & Blood, 1968; Orpen, 1976; Turner & Lawrence, 1965; Wanous, 1974), individual growth need strength (i.e., the needs for personal growth, autonomy, and accomplishment) has generally been the most consistent and strongest moderator of the relationship between the motivational potential of the job and worker response to it (Hackman & Oldham, 1976). Specifically, workers who strongly desire satisfaction of higher order needs respond very positively to an enriched and enlarged job, while those having weak needs for personal growth and development at work respond less favorably toward a complex job, perhaps even negatively toward it. Presumably, the stronger positive reactions by employees with high growth needs are caused by their higher valuation of the intrinsic rewards that come from performing well on a challenging task.

Recent interest has focused on the moderating effects of the context of the job on the relationships between job content and responses to the job. Such interest in situational moderators has been stimulated in part by

the recent failure of job redesign experiments that have neglected the importance of the work surroundings (Hackman, 1974). For example, the enhanced skill variety and autonomy of the work of telephone operators following a work enrichment project did not improve their internal work motivation, job involvement, or job satisfaction (Lawler, Hackman, & Kaufman, 1973). Rather this work redesign had a negative impact on the operators' interpersonal relationships with co-workers and supervisors. Moreover, Lawler et al. found that the jobs of the immediate supervisors of the telephone operators became "impoverished" when their subordinates took over much of what the supervisors used to do. This, in turn, contributed to the supervisors' greater feelings of job insecurity and to their dissatisfying interpersonal relationships with their superiors and their operators. Apparently, with little work left to do after the enrichment of their subordinates' jobs and being charged concomitantly with a new managerial responsibility of "developing" their subordinates (for which the supervisors were ill-prepared and lacking in guidance), the supervisors "oversupervised" their telephone operators. The intensified surveillance aroused resentment from the telephone operators and counteracted any positive gains that might have accrued from the enrichment of their jobs.

A job enrichment experiment by Locke, Sirota, and Wolfson (1976) reduced turnover, absenteeism, and grievances, and increased productivity. Job attitudes, however, were unaffected. Attitudes did not improve, the authors argued, because employee expectation and desire (created by the job enrichment) were not met; pay raises and promotions as equitable compensation for the enriched work were not forthcoming.

Interest in situational moderators is also reflected in Oldham's work. Oldham and his associates (Oldham, 1975; Oldham, Hackman, & Pierce, 1976)

uncovered circumstances under which enriched work would have the maximal beneficial impact on employee motivation and satisfaction. They found that satisfaction with several aspects of the work context--satisfaction with pay, job security, supervision, and co-worker relations--moderated the effect of an inherently motivating work content on workers' internal work motivation, job performance, and salary (corrected for tenure in the organization). In other words, employees dissatisfied with their pay, job security, or relationships with their co-workers or supervisor did not respond as favorably to jobs with high motivating potential as did employees who were satisfied with these contextual factors. Dissatisfaction with contextual work factors then attenuated the positive effects of enriched work.

These results were explained by Oldham in terms of the active dissatisfaction with the immediate work environment that distracts the attention of workers from the work itself and directs their energies and attention toward coping with the disturbing environmental problem. Only when such difficulty with the surrounding work setting is resolved, Oldham hypothesized, can workers fully appreciate and respond positively to the elements of a complex job. Dunham (1977) similarly interpreted the moderating effect of functional specialty on the relationship between job scope and affective work responses.

At first Oldham's explanation resembles Herzberg's two-factor theory of job satisfaction (Herzberg, 1966). Herzberg's theory views intrinsic aspects of the job (motivators such as achievement, recognition, responsibility, and advancement) as the primary determinants of job satisfaction, whereas the primary determinants of job dissatisfaction are extrinsic factors, (e.g., supervision, salary, interpersonal relations with co-workers, and working conditions). However, regardless of which version of Herzberg's theory is proposed (see King, 1970), extrinsic factors have always been



treated as main effects on employee satisfaction. On the other hand, Oldham regards extrinsic factors as behaving as moderators, although their additive effects on workers' responses are not precluded by his approach. In Herzberg's terms, Oldham suggests that extrinsic factors may also affect the relationships between motivators and job satisfaction (as well as other employee reactions to the job).

The purposes of this investigation are several. One is to explore the generalizability of the findings discussed above, which have been collected predominantly from samples of full-time workers, to part-time workers. Generalizability to the part-time work population, representing 21% of the labor force according to 1974 Department of Labor Statistics, is important since several researchers have discovered significant psychological differences in how these two types of workers respond to their jobs (Hall & Gordon, 1973; Logan, O'Reilly, & Roberts, 1973; Terborg & Miller, 1977). Not only do part-time employees appear less satisfied with their jobs than do full-time employees (Terborg & Miller, 1977), but the patterns of relationships among variables in these two groups differ (Hall & Gordon, 1973; Logan, O'Reilly, & Roberts, 1973). In this study, an attempt is made to determine whether the challenge and complexity of the part-time work performed by National Guardsmen influence their work satisfaction, internal work motivation, organizational commitment, intention to reenlist, and reenlistment in the National Guard. The effects of job scope on these responses may be weaker than those typically found among full-time workers if it is assumed that part-time workers value intrinsic rewards on their jobs less than full-timers do and consequently react less favorably to an enriched job. For example, Logan et al. (1973) hypothesized that because they spend fewer hours on the job and have different reasons for working, part-time employees



are less responsive to intrinsic work elements than are full-time employees.

Further, it will be determined in this study whether growth need strength and dissatisfaction with contextual job factors moderate the impact of the motivating potential of National Guard duty on the affective and behavioral responses of National Guardsmen. In specific, the beneficial impact of job complexity on worker reactions may be greater when National Guardsmen are "high" on these variables than when they are "low." If the scope-response relationships are weak to begin with (because of the low valence that intrinsic factors of the job have for part-time workers), then these individual and situational variables may be weaker moderators of these relationships.

A second purpose of this investigation is to examine the independent and interactive effects of job involvement (Rabinowitz & Hall, 1977). In this context, involvement with another job (the civilian one) may adversely affect National Guardsmen's reactions toward their National Guard duty. The importance of the civilian job for National Guardsmen may be detrimental for their job attitudes and behaviors because the part-time job (Guard duty) may interfere with and reduce the amount of time and energy that can be allocated to the more important full-time job. Participation of National Guardsmen in another work organization may limit and reduce the degree of inclusion in the National Guard (see Katz & Kahn, 1966 for a discussion of the concept of partial inclusion).

Moreover, the job involvement of National Guardsmen in their full-time occupation may influence the relationship between the complexity of the National Guard job and their responses toward it. However, the nature of this interaction is unknown. Psychological absorption in one's full-time occupation may divert one's attention away from the National Guard duty and

thus block the effects of its motivating potential. Alternatively, it may be plausibly argued that psychic investment in the full-time work may sensitize and sharpen one's perception of the job characteristics of the part-time work and consequently facilitate the impact of the complexity of the Guard duty on employee behaviors and attitudes. This particular form of interaction is possible because the job-involved person is one with strong growth and achievement needs and who endorses the Protestant Work Ethic (Rabinowitz & Hall, 1977; Saal, 1978) and thus would be more appreciative of the intrinsic work elements in the National Guard.

Finally, while other measures reflecting the propensity to withdraw from the work place have been considered as dependent variables in studies of the effects of job scope, such as absenteeism and commitment to the organization, the relationship between job scope and actual resignation from the organization has been ignored (see Mowday, Stone, & Porter, 1976, for an exception). Such neglect is surprising since some researchers (e.g., Hackman & Oldham) have explicitly included reduced turnover as an important outcome of enriching and enlarging the work content.

#### Method

##### Subjects

Data were collected from 484 National Guardsmen from a Midwestern State during their annual summer training. Guardsmen were selected for the survey if the decision to reenlist in the National Guard was imminent for them since researchers were interested in collected information regarding their reenlistment decisions. Social Security numbers were obtained for this purpose, and confidentiality of individual responses was guaranteed for subjects. The average tenure in the National Guard was 5.3 years (88% were first-term enlistees; the first-term enlistment is a fixed six-year

period), and the average number of months remaining in the present enlistment was 5.6 months for the sample.

The median educational level of the National Guardsmen was "some college or business school." Eighty-four percent of the sample were non-students. The average age of the subjects was 27 years. Males constituted 97 percent of the sample, and whites represented 85 percent of the participants.

#### Measures

The variables' means, standard deviations, internal consistency reliabilities (coefficient alpha), and their intercorrelations are presented in Table 1.

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Insert Table 1 about here

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Job scope. The National Guardsmen described the presence and amount of skill variety, task identity, task feedback, task significance, autonomy, learning opportunities, and job challenge in their military occupational specialty (MOS).

Skill variety is the degree to which the MOS requires a variety of different skills in carrying out the work.

Task identity is the extent to which the MOS requires completion of a "whole" and identifiable piece of work.

Task significance is the degree to which the MOS has a substantial impact on the lives and work of other persons.

Autonomy is the degree to which the MOS provides freedom and independence to the job incumbent in scheduling the work and in determining the methods to be used in carrying it out.

Task feedback is the degree to which carrying out the work activities required by the MOS results in the job incumbent's receiving direct and clear information about his performance.

Each job characteristic except for learning opportunities and challenge was measured by two items from Hackman and Oldham's Job Diagnostic Survey (1975).

The learning opportunities provided by the MOS for learning new job skills and knowledge were assessed by a two-item scale derived from Rousseau (1977): (1) There are frequent opportunities for me to learn new skills in my MOS; and (2) The work in my MOS provides little opportunity for me to increase my skills and knowledge of the job. Job challenge was the perception of the extent of challenge inherent in one's MOS and was also assessed by a two-item scale derived from Rousseau (1977).

A measure of the overall complexity or scope of the MOS was formed by an unweighted sum of the seven job characteristics. This procedure of combining job characteristics is justified because Hackman and Oldham (1976) have shown that a unit-weighted linear composite was as adequate as other means of combining job dimensions for a summary measure of job scope. The internal consistency reliability (coefficient alpha) of the summary index of job scope was .80 (the intercorrelations among job characteristics are low; average  $r = .35$ ).

Moderator variables. The sum of the subject's ratings of importance of several intrinsic rewards of work for his continued membership in the National Guard was the index of individual growth need strength. For example, a National Guardsman indicated how important having challenging work is to his reenlistment decision. This method is not dissimilar from how growth need strength is measured by the Job Diagnostic Survey, which



requires subjects to rate the desirability of intrinsic rewards (such as challenging work, opportunities for creative expression, etc.) in their jobs. Eight importance ratings constituted the individual growth need strength scale used in this study; its reliability was .91. The eight outcomes used in the scale are:

1. Having a job in which you know how well you are doing.
2. Having a clear idea of what you are to do during drills.
3. Learning new skills and information in your job.
4. Having a job in which you can take pride.
5. Having work which offers a challenge.
6. Having an interesting job.
7. Using your skills in your job.
8. Having a job that gives you a feeling of doing something worthwhile.

Three aspects of the work context were considered as potential situational moderators: satisfaction with pay, co-worker relations, and supervision. Two items judged to be appropriate for the National Guard were selected from the pay, supervision, and co-workers sub-scales of the Index of Organizational Reactions (IOR) (Dunham, Smith, & Blackburn, 1977). Because of space limitations the use of two items from each of these facets was judged to be an acceptable means of measurement given the known psychometric properties of the scales. The pay scale consisted of (a) For what I do in the National Guard, I feel the amount of money I make is very good; (b) How satisfied are you with the pay and benefits you receive from the National Guard? The reliability (coefficient alpha) of this pay satisfaction scale was .82.

The satisfaction with supervision items were (a) How do you feel about the supervision you receive in the National Guard?; (b) Do you ever have the



feeling you would be better off working under different supervision? This scale's internal consistency reliability was .73.

Satisfaction with co-workers was measured by (a) How do you generally feel about the Guardsmen you attend drill with?; (b) How satisfied are you with the other Guardsmen in your unit? The reliability of the measure of co-workers satisfaction was .71.

Finally, the sum of the three satisfaction scales represented a summary measure of overall satisfaction with the workplace.

Civilian job involvement is the extent of psychological identification with one's civilian work (Rabinowitz & Hall, 1977). Three items derived from Lodahl and Kejner (1965) were used to measure this construct. Involvement in the civilian occupation was assessed by the following items:

- (1) The most important things that happen to me involve my civilian work;
- (2) I am very much personally involved in my civilian work; and (3) The major satisfaction in my life comes from my civilian job. The internal consistency reliability of the involvement scale was .83.

Dependent variables. The work satisfaction scale of the Job Descriptive Index (Smith, Kendall, & Hulin, 1969) was used to index satisfaction with the MOS.

Internal work motivation is the degree to which an individual experiences positive internal feelings when performing effectively on his job. Three items from Hackman and Lawler (1971) measured this construct: (1) I feel a great sense of personal satisfaction when I do the work in my MOS well; (2) Doing the work in my MOS well increases my feelings of self-esteem (improves my opinion of myself); (3) I feel bad when I do the work in my MOS poorly. The coefficient alpha of the internal work motivation scale was .82.

Organization commitment is a National Guardsman's identification with and involvement in the National Guard (Porter et al., 1974; Porter, Crampon, & Smith, 1976). Porter considers organizational commitment to be a function of (a) a strong belief in and acceptance of the organization's goals and values; (b) a willingness to exert considerable effort on behalf of the organization; (c) a definite desire to maintain organizational membership. The internal consistency estimate (alpha) of Porter's instrument in this sample was .89.

Intention to reenlist in the National Guard was measured by a bipolar questionnaire item that ranged in score from -3 (very unlikely that one will reenlist in the National Guard when one's present enlistment expires) to +3 (very likely that one will reenlist).

Finally, information about the actual reenlistment decisions by the Guardsmen was collected from central records six months after assessment of attitudes. The term of enlistment for 252 subjects expired within that six-month period. The decision was coded: 1 = terminate; 2 = reenlist.

#### Analytic Procedures

Moderated multiple regression (see Zedeck, 1971) followed by subgroup analysis were used to detect the presence and assess the importance and meaning of the moderating effects of growth need strength, contextual satisfaction, and civilian job involvement.

Moderator effects, as the term is normally used, are analogous to interactions or additive effects in ANOVA designs. This suggests the significance of the moderator effects should be tested after removing the linear effects of the independent and hypothesized moderator variables. Only after detecting significant moderator effects should one resort to subgroup analyses in order to interpret the meaning of the moderator effects. This can be done by examining the signs and strengths of the correlations between independent and dependent variables in the subgroups

formed on the basis of the moderator variable.

Job scope and a particular moderator were first treated as predictors. The five dependent variables were separately regressed on the two predictors, and five multiple correlations were obtained. The increase in the  $R^2$  explained and the statistical significance of this independent effect of the moderator beyond that established with job scope alone were determined. Then the product of job scope and the moderator was added to the five multiple regression equations as a third predictor. The magnitude of the improvement in the five  $R^2$  was assessed, and the significance of the contribution (in criterion variance accounted for) made by the interaction term (i.e., the moderating effect) was determined. This procedure was repeated for each potential moderator.

In the subgroup analysis, subsamples were created by dichotomizing the total sample of subjects by scores on each of the potential moderators (using the median as a cutoff). Two samples were formed for each moderator, and the correlations between job scope and the five dependent variables were compared across both subsamples. It is hypothesized that (except for civilian job involvement) the correlation between job scope and any dependent measure in the "high" subsample will be greater than the correlation between job scope and the same dependent measure in the "low" subsample. Also, the difference between the two correlations is expected to be statistically significant.

Because of missing data on one or more variables, the sample size in the analyses was always less than the total sample of subjects participating in the study. This meant that the sample size also varied by the particular type of analysis used.

### Results

As can be seen in Table 1, job scope is positively, moderately, and significantly related to the five response variables ( $p < .05$ ). Its correlation with work satisfaction is .59, and its correlation with internal work motivation is .55. Its relationship with the propensity to withdraw from the organization is evidenced by a correlation of .57 with organizational commitment, a correlation of .45 with reenlistment intention, and a correlation of .37 with actual reenlistment. Except for the reenlistment act, the zero-order correlations between the scope of a job and the dependent measures are larger than the corresponding correlations between any moderator and the dependent measures. In addition, job scope is weakly related to the moderators with the exception of supervision satisfaction and the sum of the contextual factors. Finally, except for the relationships of the contextual satisfaction scales with their derived composite (the sum), the correlations among the moderators are low.

Although the relationships between involvement in the civilian job and the response measures are all negative, they are also weak, and only two of them are statistically reliable (the correlation of involvement with the reenlistment intention and behavior).

### Moderated Regression Analysis

The multiple correlations resulting from using job scope and each moderator as predictor are all statistically significant (see Table 2).

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Insert Table 2 about here

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Not surprisingly, the multiple correlations resulting from the enlarged predictor equation when the interaction term is included are also all significant ( $p < .01$ ).



Table 3 presents the increase in  $R^2$  and significance level of the

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Insert Table 3 about here

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contribution made by the independent effect of the moderators. Growth need strength and the sum of the contextual factors make the strongest contribution to prediction beyond that established by job scope alone. The average amount of additional criterion variance explained (across all response measures) when growth need strength or the sum of the contextual factors is combined with job scope is five percent. In each instance, the contribution to prediction made by using the two moderators as predictors is statistically significant ( $p < .05$ ). On the other hand, civilian job involvement makes the weakest contribution to prediction of employee reactions to the job as a predictor. The average increment in explained criterion variance is one percent, and only two of five contributions to prediction are statistically significant ( $p < .05$ ).

The addition of the interaction term to the multiple regression equation containing job scope and pay satisfaction significantly enhances the predictive accuracy of work satisfaction, organizational commitment, and reenlistment intention (see Table 3). Among the proposed moderators, pay satisfaction shows the strongest interactive effects, but the average increase in criterion variance accounted for when the pay satisfaction X job scope interaction is added to the prediction equation is less than one percent.

The sum of the contextual factors significantly moderates the relationships between job scope and work motivation and intention to reenlist. When the interaction term (the product of job scope and overall satisfaction with contextual factors) is added to the predictor battery containing job scope



and overall satisfaction with the work context, the amount of variance explained in work satisfaction and in reenlistment intention is improved significantly. Because neither co-worker nor supervisory satisfaction individually yields any significant moderating effects, the moderating effects by the sum of the contextual factors may be spurious. The results shown by overall satisfaction with the work context may be caused by the contribution of pay satisfaction to the sum of the contextual satisfaction scales.

Finally, none of the other proposed moderators demonstrates any significant interactive effects according to the moderated regression approach.

#### Subgroup Analysis

Table 4 contains the results of the subgroup analyses. Regardless of the particular subgroup considered, all correlations between job scope and employee responses are uniformly positive, and all except one are significant ( $p < .01$ ).

Considering first the significant moderator effects discovered in the preceding analyses, we find that of five cases in which a significant contribution was made by the interaction term, only one is shown to be significant in the subgroup analysis. The moderating effect of pay satisfaction on organizational commitment provided the only significant difference between correlations for the high and low groups. The remainder of the moderator effects found in the moderated regression analysis were not replicated in the subgroup analysis.

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Insert Table 4 about here

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The correlations between job scope and the five dependent variables for subjects with strong growth needs are higher than the corresponding

correlations for subjects with weak growth needs. That is, for each dependent variable, the difference in strength between two correlations is in the expected direction. However, only the relationship of job scope with internal work motivation in the "high" growth need subsample is significantly (statistically) larger than the job scope-motivation relationship in the "low" growth need subsample.

Satisfaction with interpersonal relationships in the Guard unit, civilian job involvement, and overall satisfaction with contextual factors fail to affect the associations between job scope and employee reactions. The differences in magnitude between correlations from the two subgroups generated from each of these moderators are inconsistent across the dependent measures. That is, for any one of these moderators, the job scope--response correlation in the "high" subsample may be stronger than the corresponding correlation in the "low" subsample. Yet when another response measure is considered for the same subsamples (and a different pair of correlations is compared), the "high" subsample may possess the weaker correlation of the pair.

None of the pairwise comparisons of correlations between subsamples is statistically significant for these moderators. Using co-worker satisfaction, supervision satisfaction, civilian job involvement, and overall satisfaction with the work surroundings as bases for splitting the total sample into subgroups did not demonstrate significant differential validity coefficients between them.

When pay satisfaction is used to subgroup subjects, the differences in strength between correlations from the "high" and "low" groups also fluctuate in direction. Further, only the job complexity-organizational commitment relationship is significantly different between the two subgroups with the correlation being stronger for Guardsmen who are satisfied with their pay.

### Discussion

Consistent with past research on the effects of job characteristics (Hackman & Lawler, 1971; Hackman & Oldham, 1976; Stone, 1976), the scope of a job is positively and reliably related to an employee's reactions to that job in a part-time military organization. Specifically, the challenge and complexity of the MOS of National Guardsmen was positively and substantially related to their satisfaction with the work, internal work motivation, organizational commitment, intention to continue membership in the organization, and actual reenlistment. Such generalizability to a different work population is encouraging since it has not been demonstrated before that the job characteristics of part-time work (National Guard duty) influence favorably the behavioral and affective responses of part-time employees to their jobs. Also, this study has expanded the domain of effects of job scope since this study has verified empirically the widely-shared but untested assumption that job scope affects employee retention. Moreover, since most of the past research on the effects of job scope have relied on verbal self-report, one criticism of this research is that the relationships between job scope and employee reactions reflect nothing more than common method variance. The scope--turnover association found in this study furnishes evidence that controverts this claim.

The results of this study suggest that rather than rely exclusively on extrinsic rewards such as pay or fringe benefits, job enrichment and enlargement may also represent viable means of increasing motivation, satisfaction, and tenure among part-time workers as they do for full-time workers. That part-time employees do not devote the standard amount of time to their jobs in an organization should not imply that they are uninvolved in their jobs or that they can only be extrinsically motivated to perform effectively

(although their reasons for membership in an organization may primarily be economic or social).

However, the evidence in this investigation for the existence of moderating effects is disappointing. In general, the moderating effects were inconsistent across the different statistical analyses or measures of employee reactions to work (e.g., in the subgroup analysis, the scope-employee reaction relationships were not always stronger in the "high" groups than in the "low" groups). Further, few of the effects were statistically significant, and given the larger number of statistical tests, these results can not be interpreted as reliable. Finally, the magnitude of the moderating effects was neither impressive nor practically important. The strongest moderator was satisfaction with pay. Yet the average amount of criterion variance uniquely explained by the moderating effect of pay satisfaction was less than one percent. In general, the evidence strongly suggests that the moderators functioned better as predictors.

One cannot ignore the possibility that problems of the sample, the task, or the measures used may account for the lack of unambiguous moderator effects. That job scope was related significantly to several responses would suggest that this sample of part-time members is not different from samples on which other studies were based. If it can be argued that this sample is representative of part-time workers in general, these results may be generalizable to at least that significant portion of the labor force that is involved in part-time work.

Considering the jobs involved in this sample, the possibility that these represent too narrow a range of jobs to test adequately for moderator effects can be refuted on the basis of the data presented. Substantial



variance on job scope indicates a rather wide range of work quality. Further, the relationships with the dependent variables suggest that this variance is not simply error. This gives support for both the credibility of the measures and adequacy of the sampling. Also, the summary measure of job complexity used in this study may have masked important moderating effects. That is, the relationships between some job characteristics with employee reactions may be affected by the proposed moderators, but these effects were attenuated or eliminated when the characteristics of the job were combined into a summary index of job scope. This possibility is improbable because numerous researchers (e.g., Stone et al., 1977; Steers & Spencer, 1977; Oldham et al., 1976) have found moderating effects with a summary measure of job complexity.

Based on these results, the validity of findings of moderator effects by other investigators may be questioned. Inappropriate and less powerful analytic tools used by them may be responsible for the illusory universality and pervasiveness of this phenomenon. The most common analytic technique for searching for moderator variables is the subgroup analysis. There are several means to determine whether the correlations are different between subgroups (Zedeck, 1971). The most widely used method is to determine whether the correlation in one subgroup is different in magnitude than the correlation in the other subgroup (the null hypothesis is not rejected for this group) and is statistically significant (different from zero). This is known as the single-group validity approach (Boehm, 1972). For example, Brief and Aldag (1975) showed that persons high in growth need strength display stronger positive correlations between job complexity and their affective responses to that job than do persons low in growth need strength. Most of the correlations were in the expected direction, and most of the



correlations in the high growth-need group were significantly different from zero. Hence, Brief and Aldag concluded that evidence for moderator effects exists.

A second method is to determine whether the correlations differ significantly between subgroups (also known as differential validity). Humphreys (1973) argued that this is the appropriate statistical test for demonstrating subgroup differences in validity and that it is an error in statistical logic to use the former, less rigorous, approach. If this differential validity criterion is applied to Brief and Aldag's results, there is no evidence for moderating effects by growth need strength in their study (nor in this or most other studies). Also, the standard error of prediction should also be compared statistically since the subgroup with the highest validity coefficient may not have the smallest standard error (Abraham & Alf, 1972).

Another robust method, rarely used, is moderated multiple regression. It has several advantages over the subgroup method (Zedeck, 1971). The usefulness of the moderator as an independent predictor can be evaluated, and the integrity of the total sample is maintained. Moreover, the problem of subgrouping is avoided. Researchers often use arbitrary criteria for subgrouping; the number of groups and cut-off points is usually arbitrarily selected (Kuleck, 1976). In general, moderated regression has not been successful in improving prediction (Zedeck, 1971). This can be seen in the negligible improvement (albeit significant) in prediction of employee reactions in this study and in studies by Stone et al. (1977) and Steers and Spencer (1977). In addition, if the moderated regression equations were cross-validated (rarely performed according to Zedeck, 1971) or if the shrinkage formula were applied (Schmitt, Coyle, & Rauschenberger, 1977), even these small moderating effects may vanish.

If the above, more rigorous and powerful, methods were applied uniformly by other investigators, the claim for the ubiquity of moderators that affect the relationships between the complexity of a job and employee reactions to that job may prove false. The paucity of evidence for moderating effects in this investigation would therefore not be unusual.

Before this pessimistic conclusion can be accepted, moderating effects by growth need strength or satisfaction with contextual factors should be demonstrated with other research designs. It is incumbent upon future researchers wishing to claim the existence of such moderating effects to use approaches other than cross-sectional correlational techniques. Simultaneous experimental manipulations of job complexity and sources of contextual satisfaction are needed to discover their interaction. Also, longitudinal research designs on the impact of job characteristics on employee reactions over time and on how changes in the contextual factors of the work setting dynamically moderate the impact of complexity of the job are required. This is important since cross-sectional designs may not yield the same results as longitudinal designs (Goulet, 1975). A recent longitudinal study by Hall, Goodale, Rabinowitz, and Morgan (1978) illustrates this point. Contrary to most correlational studies, changes in the context of a job over a ten-month period were unrelated to changes in perceived effort, satisfaction, and performance, although changes in the job characteristics were positively related to changes in job involvement.

The findings of this study are limited, however, to part-time workers who are also employed elsewhere. The overwhelming majority of the study's participants (97%) were employed in another organization, and the National Guard was not their only form of employment. Part-time workers without jobs elsewhere may be less appreciative of the complexity of their (sole)

jobs. Unlike the part-time workers in this study who are firmly attached and committed to the labor market, these part-time workers are marginal and peripheral participants in the labor force (Morse, 1969). Like others with peripheral work experience (e.g., hard-core unemployed; Goodale, 1973), such part-time workers may be less desirous of growth need satisfaction and hence may not respond positively to enriched and enlarged work. In short, the peripherality of participation in the work force may moderate the impact of job scope on employee reactions. Contrary to our hypothesis, number of hours worked per week in an organization appears to be of little importance since the National Guardsmen were no different from full-time employees in terms of their responses to job complexity.

Although civilian job involvement did not moderate any of the relationships between job scope and employee reactions, there is some evidence for its usefulness as a predictor. It was weakly but inversely related to reenlistment intention and behavior. National Guardsmen who were psychologically preoccupied and involved in their civilian jobs were more likely to express desires to leave the National Guard and to resign. This result can be interpreted in light of Hall and Gordon's (1973) findings. They found that married women who worked (part-time or full-time) experienced greater role conflict than full-time housewives. Thus, having multiple jobs or roles may create greater time demands that lead to role stress and attempts to eliminate peripheral and less significant jobs or roles in favor of the more important ones. The National Guardsman therefore represents a special kind of part-time employee. It remains to be explored further how enriching and enlarging one job affects an employee's reactions to his other job (as well as his other nonwork roles).

References

- Abraham, N., and Alf, E. Pratfalls in moderator research. Journal of Applied Psychology, 1972, 56, 245-251.
- Boehm, V. Negro-white differences in validity of employment and training selection procedures. Journal of Applied Psychology, 1972, 56, 33-39.
- Brief, A., and Aldag, R. Employee reactions to job characteristics: A constructive replication. Journal of Applied Psychology, 1975, 60, 182-186.
- Dunham, R. Reactions of job characteristics: Moderating effects of the organization. Academy of Management Journal, 1977, 20, 42-65.
- Dunham, R., Smith, F., and Blackburn, R. Validation of the index of organizational reactions with the JDI, the MSQ, and faces scales. Academy of Management Journal, 1977, 20, 420-432.
- Goodale, J. Effects of personal background and training on work values of the hard-core unemployed. Journal of Applied Psychology, 1973, 57, 1-9.
- Goulet, L. Longitudinal and time-lag designs in educational research: An alternative sampling model. Review of Educational Research, Fall, 1975, 45, 505-523.
- Hackman, J. On the coming demise of job enrichment. Technical Report No. 9, Department of Administrative Sciences, Yale University, Dec. 1974.
- Hackman, J., and Lawler, E. Employee reactions to job characteristics. Journal of Applied Psychology Monograph, 1971, 55, 259-286.
- Hackman, J., and Oldham, G. Development of the Job Diagnostic Survey. Journal of Applied Psychology, 1975, 60, 159-170.
- Hackman, J., and Oldham, G. Motivation through the design of work: Test of a theory. Organizational Behavior and Human Performance, 1976, 16, 250-279.
- Hall, D., and Gordon, F. Career choices of married women: Effects on conflict, role behavior, and satisfaction. Journal of Applied Psychology, 1973, 58, 42-48.



- Hall, D., Goodale, J., Rabinowitz, S., and Morgan, M. Effects of top-down departmental and job change upon perceived employee behavior and attitudes: A natural field experiment. Journal of Applied Psychology, 1978, 63, 62-72.
- Herzberg, F. Work and the nature of man. New York, New York: World Publishing Co., 1966.
- Hulin, C. Individual differences and job enrichment: The case against general treatments. In Maher (Ed.), New perspectives in job enrichment. New York: Van Nostrand Reinhold, 1971.
- Hulin, C. and Blood, M. Job enlargement, individual differences, and worker responses. Psychological Bulletin, 1968, 69, 41-55.
- Humphreys, L. Statistical definitions of test validity for minority groups. Journal of Applied Psychology, 1973, 58, 1-4.
- Katz, D., and Kahn, R. The social psychology of organizations. New York: John Wiley & Sons, Inc., 1966.
- King, N. A clarification and evaluation of the two-factor theory of job satisfaction. Psychological Bulletin, 1970, 74, 18-31.
- Kuleck, W. Individual differences as moderators of expectancy theory predictions of job choice attitudes. (Doctoral dissertation, University of Michigan, Ann Arbor, Michigan, 1976).
- Lawler, E., Hackman, J., and Kaufman, S. Effects of job redesign: A field experiment. Journal of Applied Social Psychology, 1973, 3, 49-62.
- Locke, E., Sirota, D., and Wolfson. An experimental case study of the success and failures of job enrichment in a government agency. Journal of Applied Psychology, 1976, 61, 701-711.

- Lodahl, T., and Kejner, M. The definition and measurement of job involvement. Journal of Applied Psychology, 1965, 49, 24-33.
- Logan, N., O'Reilly, C., and Roberts, K. Job satisfaction among part-time and full-time employees. Journal of Vocational Behavior, 1973, 3, 33-41.
- Morse, D. The peripheral worker. New York: Columbia University Press, 1969.
- Mowday, R., Stone, E., and Porter, L. The influence of job scope on the personality-turnover relationship. Technical Report No. 8, Department of Management, University of Nebraska, Lincoln, NE, Dec., 1976.
- Oldham, G. Job characteristics and internal motivation: The moderating effect of interpersonal and individual variables. Human Relations, 1975.
- Oldham, G., Hackman, J., and Pearce, J. Conditions under which employees respond positively to enriched work. Journal of Applied Psychology, 1976, 61, 395-403.
- Orpen, C. Job enlargement, individual differences, and worker responses: A test with black workers in South Africa. Journal of Cross-Cultural Psychology, 1976, 7(4), 473-480.
- Porter, L., Crampon, W., and Smith, F. Organizational commitment and managerial turnover: A longitudinal study. Organizational Behavior and Human Performance, 1976, 15, 87-98.
- Porter, L., Steers, R., Mowday, R., and Boulian, P. Organizational commitment, job satisfaction and turnover among psychiatric technicians. Journal of Applied Psychology, 1974, 59, 603-609.
- Rabinowitz, S., and Hall, D. Organizational research on job involvement. Psychological Bulletin, 1977, 84, 265-288.

- Rousseau, D. Technological differences in job characteristics, employee satisfaction and motivation: A synthesis of job design research and sociotechnical systems theory. Organizational Behavior and Human Performance, 1977, 19, 18-42.
- Saal, F. Job involvement: A multivariate approach. Journal of Applied Psychology, 1978, 63, 53-61.
- Schmitt, N., Coyle, B., and Rauschenberger, J. A monte carlo evaluation of three formula estimates of cross-validate multiple correlation. Psychological Bulletin, 1977, 84, 751-758.
- Smith, P., Kendall, L., and Hulin, C. The measurement of satisfaction in work and retirement: A strategy for the study of attitudes. Chicago: Rand McNally, 1969.
- Steers, R., and Spencer, D. The role of achievement motivation in job design. Journal of Applied Psychology, 1977, 62.
- Stone, E. The moderating effect of work-related values on the job scope-job satisfaction relationship. Organizational Behavior and Human Performance, 1976, 15, 147-167.
- Stone, E., Mowday, R., and Porter, L. Higher order need strengths as moderators of the job scope-job satisfaction relationship. Journal of Applied Psychology, 1977, 62, 466-471.
- Stone, E., and Porter, L. Job characteristics and job attitudes: A multivariate study. Journal of Applied Psychology, 1975, 60, 57-64.
- Terborg, J., and Miller, H. An investigation of part-time vs. full-time employees. Technical Report No. 1. Department of Psychology, University of Illinois, Nov., 1977.
- Turner, A., and Lawrence, P. Industrial jobs and the worker: An investigation of response to task attributes. Cambridge, Mass.: Harvard University Press, 1965.

Umstot, D., Bell, C., and Mitchell, T. Effects of job enrichment and task goals on satisfaction and productivity: Implications for job design.

Journal of Applied Psychology, 1976, 61, 379-394.

Wanous, J. Individual differences and reactions to job characteristics.

Journal of Applied Psychology, 1974, 59, 616-622.

Zedeck, S. Problems with the use of moderator variables. Psychological

Bulletin, 1971, 76, 295-310.



Footnote

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TABLE 1

Means, Standard Deviations, Reliabilities, and Intercorrelations Among Variables

Measures	$\bar{X}$	SD	Coefficient												
			alpha	1	2	3	4	5	6	7	8	9	10	11	12
1. Job Scope	45.50	9.73	.80	---											
2. Growth Need Strength	30.67	7.77	.91	.23	---										
3. Pay Satisfaction	6.88	2.12	.82	.26	.16	---									
4. Supervision Satisfaction	5.73	2.18	.73	.42	.14	.34	---								
5. Co-Worker Satisfaction	7.23	1.86	.71	.19	.09	.24	.27	---							
6. Sum of Contextual Factors	19.85	4.47	---	.41	.18	.74	.76	.66	---						
7. Civilian Job Involvement	11.26	3.30	.83	-.07	-.05	-.02	-.04	.07	.00	---					
8. JDI Work	21.95	13.61	---	.59	.30	.34	.45	.28	.49	-.08	---				
9. Internal Work Motivation	10.37	3.39	.82	.55	.33	.29	.31	.22	.38	-.03	.43	---			
10. Organizational Commitment	47.39	11.41	.89	.57	.30	.40	.48	.24	.52	-.13	.64	.55	---		
11. Intention to Reenlist	-.60	2.25	---	.45	.35	.25	.38	.14	.36	-.21	.54	.42	.68	---	
12. Reenlistment Decision	1.48	.500	---	.37	.37	.25	.32	.09	.43	-.14	.48	.36	.59	.68	---

NOTE: N = 392 for variables 1 through 11

N = 210 for variable 12

All correlations greater than or equal to .135 are significant at the .05 level (two-tailed test).

Table 2

Multiple Correlations For Two Predictor Models

<u>Predictors</u>	JDI Work Satisfaction	Int. Work Motivation	Organiz. Commitment	Reenlist. Intention	Reenlist. Decision
JS + GNS	.62	.59	.60	.52	.46
JS + GNS + Interaction	.62	.60	.60	.52	.46
JS + PAY SAT	.62	.58	.63	.47	.38
JS + PAY SAT + Interaction	.63	.58	.63	.49	.39
JS + SUP SAT	.63	.57	.63	.50	.38
JS + SUP SAT + Interaction	.63	.57	.63	.50	.38
JS + COW SAT	.62	.57	.59	.45	.36
JS + COW SAT + Interaction	.62	.57	.59	.45	.36
JS + SUM SAT	.66	.58	.65	.49	.38
JS + SUM SAT + Interaction	.66	.59	.66	.50	.38
JS + CJI	.60	.56	.58	.48	.38
JS + CJI + Interaction	.60	.56	.58	.49	.38

Note: N = 395 for the first 4 dependent variables, N = 221 for reenlistment.

All multiple correlations are significant,  $p < .01$ .

JS = Job Scope

COW SAT = Co-worker Satisfaction

GNS = Growth Need Strength

SUM SAT = Sum of Contextual Satis-

PAY SAT = Pay Satisfaction

faction

SUP SAT = Supervision Satisfaction

CJI = Civilian Job Involvement

Interaction = Product of Job Scope and Moderator

Table 3  
Increase and Significance of  $R^2$  by  
Independent and Interactive Effects of Moderators

<u>Moderator</u>	<u>Dependent Variables</u>				
	<u>JDI Work</u>	<u>Internal Work Mot.</u>	<u>Org. Com.</u>	<u>Intention</u>	<u>Reenlistment</u>
GNS Independent	.028*	.038*	.029*	.064*	.079*
GNS Interactive	.002	.005	.004	.003	.001
Pay Sat Independent	.035*	.023*	.068*	.018*	.020*
Pay Sat Interactive	.009*	.006	.009*	.016*	.006
Sup Sat Independent	.047*	.008*	.072*	.044*	.014
Sup Sat Interactive	.000	.000	.001	.004	.000
Co-Worker Satisfaction					
Independent	.029*	.015*	.017*	.003	.000
Co-Worker Satisfaction					
Interactive	.005	.000	.000	.000	.001
Overall Contextual					
Satisfaction Independent	.075*	.031*	.101*	.038*	.018*
Overall Contextual					
Satisfaction Interactive	.006*	.001	.004	.010*	.012
Civilian Job Involvement					
Independent	.002	.000	.009*	.041*	.014
Civilian Job Involvement					
Interactive	.002	.001	.003	.004	.003

Note: \*  $p < .05$

N for first 4 dependent variables is 395, N for Reenlistment Decision is 221.



Table 4  
Subgroup Analysis: Correlations Between Job Scope and Dependent  
Variables for Each "Moderator"-Based Subsample

		Dependent Variables				
		JDI Work	Internal Work Motivation	Organizational Commitment	Intention to Reenlist	Reenlistment Decision
Moderators						
Growth Need Strength	High	.63	.59**	.57	.48	.37
	Low	.53	.47	.54	.37	.31
Pay Satisfaction	High	.58	.53	.61**	.43	.27
	Low	.56	.53	.48	.41	.37
Supervision Satisfaction	High	.50	.52	.52	.43	.20*
	Low	.57	.51	.47	.32	.34
Co-Worker Satisfaction	High	.56	.57	.54	.39	.26
	Low	.61	.52	.57	.48	.43
Sum of Contextual Factors	High	.52	.46	.53	.43	.31
	Low	.54	.53	.47	.32	.30
Civilian Job Involvement	High	.62	.57	.53	.44	.31
	Low	.56	.53	.62	.45	.40

\*Except for this correlation, all correlations are significant at .01 level (two-tailed)  
\*\*The difference between the two correlations is statistically significant at .05 level  
(one-tailed test).

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