Individual Performance in a Piecework Setting:
An Analysis of Employee Differences
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Incentive pay systems are of interest to both researchers and practitioners as a way to improve employee productivity and efficiency. Past research has considered the design of incentive systems, the effects of systems and costs/benefits to employers. Little consideration has been given to another issue: what characteristics are associated with high incentive pay performers? Research that has considered the effect of personal variables on incentive-rewarded performance has failed to provide a theoretical framework in which findings could be considered, and thus lacks the underlying unity and cohesiveness that a theoretical model could provide.

In order to investigate the relationship between an individual's characteristics and incentive-rewarded performance, a questionnaire was administered to 453 employees of a major garment manufacturer. Employees responded to questions about their background, their interests and their attitudes toward their work. Performance was measured using employee production data from a nine week period collected by the company.

This study proposed and investigated a theoretical model of piecework performance which postulates that motivation, within a piecework setting, is a function of the va-
lences of pay and workgroup affiliation. This model proposes that this measure of motivation, in combination with an ability measure, is related to performance.

Quantitative results indicate that this model is useful in understanding piecework performance. Both the valence of pay and ability were found to be predictive of performance. Moreover, the valence of pay was related to age and Protestant ethic while previous findings that employees high in affiliation need were susceptible to rate restriction were not supported. Findings from this study hold promise for more effective selection of piecework employees and add insight into the use of incentive pay to increase individual performance.
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Chapter 1: Introduction

While American companies still have the highest productivity per worker, the gap between individual productivity in this country and that of other countries has narrowed substantially over the past ten years (Monthly Labor Report, 1987). Thus the global competitive position of American employers has been severely eroded. Foreign manufacturers have become more competitive by increasing employee productivity while paying lower labor costs. These lower labor rates help foreign manufacturers achieve a lower labor cost per unit and subsequently a lower overall manufacturing cost per unit. The competitive position of many foreign manufactures is based on two factors: lower labor rates and increased employee productivity.

1 Throughout the conceptualization and construction of this dissertation the controversy over the definition of the term "productivity" as contrasted to "performance" has been a thorny issue. Johannes M. Pennings (1984: 128), while debating the definition of "productivity", makes a distinction between productivity and performance. Productivity, he indicates, is usually associated with costs per unit of output, while performance pertains to levels of output. This research will continue to use these definitions. Implicit in this distinction is the implication that heightened performance will lead to increased productivity. Weiss (1984) notes that this is a common assumption, and that while a useful thought, still one that is taken on faith. This dissertation continues this assumption based on faith; that increases in piecework performance will lead to some increase in the company's productivity. It is worth noting that labor performance is only one influence on a company's productivity level. Other influences can include suppliers, management, capital, and the ownership itself (Adam, Hershauer, and Ruch, 1984).
Since American manufacturers must pay labor rates which are uncompetitively high in a global economy, lower overall cost per unit must be achieved by increasing individual employee job performance. This increased performance per employee would mean that fixed manufacturing costs could be spread over a greater number of units, thereby achieving a lower overall manufacturing cost per unit.

One response to this problem of increasing performance can be found in a 1945 U.S. Government study of 514 manufacturing plants. This study found that the average pay incentive plan increased the level of performance 39% over the level achieved by an hourly rate pay plan (Vitales, 1953). Further, while performance increased, cost per unit decreased, and employee take-home pay increased. These results seem responsive to Frederick Taylor's (1919: 2) directive that the "principal object of management should be to secure the maximum prosperity for the employer, coupled with the maximum prosperity for each employee." Other studies indicate that changing from an hourly to a performance contingent reward system will increase employee output between 10% and 20% (Lawler, 1971). More recently, Locke, Feren, McCleb, Shaw and Denny (1980) summarized a number of studies, some of which compared the effects of hourly pay with piecework pay. Median performance improvement for these studies was 30%, with a range 5% to 49%. These findings are pertinent to the United States of the 1980's since they suggest a method of dealing with the problem of declining growth rate in productivity in the United States, relative to other nations.

Increasingly the pressure of foreign competition is being felt in labor-intensive industries such as shoe-making, garment-making, and electronics assembly. Su (1985) has

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2 The U.S. Bureau of Labor Statistics (Nov., 1986) publishes data comparing the average U.S. pay to pay in other countries. For example, production workers in "all manufacturing" earn $12.40 in the U.S., compared to $1.41 (Korea), $1.48 (Taylor) and $0.25 (Sri Lanka).
projected that the electronics and garment industries will be among the top five industries experiencing continued competitive pressure from imports into the mid-1990's. Within such labor-intensive industries, labor costs (made up of fixed costs plus the variable piecerate cost) constitute the largest single element in the final cost per unit, thereby giving a competitive advantage to the manufacturing concern with the lowest labor cost per unit.

Theoretically, the productivity of piecework plants could be raised to offset a higher per-unit labor cost by hiring and retaining employees who manifest high rates of performance under this form of reward system. Unfortunately, almost no research has been done on the identification of high performance employees in incentive-based pay settings. This lack of pertinent research reflects the general lack of staffing research that addresses both individual and organizational characteristics in combination (Schneider, 1976).

**Purpose**

The personal characteristics seen by previous research to affect piecework performance were not tested empirically, nor was theory used to guide the majority of the research. Further, lacking theory, research that followed was not integrated to existing findings. A purpose of this study, therefore, is to investigate piecework performance and personal characteristics within a theoretical framework so that some order can be brought to existing and new findings.
A further purpose of this study then, is to create a model that might be useful for other pay-for-performance environments such as merit pay systems, gainsharing, and group incentive plans. Conceptually, these environments are linked by the use of money to motivate performance, therefore, the model postulated for this study could be more generally useful (or at least worthy of investigation) in these environments.

**Significance of this Study**

The study of work performance in a piecework setting offers a unique opportunity to examine the motivation/performance relationship. Within a piecework environment, a direct one-to-one relationship can be found between performance and outcome. This relationship removes variables that in other pay systems might come between an individual's performance and reward outcomes. Variables that weaken the link between performance and reward outcome diminish the possibility of determining the relationship between rewards and individual characteristics since the cause and effect relationship is diluted.\(^3\) If a difference can be found between high and low performance piecework employees, then future job applicants could be selected, in part, using the findings from this study. Over a period of time, therefore, the competitive trade position of the plant could be improved by increasing average employee performance and hence overall plant productivity.

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\(^3\) Examples of these variables include: time between performance and reward, reward schedule, trust in the reward and appraisal systems and the perceived link between performance and reward. For example, if an individual produces a high number of widgets in a day, but is rewarded by the supervisor's interpretation (appraisal) of that performance it could be that the employee will not see the appraisal as indicative of actual performance and the reward will no longer serve to motivate as it would without the offending appraisal system in place.
For academics, the results of this study will, perhaps, shed new light on motivation in the workplace by investigating the proposed motivation model and the individual variables associated with motivation. The model encompasses both the tangible nature of "rewards" and the less tangible nature of an individual's characteristics and background influences on the pay-to-motivation relationship.

Some past piecework research has focused on the importance of pay for the individual and distinguishable employee characteristics. Ganguli (1954), Gruenfeld (1962), Herzberg et al. (1957), Rosenberg (1957), Whyte (1955), and Wilkins (1949; 1950) looked at intelligence, age, personality traits, family background, and educational level. They found that these characteristics could affect the importance an individual attaches to pay. These findings are discussed in Chapter 2.

Dalton's (1949), Lawler's (1971), and Whyte's (1955) findings indicate that where people work under a piecework pay system it is desirable to have employees who ignore quotas established by their workgroup. In a number of piecework locations, workgroup quotas were seen to restrict production far below an otherwise obtainable level. Research on the individual characteristics of employees who accept restrictive quotas is limited to the work of Dalton (1949) and Roy (1955) who describe personality traits and family background associated with this restriction. These studies have determined that employees' personal characteristics can be an important influence on their motivation to perform, and therefore on their piecework productivity. Thus, it is quite possible that performance-contingent pay is an inadequate strategy for influencing the performance of some individuals. If the formal incentive offered by the company for productivity is not serving to motivate certain individuals due to these
personal characteristics, it is possible to have a plant that is running at less than optimum efficiency due to an underutilization of its human resources.

An incentive system that fails to motivate many employees can be costly and ineffective, yet research in this area has not advanced appreciably beyond a few studies done in the late 1940's and early 1950's.

The results of the current study could have significant implications for both the practitioner and the academician:

1. Determination of distinctive characteristics of high and low piecework producers.

2. An improved understanding of the components of motivation in an incentive-based pay system.

3. Insight into the question of whether or how money motivates, so that management can allocate the company's reward dollars.

4. Development of a theoretical model of piecework performance which could be useful framework within which to consider other forms of pay-for-performance.\(^4\)

The model which guided this study is based on an expectancy theory of motivation, (i.e., Porter and Lawler, 1968) adapted for the piecework incentive setting. The hypothesized model incorporates a number of personal characteristic variables from previous research which were found to influence individual performance in a piecework setting. The proposed model suggests that personal variables are related to two pos-

\(^4\) If the model developed in this study can successfully incorporate personal characteristics into a theory of performance it is possible some of the same relationships can be found in other forms of pay-for-performance environments.
sible outcomes of performance: (1) "importance of pay" and (2) "importance of workgroup affiliation."

**Summary**

*Chapter 1* provides an introduction to this study, presents the purposes of the study and discusses its practical and theoretical significance.

*Chapter 2* describes the distinguishing elements of piecework incentive pay plans. It then reviews the literature pertaining to motivation and personal characteristics distinguishing high and low producers in a piecework setting. Finally, a conceptual model drawn from earlier piecework research and motivation theory is presented which links individual variables to motivation and then motivation to piecework performance. This model will provides a framework for the conceptual hypotheses which guide this research effort.

*Chapter 3* presents the methodology of this research. Included is a description of the site and sample, a discussion of how variables were measured, and a discussion of the measures' reliability and validity. The analysis section restates the conceptual hypotheses of *Chapter 2* in operational form. The statistical methodology used to test these hypotheses is described.
Chapter 4 details the sample characteristics, and gives the results of the factor analysis and reliability investigation on the construction of the questionnaire scales. The results of each hypothesis test are then presented.

Chapter 5 discusses the results presented in Chapter 4. Also included in this chapter is a section on the limitations of the research. Practical significance and the importance of the study relative to past research are discussed.
Chapter 2: Literature Review

How are individual characteristics, motivation and employee performance related in a piecework setting? In order to investigate this question several variables found by previous research to influence performance will be introduced and then integrated into a model of piecework motivation/performance. Therefore, this chapter will present:

- a description of the distinctive elements of piecework incentive systems,

- a review of the literature pertaining to the influence of personal variables on performance within a piecework setting,

- a theoretical model explaining the relationship between personal variables and performance within a piecework setting, and

- a set of conceptual hypotheses derived from the theoretical model.


Piecework Incentive Systems

Piecework incentive systems establish a fixed payment for each unit produced by the employee. While the concept is simple, attempts to implement it have given rise to many different versions of piecework incentive plans. Differences among piecework systems stem from the procedures used to link pay to the number of units produced.

Typically, the first step in the establishment of a piecework plan is the measurement of the work being done on the job and the establishment of the production norms for high and low producers. The second step is the calculation of the fair "standard" for the job. This standard is the rate which could be achieved by the average worker doing the job. The establishment of this standard is frequently the job of the industrial engineer. This standard determines the base rate productivity level above which an employee will begin to earn the piecework incentive. To determine the actual cash value to the employee of each unit produced, is established by attaching a dollar value to the job based on local labor market conditions and value to the firm. After establishing this value, frequently on an hourly basis, this value per hour is divided by the standard output per hour. The result is the pay per unit produced. Several authors (Belcher, 1972; Henderson, 1985; Hills, 1987; Lawler, 1971; Roy, 1953; and Viteles, 1953) consider this setting of the piecework standard and the resultant value per unit as the most difficult and controversial aspect of implementing any piecework system.

Throughout this dissertation the term "piecework" will be used in place of "piecerate." While the terms are not exactly synonymous, their meanings are so highly similar as to make them interchangeable for this research effort.
There are numerous types of piecework incentive plans. Henderson (1985) describes several of note:

- **Simple Piecework** specifies a guaranteed minimum hourly or daily pay for production up to a standard minimum number of units. Above this minimum standard the guaranteed minimum wage is supplemented directly by each unit produced. Most needle trade work such as the sewing of pockets on shirts consists of simple piecework.

- **Differential Piecerate** specifies two rates of pay per unit produced. One rate is for units produced below the standard and the other is for units produced above the standard. When Frederick Taylor first instituted this plan there was no governmental required minimum wage and in practice the differential piecework plan had no fixed minimum that could be earned. The rate paid per unit below the standard was at least 20% below the rate paid for production above the standard rate. The purpose of this payment system was to move people up to the standard or force them out of the organization. Sewing operations, machine shops, and other assembly processes frequently made use of this system. However, with the advent of minimum wage laws requiring a minimum hourly wage, differential piecerate has generally been abandoned in favor of simple piecework.

- **Standard Hour Plan** entails setting the time required by the average employee to finish one unit and specifying the pay attached to that unit, based on the "standard" number of units per hour. Deviation from the standard output of units per hour results in an adjustment of the pay per hour. In practice, however, the usual standard hour plan does not adjust the employee's pay downward if production is below the standard output level. Auto mechanics frequently work on a standard
hour plan. If the task of replacing an exhaust pipe, for example, is completed in less than the .75 hour standard allotted for that specific task, the mechanic is still paid the "book rate" for the task. Standard hour plans differ from simple piecework in that the output "units" are usually different. For example, after completing the replacement of the exhaust pipe, the mechanic might go to a waterpump "unit" which has its own specific unit value.

Piecework has been considered as primarily a motivational tool. Motivation of performance, however, is only one facet of piecework systems. A piecework system has the additional advantage of allowing for the budgeting of labor costs on a fixed, known cost per unit. Further, piecework offers the potential for reduced supervision since employees are not paid (beyond the minimum established) for work not done. The inherent simplicity of paying for each unit, along with an established labor cost per unit, the reduced supervision, and the apparent motivational aspects, make piecework incentive systems attractive to organizations seeking such efficiency.

However, piecework incentive systems have also led to restriction of productivity and labor discontent. Employees have been known to restrict their output because they feared (often with justification) that high productivity would lead to a higher base standard as management saw that many employees were achieving the former, lower, standard. This higher standard would be harder to achieve, thereby reducing an employee's paycheck and resulting in the layoff of slower employees who couldn't achieve the new standard. Labor discontent has also occurred because the established standard failed to take into account constraints on an individual's production which were be-
yond the individual’s control.\textsuperscript{6} Labor discontent arising from a piecework system seen by employees as unfair and the frequently observed phenomenon of production restriction illustrate the need for management to establish a system that employees see as fair. While over 70\% of garment workers, 70\% of footwear workers, and 60\% of women’s hosiery workers, along with tire workers and workers in other forms of miscellaneous manufacturing are piecework employees (Seiler, 1984) and this form of payment has been in use for many years, Belcher (1974) notes that perceived fairness is frequently an elusive goal in the establishment of piecework systems. Piecework entails a direct and obvious exchange of labor for reward, meaning that perceived equity in the one-for-one exchange, is of paramount importance.

**The Components of Performance**

Understanding and predicting individual performance in the workplace has been the focus of much research over the last 70 years. Most of the early research was “applied” in nature; certain variables were tested relative to performance, but there was little underlying theory to explain the results. Maier (1955) advanced an early theory of workplace performance as a function of the multiplicative relationship of ability and motivation. This is summarized by the formulation Performance = function(Ability \times Motivation). The following two sections of this dissertation will discuss these two components of performance. In the first, the motivation theory chosen for this re-

\textsuperscript{6} Most companies today compensate employees for time lost due to unavailable materials or machine down time. However, historically it was not common to make pay adjustments for “lost” time.
search will be discussed. In the second, ability and the problems associated with its assessment will be discussed.

**Motivation Theory**

A number of motivation theories have been introduced over the years, including drive theory, two factor theory, goal theory, and attribution theory. This study used an expectancy theory framework to guide the investigation of the effect personal traits and characteristics have on motivation and piecework performance. Expectancy theory is a process theory of motivation which allows for the examination of the component parts of motivation in ways that a content (or "what motivates individuals") theory of motivation does not. Campbell and Pritchard (1976: 80) note:

...an expectancy-valence model adds clarity to our thinking about motivation... (and) we will see that such a model can profitably incorporate a number of additional theoretical notions, as well as a lot of research data.

It is precisely for these two reasons, to clarify aspects of piecework motivation and to incorporate additional variables, that "valence-instrumentality-expectancy" (VIE) theory was chosen as the basic theoretical structure for this study. Further, one study (Dachler and Mobley, 1973), which will be discussed in this chapter, found that an expectancy theory explanation of motivation and performance was supported in a piecework incentive system similar to the research site used for this study, but it was not supported in a salary-based work environment.

The following section reviews research on the individual components of the VIE model.
The Components of the Expectancy Theory Model

Victor Vroom (1964) introduced expectancy theory to the workplace to explain work motivation (Figure 1). His theory postulates a relationship between the variables of valence, instrumentality, and expectancy in order to explain motivation. The expectancy model explains an individual's motivation as determined by (1) the "expectancy" (or probability) that effort will lead to successful task completion, and that successful completion of the task (first level outcome) will be (2) "instrumental" (causal) to achievement of a (second level) outcome that is perceived as having some positive or negative (3) "valence" (value).

Motivation is seen by Pritchard and Campbell (1976) as the determinant of:

a) the choice to initiate effort on a certain task, (b) the choice to expend a certain amount of effort, and (c) the choice to persist in expending effort over a period of time.
Motivation research of the 1950-60's held in common the belief that motivation was the result of an interaction of the nature of the job and the nature of the employee. In contrast, Vroom's expectancy theory emphasized not only the personality mechanisms which determine motivation, but also the importance of the differences between individuals (Schneider, 1984). The elements included in the expectancy model, therefore, allow for a blend of both workplace and individual factors to explain motivation. Elements of the expectancy model of motivation are discussed below.

**Expectancy**

Expectancy is an individual's estimation of the probability that a certain level of effort will lead to a certain level of performance. Expectancy is measured, therefore, as a probability from 0 to +1, with "0" signifying no chance of effort leading to successful task performance, and "1" indicating absolute certainty of effort leading to successful task performance.

Research has been conducted on the relationship of motivation to performance when expectancy was considered as the only component of motivation. The findings were mixed. Arvey (1972) and Motowidlo, Loehr, and Dunnette (1972) found support for the effect of expectancy on performance in experimental studies in which subjects were put into a "mathematics competition." In these studies subjects were told that only a certain percentage of the "contestants" would be scored as "top," "medium" and "low" performers. Results confirmed self-ratings of expectancy by the subjects; those who saw themselves as low, medium, and high performers performed as such.
Hackman and Porter (1968) used an expectancy theory model to predict the performance of 82 female telephone company service representatives who had worked with the company for at least three months. Working with a basic "motivation (or force) equals expectancy times valence" \(M = E \times V\) formula, each subject provided three pieces of information: (1) a list of outcomes associated with "working hard" on the job, (2) an estimate of the level of certainty they had that the outcomes would in fact be obtained as a result of working hard (the "E"), and (3) an estimate of the degree to which they liked or disliked the outcomes (the "V"). Following the tenets of expectancy theory, the E and V were multiplied to provide the measure of motivation. In this study of telephone operators, the performance measure was taken from an overall index of work effectiveness, which included error rate, sales data, and supervisor ratings of job involvement and effort.

The correlation between the expectancy measure and the performance measure \(r = .40\) was significant. Hackman and Porter also found support for the multiplicative relationship between valence and expectancy (as had been found by Lawler and Porter [1967]) and its relationship to performance.

The findings of Pritchard and Sanders (1973), however, do not strongly support the relationship between expectancy and performance. In their study, government employees learning a new task were questioned about the probability of effort leading to performance. This expectancy measure correlated .14 with self-reports of effort and .02 with supervisory ratings of effort. However, it is possible that these findings were influenced by problems in the measurement of "effort" (motivation or force), which was taken as a self-report, as well as a supervisor's measure of individual effort. While supposedly measuring the same trait, the correlation between the two measures was
only .27. Consequently, it was impossible to determine which of the measures was the more appropriate criterion to relate to expectancy.

It appears from these finding that there is a positive and significant relationship between expectancy and performance. These findings, therefore, appear to support the role of expectancies in determining employee motivation.

**Instrumentality**

Instrumentality is defined as the individual's perceived probability that task achievement ("first level outcome") will lead to a defined second level outcome such as money, recognition, or any number of other outcomes (either planned or unplanned) by the organization (Campbell, et al., 1970; Wanous, 1971). Instrumentality ranges from "0" (indicating no chance that task completion will lead to a specific second level outcome) to "+ 1" (indicating that task completion will definitely lead to a specific second level outcome).

Research on the role of instrumentality in motivation is plentiful. Georgopoulos, Mahoney, and Jones (1957) investigated a path-goal approach to understanding motivation. This model of workplace motivation is similar to the expectancy model of Vroom (1964), though the path goal and expectancy models use different terminology to describe similar concepts. Path goal theory contains the concept of "instrumentality" as well as the concept of valence (using the term "high need for a goal") and aspects of "expectancy" (using the term "freedom to follow the desired path"). Thus, findings presented in this "path goal" research are applicable to the expectancy model (Heneman and Schwab, 1972).
Georgopoulos et al. (1957) redefine workplace "motivation" as a question which they believe is asked by each employee establishing a level of performance: "How much payoff is there for me toward attaining a personal goal while expending so much effort toward the achievement of an assigned organizational objective? (p.346)"

The subjects in the Georgopoulos et al. (1957) study were 621 employees of a medium-sized unionized, household appliances company. Data were gathered from these individuals by questionnaire. The incentive plan was a "standard hour" plan in which a "standard time" was allowed to complete the particular job. The employee was paid to this standard time regardless of how long the work actually took. Consequently, if the standard time for a specific task was one hour and the employee completed 1.3 tasks in an hour, this employee would earn 1.3 times the standard hourly rate.

The research method called for the administration of two groups of questionnaire items. One group of items asked the respondent to make an assessment of the instrumentality of high performance toward a set of listed goals. The second group of items asked the respondent to make an assessment of the instrumentality of low performance toward the same set of listed goals. Results confirmed hypotheses regarding the perceptions of instrumentality by high performance employees. The high producers generally saw high performance as instrumental in leading to a particular reward (positive outcome) or saw low performance as hindering the achievement of a reward. It was also found that high producers were those who had the highest needs for rewards.
Numerous other studies have confirmed, at least in part, the findings of Georgopoulous, et al. (1957). (See Gavin, 1970; Lawler and Porter, 1967; Porter and Lawler, 1968; Schuster, Clark, and Rodgers, 1971.) In a thorough and carefully done field study investigating construct validation of the VIE model, Dachler and Mobley (1973) tested its components. Dachler and Mobley were interested in understanding the effects of workplace environment on motivation as well as understanding the process aspects of motivation. Their study was conducted in parallel sessions in two different work environments, one a standard piecework setting and the other an hourly rate setting. The results confirmed the postulate that workplace settings do influence motivation. They found that expectancy theory tenets were generally supported in the piecework setting but not in the salaried setting. Specifically in regard to instrumentality, Dachler and Mobley (1973) found that instrumentality was useful in understanding performance when combined with “desirability of work outcomes” to form a “Utility Index.” These findings indicate that instrumentality was seen as high (approaching 1, i.e. certain linkage to outcomes) in the environment where employees knew they were being paid for each unit made. Conversely, this research found that for hourly paid employees this linkage was substantially reduced.

**Valence**

Vroom (1964:15) defined valences as “affective orientations toward particular outcomes.” Since valences can be attractive or unattractive they are assigned a value in the range from -1 (unattractive) to +1 (attractive).

Pritchard and Sanders (1973) related both self-perceived effort and supervisor’s measure of effort to the valence of job outcomes. Valence, for this sample of 148 government
employees, was found to correlate .54 with the self-perceived measure of effort and .21 with the supervisor's rating of effort, thereby giving reasonably strong support for the usefulness of valence in determining effort.

Hackman and Porter (1968) surveyed 82 telephone company service representatives in their study of valence. They used a summation of the valences of possible outcomes, as specified by VIE theory, and found that the correlation of this measure with the performance measure (a composite of some 11 items) was a non-significant .16. The valence measure only gained a significant correlation with performance ($r = .40, p < .01, n = 82$) when it was combined multiplicatively with an expectancy measure.

As noted above, Dachler and Mobley (1973) used a "perceived utility" measure which included valence (as well as the above-noted instrumentality measure) as one of its components. The setting for this study was a unionized piecework sewing plant employing approximately 450 females. Again, within a piecework setting, this measure was found to have a significant relationship to performance.

The three elements of expectancy theory discussed above, expectancy, instrumentality, and valence, were postulated by Vroom (1964) to be determinants of motivation. As discussed earlier, the model of performance as originally presented by Maier (1955) uses both motivation and ability to predict performance. The following section will discuss this second component of performance: ability.
Ability

Lawler and Porter (1967:129) define ability as "the individual’s currently developed power to perform" and emphasize its long term, consistent nature. An extended expectancy model which incorporates the ability factor is shown in Figure 2 on page 22. This model, proposed by Porter and Lawler (1968), shows ability to influence the relationship between motivation (force) and performance. That is, performance will not be a direct reflection of motivation alone, but rather will be determined by motivation and ability together. Conceptually, it seems plausible that ability would be an important factor in the determination of actual performance, since no amount of motivation will result in a high level of job performance if an individual lacks the requisite ability.

Figure 2. Expectancy (VIE) Theory Model with Ability

Performance = \( f \) [Force \( \times \) Ability

Force = \( f \) [Exp. \( \times \Sigma \) (Inst. \( \times \) Valence)]
Lawler (1966) obtained a measure of ability from the employee's supervisor at the same time that he got the supervisor's overall performance rating for the employee. Correlation between these two scores was found to be significant, but possibly due to the methodological problem of having the supervisor provide both measures. Galbraith and Cummings (1967) failed to find any correlation between supervisor rated ability and job performance and so a surrogate measure, "job tenure," was used. Using this measure, a positive correlation between ability and performance was found. Galbraith and Cummings do not discuss the relationship between tenure and ability, nor why supervisor ratings of ability, which were not correlated with performance, should not be used as a measure of ability.

Dachler and Mobley (1973), in their study of expectancy theory postulates, had an ability measure for only 46 of the newest hires to the plant. The ability measure for these subjects, who worked in a piecework environment, was found to be correlated .36 with performance (p < .05). The combination of ability with motivation did not increase the explained variance in performance.

When considering the concept of ability it is necessary to remember the definition noted above. If ability is seen as the "power to perform," then the translation of "ability" into needed employee characteristics would be dependent on the nature of the job. All jobs can be placed on a continuum seen to range from largely physical ability (construction laborer) to largely mental ability (researcher). It would seem that the majority of jobs require a mix of these two extremes; some physical ability, some mental ability, for most jobs. However, Schmidt and Hunter (1981) state emphatically that cognitive ability is a valid determinant of future job success in all jobs. What they are saying is that ability (specifically, cognitive ability) will determine levels of per-
formance for individuals on the job. Looking at this statement (and the research findings on this topic) from an expectancy theory viewpoint, it would appear that the Schmidt and Hunter research supports the Porter and Lawler (1968) expectancy model's contention that (along with motivation) ability will significantly influence job performance. Both the Schmidt and Hunter research and the Porter and Lawler expectancy work, therefore, supports the importance of ability in understanding performance. The point of interest is the nature of the ability. Frequently, for production jobs, ability has been assumed to be a relevant, physical skill. Expectancy research has generally measured "ability" with a supervisor's appraisal. However, Schmidt and Hunter's research indicates that cognitive ability is equally, or perhaps even more, relevant to successful job performance (Hunter, 1980; Schmidt, Hunter and Pearlman, 1981).

The question is not whether ability is helpful in explaining performance variance. The Hunter and Schmidt stream of research has shown that it is. The question is whether ability is helpful (i.e., contributes to the accuracy of the predictive model), when used with motivation as postulated by expectancy theory.

As noted earlier, Vroom's (1964) work brought into the study of motivation an emphasis on "the nature of man and individual differences" (Schneider, 1984: 190). Ability, of course, is one of these differences, and one that has consistently been used to determine suitable employees for specific positions. Earlier work, particularly work written for practitioners, focused on other individual differences which lead to changes in levels of performance. Several studies of this sort were done in piecework settings. These studies, primarily qualitative and sociological in nature, analyzed performance differences in a reflective, post hoc fashion. The following section discusses the
findings from these early piecework studies. By integrating these studies with Vroom's (1964) VIE Motivation Theory, this author will create a model of piecework performance which links personal variables with motivation and performance.

**Personal Characteristics, Workgroup Affiliation and Piecework Performance**

**Workgroup Affiliation and Performance**

Festinger (1950: 91), discussing the influence of group norms on the individual employee, said:

> If a person wants to stay in a group, he will be susceptible to influences coming from the group, and he will be willing to conform to the rules which the group sets up.

The workgroup will make use of the implied threat, or the reality, of withdrawal of support from the person who does not comply with the group’s norms. By these means the group can strongly influence the workplace behavior, including work performance, of those who wish to remain affiliated with the group. In the studies discussed below the group norm for productivity and the propensity of the majority to accept this quota is a central concern for each of these researchers.

Taylor (1919), Roethlisberger and Dickson (1935), and Dalton (1948) all warned of the problems associated with workgroup-imposed quotas on productivity within a piecework reward system. Dalton (1948) termed adherents to the group-imposed quotas “rate restricters.” Dalton interpreted the words and actions of these rate restricters as signs of distrust of plant management. This distrust centered around the feeling that
high productivity would cause an increase in what management would consider to be standard output for an average employee. In turn, this increase in the standard would make it more difficult to earn incentive pay above the standard. These restricters acted on this distrust by holding production down to an informally determined level. This level, the group felt, allowed each employee to earn a reasonable take-home check, but did not endanger the current standard. Because of this fear, rate restricters made sure each worker knew the acceptable performance level. If an individual's output went above this level, the violator risked group sanctions, mostly in the form of social ostracism.

Dalton further noted that certain individuals, who he termed "rate busters," regularly ignored the group-set production limits and the resultant group sanctions, preferring to maximize pay rather than friendship.

Dalton's (1948) and Roy's (1953) studies are perhaps the only ones that address the issue of which specific characteristics distinguish high and low piecework performers. These studies determined that several factors influenced performance through the employee's willingness to accept group rate restriction. Significant factors included off-work group activity, background factors such as urban or rural upbringing, and need for affiliation. The following section discusses these factors.

**Personal Characteristics and Workgroup Affiliation**

McClelland (1971) and Atkinson (1964) have done extensive research on what they term "socially acquired motives." According to McClelland's theory, based on
Murray's (1938) Manifest Need Theory (MNT), there are four needs (distilled from the two dozen needs of the MNT) which are applicable to the workplace: affiliation, achievement, autonomy, and dominance. These needs, according to McClelland, become socially developed motives, distinct from those that are biologically based (Hampton, Summer, and Webber, 1973).

McClelland's hypothesis regarding an individual's acceptance of "reference" group behavior holds that this individual is expressing an "affiliation need" developed from a background which rewarded affiliative behavior. If the individual uses affiliation to cope with problems and if the problems are solved through this affiliation mechanism, then satisfaction will be derived from this behavior and the affiliative response will be strengthened.

McClelland's findings help to explain Dalton's (1948) research which found differences in both the family and social backgrounds of the rate restricters and busters. The rate restricters came from the families of unskilled industrial workers and grew up in larger cities, where they had been active in boys' gangs. From this background, Dalton speculates, came a group loyalty and a distrust of authority. Conversely, the rate busters had a small town or rural background where they were raised in somewhat isolated situations. Dalton hypothesized that this created a background of economic individualism which contrasts with the restricters' background of group-oriented activities. The rewards associated with high productivity, therefore, had different valences for the restricters than for the busters.

Dalton also noted that rate restricters were generally Catholics and Democrats, while the rate busters were nondenominational and Republicans. Dalton explained this by
noting that Catholics, in general, are very group-oriented, seeing each other in groups away from work. These off-work group activities strengthened the social ties found by Dalton in the rate restricters. Democrats are historically the party that supports the working class, with an underlying philosophy of group unity against the wealthy capitalists. Republicans, conversely, are more individualistic and, according to Dalton, adhere to the belief that each person is their own taskmaster. Dalton uses the phrase "lone wolf" when discussing the rate busters' personalities in contrast to the rate restricters' group-oriented personalities. In summation, these findings indicate that the perceived value ("valence" in VIE terms) of group affiliation was dependent on the backgrounds of the employees, and that this perceived value had a strong influence on individual performance within the piecework setting.

In a parallel finding Dalton (1948) determined that there was a relationship between an employee’s background and the importance attached to pay. This difference in perceived importance of pay, Dalton noted, was readily apparent when considering the rate restricters and rate busters. Further, Dalton was able to distinguish individual personal and background variables which seemed to be predictive of the value an individual would attach to pay. The importance of this variable in a piecework setting is apparent. Briefly, if pay is the formal reward mechanism offered for performance, those employees assigning high importance to pay will be those interested in its accumulation and therefore interested in high performance. The following section examines the research findings on employee background as a determinant of the value the individual attaches to pay.
Personal Characteristics, Importance of Pay and Piecework Performance

Importance of Pay and Piecework Performance

Lawler (1971) presented a model of how an individual's "importance of pay" is determined. A brief examination of this model will serve to define this construct. Lawler postulates that the importance of pay is determined by the ability of pay, for each individual, to solve needs similar to those postulated by Maslow (1954) and Alderfer (1966). Each of these needs is combined multiplicatively with the importance of that need to the individual. These multiplicative combinations of each need with the corresponding importance of each need are then summed to form a grand total that is defined as the individual's "importance of pay" measure. In short, then, importance of pay is a measure of the degree to which pay serves to lessen an individual's felt needs.

Personal Characteristics and Importance of Pay

Dalton (1949) noted a substantial behavioral difference between rate busters and rate restricters in their earning and retaining of money. His study determined that the restricter spent money freely on friends when in a social group situation even though he had less to spend, because of the restriction of output, than the rate buster. In Lawler's terms, this activity would correspond to ability of pay (money) to help with social needs combined with high importance of social needs. Conversely, the rate buster saved frugally, invested in savings bonds, and was proud of the fact that he was
not reliant on anyone for help. When it came to giving to charity, the restricter was the generous one, while the buster was very reluctant to give money away. In Lawler’s terms, it would appear that for the rate buster pay was not linked to social concerns, but rather pay was linked to self-actualization needs and long-term security.7

Interestingly, while the rate buster was “closest” with his money, he was apparently in less economic need than the rate restricter. The rate restricter, conversely, was more willing to spend his pay freely, but was apparently unable to set money aside for savings bonds, thereby indicating greater financial need for immediate living costs. Concern for financial matters was directly reflected in both the restricters’ and busters’ interest in how much money they could take home at the end of the day. The rate restricter, as noted above, was not driven to high productivity.

A description of the rate buster, then, might make use of the terms “hard-working,” “values a dollar,” “acquisitive” and “independent.” These terms also describe what Max Weber (1930) called the “Protestant ethic.” Weber attributed to the Protestant ethic individualistic, hard-working, and acquisitive employee traits. The Protestant ethic fosters the belief that people should live a simple life while being tremendously industrious. By the Protestant ethic, the acquisition of money was a public badge of a virtuous lifestyle and a manifestation of God’s approval of an individual’s industrious work coupled with a frugal lifestyle.

7 While widely read (along with Roy’s [1953] work), Dalton’s study, however, is not empirically based, and is not presented within the framework of a theory of motivation in an incentive pay environment. Lacking an empirical basis or theoretical framework it is difficult to determine if there actually was a performance difference between the “restrictors” and “busters” and there is little way to incorporate the findings into findings from other studies.
Outwardly, the behavior of this individual would be similar to that of the "economic man" who looks at each situation within the context of how to get the most personal gain out of it. Opposing this view of the individual is one which sees man as interested in making money, but not to the exclusion of other values such as affiliation with friends at work. This view would hold, that people are social animals, and not individualistic to the extent that group affiliation need can be set aside.

The degree to which the Protestant ethic has been assimilated by the workforce would appear to have an impact on the effectiveness of a piecework incentive system, since those employees who would be most productive should be those most responsive to the financial incentive offered for performance and the least subject to group restriction pressure. However, Dalton (1948: 14) directly denies that there is any aspect of the Protestant ethic in the rate buster, since few of the the rate busters were active members of a Protestant church. This lack of Protestant church affiliation, according to Dalton, means that it can not be a "Protestant ethic" that is motivating these rate busters.

It is possible, however, that the "Protestant ethic" was a major influence on employee performance in the Dalton study but only in the outward appearance of the ethic, manifesting itself in a drive to produce and earn money, without a connection to organized religion. This ethic might be more aptly termed a "work ethic" ingrained in individuals without regard to religion, but rather with what Dalton terms (1948:15) "an unbending morality." Weber (1978:171) recognized this metamorphosis of the Protestant ethic to be unrelated to religion when he described the modern American Protestant ethic:
In the United States, where it has been given most freedom, acquisitiveness, stripped of its religious and ethical meaning, tends today to be associated with purely competitive passions, which often gave it the character of a sporting contest.

Whyte (1955:13), in a discussion of the Protestant ethic, constructs a continuum with the purely Protestant ethic individual at one end and the social "humanistic" individual at the other end. Implied in this distinction is the fundamental difference between the rate restricter and the rate buster: the rate restricter has a greater need for workgroup affiliation, while the rate buster has a greater need for money.

Inherent in importance-of-pay research is the assumption that, in an incentive pay setting, those who attach greater value to pay will be superior performers and vice versa. (See for example Georgopoulos, et al. (1957) for a discussion and review of this research.) The following employee variables have been investigated over the years as possible determinants of an individual's level of importance of pay.

Age: Herzberg, Mausner, Peterson and Capwell (1957) reviewed the literature on the effect of age as a modifier of the importance of pay. They concluded from their review that pay becomes decreasingly important as age increases, at least to the age of forty, and then seems to increase in importance. Several other studies confirmed these findings in part (Gruenfeld, 1962; Jurgensen, 1947, 1948; Lahiri and Choudhuri, 1966). Summing up this research, Lawler (1971) states that the evidence indicates that importance of pay is less for older employees at least up to the age of 40, after which the relationship is not clear.

Gender: Lawler (1971) attributes the effect of gender on importance of pay to the fact that women seem more concerned with the social, rather than aspects of the job which
would increase the individual’s esteem (respect, or status) in the eyes of co-workers. Since pay, theoretically, can increase one’s esteem from others, but has a smaller impact on social needs, it could be hypothesized that pay should have less importance for women than for men, who value the status associated with a job.

Findings from five studies on this matter have supported the hypothesis that men attach more importance to pay than do women (Blum and Russ, 1942; Centers and Bugental, 1966; Gilmer, 1957; Mayo, 1946; Hardin, Reif, and Heneman, 1951). This finding holds, Lawler (1971) notes, even when the women studied were sole supporters of the household. This indicates, he says, that the importance of pay is not simply derived from economic needs, but addresses other needs as well.

Past studies have found that individual traits do relate to piecework performance. However each of the foregoing studies stops short of integrating the research into a coherent theory of motivation and piecework performance. This is true particularly for those field studies done in the 1940’s and ‘50’s. In each of these studies a qualitative approach was taken. The researcher, as observer, became an active participant in the workplace and compiled findings over the period of contact. Theories as to why certain events unfolded as they did were created on a post hoc basis and left in the form of simple linkages between performance and sociological variables.

These studies by Dalton (1948) and Roy (1953) were qualitative in nature. The relationships discussed in these studies were not held up to quantitative investigation, so that differences seen between high and low performers on constructs such as affiliation could not be discerned as “significantly different.” Considering the import these studies
have had over the years, these relationships should be investigated using a more rigorous methodology.

Without a rigorous methodology and theoretical framework, the findings on personal characteristics as they might apply to importance of pay and workgroup affiliation in a piecework environment are destined to remain as isolated bits of information, un-captured by a unifying theory of piecework performance. The balance of this chapter will present a theory-based model which incorporates several of the individual traits found by past research to be related to piecework performance. Relationships proposed by this model will then be tested in Chapter 4.

**Conceptual Model**

A proposed model of piecework motivation and performance is presented in Figure 3 on page 35. This model seeks to integrate the findings on personal variables that appear to affect piecework performance (Dalton, 1948; Roy, 1955) with the findings on the personal variables linked to importance of pay. This is a modified expectancy model which stresses the importance of valences in understanding piecework motivation and performance. While, as noted, expectancy theory has received mixed sup-

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8 Daehler and Mobley (1973) note that the terms "valence" and "importance" cannot be equated. This statement is based on a definition of "valence" as the "anticipated satisfaction of an outcome" whereas "importance" means the position an outcome is found in a hierarchy of all outcomes. This definition is noted, however this fine a distinction is not being made by this current research. "Importance" for this study is not cast in this hierarchical framework. Rather, employees are assumed to have needs that are satisfied by pay. The amount of this "importance" or "anticipated satisfaction" (since the pay is not yet received, nor the need satisfied) is the focus of this research. If this research has distorted the meaning of "importance" it is, perhaps, mostly a semantic rather than conceptual distortion, since a case could be made for a "valence" having a hierarchical nature in the -1 to +1 value assigned to it.
port over the years, it allows for an integration of past research on personal variables and their effect on performance and as such it appears to have value here.

The proposed research model focuses on that section of the Porter expectancy model (as shown in Figure 2 on page 22) depicting the relationship between valence and motivation (force) and subsequently performance. The proposed model, however, is extended to include several “personal” variables which have been found to be related to the valences of two specific performance outcomes. The research model is shown in Figure 3.

![Figure 3. A Model of Performance in a Piecework Setting](Figure_3.png)

Force = f [Valence of pay + Valence of group affiliation]
This model portrays performance in terms of ability and motivation. Motivation, for this study of piecework performance, is postulated as determined by two factors: the degree to which the reward offered by the company is valued by the employee, and the degree to which the individual is influenced by workgroup expectations of performance. This model allows for the incorporation of individual variables found by past research to influence these valences and thereby performance. Linkages postulated provided the hypotheses which guided this research concerned with understanding individual differences in piecework performance.

This research focuses on valences rather than instrumentalities and expectancies to understand the effect of individual characteristics on performance. Earlier qualitative field studies did not find factors parallel to the concepts of instrumentality and expectancy as influencing piecework performance. Earlier research points out, instead, the different outcomes and the valences attached to those outcomes high performance had for individuals. Force($v_1 + v_2$), as depicted by Figure 3, encompasses the two major variables discussed, though not in expectancy theory term of "valence", as being the major influences on an individual's piecework performance. Thus, this research sees instrumentality and expectancy (within a piecework setting) as less important reasons for performance compared with the perceived value (valence) of the outcomes associated with performance. By definition, piecework assures the employee that instrumentality is high (1.0); the employee knows that each completed good will be instrumental in receiving the reward. Expectancy, itself, could well be predictive of performance, since the job is familiar to employees and reasonable probability estimates of performance should be discernible. However, while a measure of expectancy was collected on the survey instrument, the focus of this research will remain on valences and thus respond to Campbell and Pritchard (1976) conclusion that:
Rather than strive for large scale studies that provide a complete test of the "full" model with superficial measures of poorly understood variables, we think researchers could better spend their time studying the individual components in depth.

This research will take the following approach. First, the correlational relationship between valence of pay and performance is examined. Second, correlations between individual characteristics and valence of pay will be calculated. A postulate of this study is that it will motivate performance to different levels depending on the valence of pay for the individual. Third, the correlation between valence of workgroup affiliation and performance will be examined, followed by an examination of the correlations between individual characteristics and valence of workgroup affiliation. The study will also examine ability as predictive of performance and predictive of performance when combined with valences.

**Conceptual Hypotheses**

The conceptual hypotheses (abbreviated by "H") of this study specify the proposed linkages shown in Figure 3 on page 35. The actual testing of the model will be done by investigating the operational hypotheses (OH), derived from these conceptual hypotheses, which are presented in Chapter 3.

The conceptual hypotheses of this study are separated into three groups. Hypotheses 1-4 address the relationship between individual personal variables and importance of pay, and between importance of pay and performance. Hypotheses 5-9 address the relationship between personal variables and importance of workgroup affiliation and between importance of workgroup affiliation and performance. Hypothesis 10 ad-
dresses the capacity of "Force(v1 + v2)" to predict performance. Finally, Hypothesis 11 addresses the inclusion of ability in the Force(v1 + v2) model of performance.

H1: Importance of Pay, Ability and Performance.

This conceptual hypothesis investigates the relationship between the valence of pay, ability and job performance. Research on this relationship by Pritchard and Sanders (1973), Hackman and Porter (1968), and Daehler and Mobley (1973) gives tentative support to a basic tenet of piecework systems: the more importance an employee attaches to pay, the more productive that employee will be. As a corollary hypothesis, Hypothesis 1(a) investigates the influence ability has on the valence-performance relationship. Hypothesis 1 is presented independently of the "work group affiliation" valence, so the relationship of each valence to performance can be determined. Therefore, Hypothesis 1 and 1(a) state:

H1: An employee who has a higher interest in pay has correspondingly higher performance than the employee with less interest in pay.

H1(a): An employee who has a higher interest in pay and high ability has correspondingly higher performance than the employee with less interest in pay and low ability.

H2-H4: Correlates of the Importance of Pay

One variable found to be related to an individual's importance of pay was age (Herzberg, Mausner, Peterson and Capwell, 1957). This relationship was found to be negative, such that older individuals value pay less than do younger individuals at least
to the age of 40. Pay, above this age, was found to gain importance. Hypothesis 2(a) and 2(b) state this relationship.

H2(a): Pay is less important for older employees than for younger employees up to age 40.

H2(b): Pay is more important for older employees than for younger employees above the age of 40.

Qualitative research from the 1940’s and 1950’s (Dalton, 1947; Whyte, 1955) indicates that high producing individuals have a similar personality profile. This profile includes such terms as “hard worker,” “values a dollar,” and “driven,” and has been associated more generally with “Protestant ethic.” This term will be used in this study with the awareness that the religious aspects once implied by the term are perhaps out of date. Following the findings of this earlier work, Hypothesis 3 predicts a positive relationship between importance of pay and Protestant ethic. While both age and Protestant ethic have been found to be related to importance of pay, Hypothesis 4 addresses the possibility that together these two variables could give an accurate prediction of importance of pay.

H3: Employees with a strong Protestant ethic have a correspondingly high interest in pay.

H4: Age and Protestant ethic together are useful in understanding an individual’s level of importance of pay.

H5: Importance of Workgroup Affiliation, Ability and Performance

While pay may be the motivator of performance within the piecework environment, workgroup affiliation has been seen to be a constraint to high performance (Dalton,
1948; Roethlisberger and Dickson, 1939; Roy, 1953). These studies indicate that individual adherence to group standards serves to cap the level of performance that might otherwise be determined by the importance of pay and ability factors. This limitation on performance occurs because employees feel that rates will be restructured if they overproduce. Because of this concern by the workgroup, continued “overproduction” by an employee results in social ostracism. Past research has indicated that overproducers are those who are unconcerned with group sanctions, and have little or no need for workgroup affiliation. Conversely, average producers are those more concerned with the group response to their level of output because of their concern over social ostracism. Hypothesis 5 tests this relationship, namely that if there is a workgroup determined production standard, those employees with the greatest level of affiliation need for the workgroup will be those most constrained, or encouraged by this standard. Hypothesis 5 states:

H5: Workgroup affiliation will influence an individual’s performance in accordance with the workgroup’s performance standards.

As a corollary hypothesis, Hypothesis 5(a) will investigate the influence ability has on the valence-performance relationship. Therefore, Hypothesis 5(a) states:

H5(a): Workgroup affiliation and ability are positively related to an employee’s work performance, when the workgroup is perceived to encourage performance.

Hypothesis 5(a) states several relationships implied by the research model: (1) ability influences the motivation to performance relationship, (2) if the group serves to restrict performance, ability will have no effect on performance and (3) the workgroup could encourage performance. Only if the workgroup encourages performance can the effect of ability and “motivation” \((\text{force}(v1 + v2))\) be seen. If the workgroup discourages
performance, high ability will be hidden by the motivation to perform at the group standard.

H6-H9: Correlates of the Importance of Workgroup Affiliation

Dalton’s (1948) research on rate restricters found a number of personal factors that distinguished them from rate busters. Dalton noted that workgroup affiliation was typical of the rate restricter and that these individuals had a number of background traits in common: urban upbringing, affiliation need, and belonging to a number of social groups both as children and as adults (away from work). Each of these background or personality traits can be linked to acceptance of group standards due to a higher need for workgroup affiliation. “Urban,” for example, suggests that the individual grew up in an setting where a greater number of friends were available and the individual is seen as comfortable fitting in with groups, while “rural” suggests more isolation as a child, with parents, rather than contemporaries, setting standards. Thus:

H6: Employees from a more urban setting place a greater importance on work-group affiliation than employees from a more rural setting.

Earlier studies identified Catholics and Democrats as those most likely to accept group-imposed performance restrictions. It was seen that individuals in these categories spend a good deal of off-work time doing things with social groups which were related to their political and religious associations. Further, those who spend time in these groups, it is discussed, do so because they grew up in urban settings and therefore had exposure to group interaction. This early exposure made them more comfortable with groups and, apparently, workgroup-imposed rate restriction.
Rather than ask respondents if they are Catholic or Democratic, a more general measure will be taken of the amount of off-work time an individual spends in group activities. The hypothesis being, therefore, that more time spent in groups away from work will be reflective of the importance workgroup affiliation holds for the individual. Hence, Hypothesis 7 states:

**H7:** Employees who use a larger amount of their off-work time in group activities will have a greater interest in workgroup affiliation.

Both Hypothesis 6 and Hypothesis 7 are surrogate measures for a general affiliation need. It seems likely that people who are high in general affiliation need would attach the greatest value to *workgroup* affiliation. Hypothesis 8 relates general affiliation need to perceived importance of workgroup affiliation.

**H8:** Employees with a higher affiliation need also have a greater need for workgroup affiliation than those employees with a lower affiliation need.

Drawing on the implications of the model as seen in Figure 3 on page 35, an individual's background, off-work group activity and affiliation need together should explain accurately their level of importance of workgroup affiliation. This relationship is stated in Hypothesis 9:

**H9:** High levels of rural background, off-work group activity, and affiliation need will yield high levels of importance of workgroup affiliation.
**H10-H12: Force(v1 + v2) and Ability in the Model of Performance**

The primary focus of this research is understanding the importance of individual variables (and in turn valences) in determining performance within a piecework incentive system. In accordance with the expectancy model the valences of pay and workgroup affiliation will be combined additively, with the title of "force(v1 + v2)." The capability of force(v1 + v2) to predict performance will then be examined (H10).

Following the modified expectancy model shown in Figure 3 on page 35, the relationship between ability and performance will be examined (H11). Finally ability will be multiplicatively combined with force(v1 + v2) to determine if performance is significantly predicted by these variables in combination (H12).

H10: An individual's level of performance can be explained by the importance the individual attaches to both pay and workgroup affiliation.

H11: Individual performance will be predicted by ability level.

H12: An individual's level of performance can be explained by the importance the individual attaches to pay, workgroup affiliation and the level of their ability.

**Summary**

Twelve conceptual hypotheses, summarized in Figure 4 on page 45, were derived from the research model presented in this chapter. The unique aspect of this model is its proposition that performance in a piecework environment is primarily a function of the
valences of the outcomes associated with performance and the personal characteristic variables that influence these valences.

Chapter 3 gives the operational version of each hypothesis and details the research methods that were used to test each one.
Relating Importance of Pay to Performance:

111: An employee who has a higher interest in pay has correspondingly higher performance than the employee with less interest in pay.

111(a): An employee who has a higher interest in pay and high ability has correspondingly higher performance than the employee with less interest in pay and low ability.

Relating Individual Characteristics to Importance of Pay:

112(a): Pay is less important for older employees than for younger employees up to age 40.

112(b): Pay is more important for older employees than for younger employees above the age of 40.

113: Employees with a strong Protestant ethic have a correspondingly high interest in pay.

114: Age and Protestant ethic together are useful in understanding an individual's level of importance of pay.

Relating Workgroup Affiliation to Performance:

115: Workgroup affiliation will influence an individual's performance in accordance with the workgroup's performance standards.

115(a): Workgroup affiliation and ability are positively related to an employee's work performance, when the workgroup is perceived to encourage performance.

Relating Individual Characteristics to Workgroup Affiliation:

116: Employees from a more urban setting place a greater importance on work-group affiliation than employees from a more rural setting.

117: Employees who use a larger amount of their off-work time in group activities will have a greater interest in workgroup affiliation.

118: Employees with a higher affiliation need also have a greater need for workgroup affiliation than those employees with a lower affiliation need.

119: High levels of rural background, off-work group activity, and affiliation need will yield high levels of importance of workgroup affiliation.

Investigating the Full Model:

1110: An individual's level of performance can be explained by the importance the individual attaches to both pay and workgroup affiliation.

1111: Individual performance will be predicted by ability level.

1112: An individual's level of performance can be explained by the importance the individual attaches to pay, workgroup affiliation and the level of their ability.
Chapter 3: Methods

Introduction

Using a modified expectancy theory framework, this study examines the relationship between personal characteristics and performance within a piecework setting. To this end a cross-sectional study of garment workers was undertaken. The study entailed the field administration of a questionnaire designed to obtain both biographical and attitudinal information. The data were used to examine the relationship between the constructs and a performance measure taken from company performance records. The specific relationships investigated were determined by a model of motivation and performance in the piecework environment, as described in Chapter 2. This chapter details the basic methodology of this study, which includes:

- The research site and sample
- Data collection methods
- Measures and scale construction
- Methods of analysis
Research Site and Sample

The data for this study were collected from a national manufacturer of undershirts and underwear. The research site was a plant located in Southwestern Virginia. Four hundred and fifty-one employees were originally surveyed. Of these 332 were piecework sewers with performance data. The plant is not unionized. Average employee age is 33 years for the full sample. Employees, who had productivity data were those used in this study. These employees were all on a piece rate incentive pay system and perform similar sewing functions. Average hourly piecework wage is approximately $7.50, with a few sewers earning up to $12.00 per hour. The plant is housed in a large, nondescript single-story building. The structure has a formal welcoming area with a receptionist, and clerical staff is located in the immediate proximity. Beyond the welcoming area, through a single door, is the production floor. This is essentially one large area with most employees working at their sewing machines while others move materials around on the plant floor. The company receives bales of raw cotton at one end of the plant and from these bales weaves the cotton cloth which becomes the underwear and undershirts sold across the nation. The employees participating in this study assemble the component parts into finished garments using various sewing processes.

Each employee completes one step in the assembly of a garment, such as sewing the pockets or adding the collar band. The garments, in bundles of 20, are brought to the employee’s station where a particular step is completed. Upon completion, a bundle is taken on to the next step in the sewing process, and a bundle is added to the employee’s record of completed goods. This record, after verification and adjustments for
quality problems, becomes part of the employee's pay record. The employee's pay is made up of two parts: one part ($5.50) is the guaranteed base rate which all sewers receive. The second part consists of the incentive rate after the standard (100% = $6.48) for that job has been achieved. Since the plant has been recently re-engineered across all sewing jobs, the level of effort to achieve standard for each type of sewing job is considered by management to be essentially equal. Consequently, the effort required to achieve specific levels of incentive pay is also equal. Incentive pay is paid by the bundle completed, such that, on average, the pay at the plant is approximately $7.50 per hour. This level is about 116% of the performance norm. Each employee must remain above 100% performance or be sent “down” to training, where pay is lower. Performance must be above 100% for two successive weeks to leave training. Very detailed production records are kept for each employee. The records not only keep track of what the employees earn for the week, but also keep track of the individual’s performance levels, and serve as the basis for “average pay” calculations which are used for employee pay calculations during sewing machine downtime and plant held meetings.

This company has an ongoing relationship with the Barringer Center at Virginia Polytechnic Institute and State University. The fact that the company had available all the archival data needed, and was enthusiastic about the collection of the survey data, played a large part in the choice of this site. Company management was extremely helpful and considerate in the collection of the data.
Data Collection

Employee attitudes and certain biographical characteristics were collected with a questionnaire of 112 items, of which approximately 72 were used for this study, the balance being collected for a future study. The questionnaire was administered at the plant itself, to seven groups of employees. Each of the groups consisted, in total, of approximately sixty individuals from two workunits. Since the employees were paid their hourly average for the forty-five minutes that were "lost" from production time, this represented a sizable investment on the part of the company.

Responses were marked directly on the survey; optically scanned response sheets were not used. While Opscans would have made it easy to enter the responses into the computer, the extra time needed for the respondents to fill in the correct circle for each question, the possibility for response errors, and the time needed to explain to the respondents how to mark their response sheets was deemed too high a cost for the convenience offered. The questionnaire is in Appendix A.

Respondents were asked to identify themselves on the questionnaire. It was explained that while the data would be kept strictly confidential, identification was needed to match this data to future data that might be collected. In order to encourage the respondents to identify themselves on the questionnaire, a contest was held using the completed questionnaires as entries. This procedure has been successful in past research conducted at several similar plants, with almost all respondents identifying themselves as requested. The prizes, sweatshirts and coffee mugs for the winners in each of the employee groups to which the survey was administered, proved to be
popular. For the actual survey administration 3.8% (17) of the 452 turned in were left without the plant identification number. Performance data was taken from company-maintained performance records (as described in the Measures and Scale Construction section of this chapter).

**Pretest**

The questionnaire was pretested with a sample of approximately forty subjects doing similar work in a similar plant. An important aspect of the pretest procedure was the debriefing of these initial subjects as to their reactions to the questionnaire. It was expected that much useful information would come from these individuals regarding problems with format, question content, and response format, as well as an indication of the time necessary to complete the survey. The pretesting went smoothly. Problems found in the format and subject matter proved to be minor. It was encouraging that the subjects seemed reasonably pleased with both the questionnaire and the paid time off they received to complete it. Coefficient alphas obtained from this pilot study focused attention on several items which needed rewording. Factor analysis was not used on this pretest because of the limited sample size.

**Survey Instrument Response Format**

Likert scales were used for most questionnaire items. The Likert scale format was used (as components of summative measures) for several reasons. First, from the practical point of view, these scales are very easy to understand and use. A Likert scale was
directly below, and clearly labeled for, each individual item, facilitating the marking of the appropriate response. Second, within each scale, the summative aspect of the items, scored as Likert scales, makes it possible to overcome the measurement error that might be present in any one item's assessment of the trait (Nunnally, 1978). This summative aspect of the Likert-type scales was of particular interest in the current research, since an estimate of construct validity was not available for the "importance of pay" or "importance of workgroup affiliation" scales. It was felt that if a number of items that apparently measure the construct of interest were combined using summative scales, they would have a reasonable chance of actually tapping that construct as intended. Each six-point Likert scale included no neutral point since these "no response" points hide actual responses which could otherwise be used to distinguish subjects (Nunnally, 1978).

As would be expected with summative scales, scores for all items within a scale were summed and averaged (mean value) for each person. This method is particularly useful because it allows for individuals who fail to respond a predetermined percentage of items within a scale to be removed from the determination of a particular correlation measure only, and not from the respondent group in general.

Measures and Scale Construction

The following section describes the measures of the variables seen in the hypothesized model of piecework performance presented in Figure 3 on page 35. This section in-
cludes information on the validity and reliability of constructed scales, as well as how the factor analysis procedure was used.

**Performance**

The performance measure was taken from the employee’s performance record for one month immediately prior to the survey week and one month immediately following the survey week. Consequently, a total of nine weeks’ data was collected; four weeks before, four weeks after, and the survey week itself. This performance data is simply each employee’s output compared to the established standard for the employee’s job. The standard for any job is considered to be a certain number of units of production and the actual output by the employee is kept as a percentage of that standard. For example, an employee might sew 200 “bundles” (20 items to a bundle) in a week. The established standard for the job is 180 bundles per week. For that week, therefore, the production record for that employee will show 111% (200/180). The employees used for this study were those who had maintained the 100% standard for at least six of these nine survey weeks. Six weeks was chosen to ensure that some production data would come from before and after the administration of the questionnaire. The impact of removing those respondents who had insufficient performance on the findings of this study are found in the discussion chapter under the heading “Threats to statistical conclusion validity.”

This performance measure showed clearly which employees were high and low performers. It provided a non-judgmental performance measure which could be used, due to recent job engineering, for all sewing machine operators.
Importance of Pay

A review of the literature failed to find an importance of pay scale which presented pay as a means to satisfy needs, as conceptualized by Maslow and/or Alderfer. Therefore, an importance of pay scale was developed for this study. This scale was developed with "security," "esteem," "self-actualization," "physiological" and "social" needs as main considerations. Each of these needs was measured with a three-item subscale.

The importance of pay measure was made up of the following items:

1. It is absolutely essential for my household that I have a job and earn money. (physiological needs)

2. I could save most of my paycheck if I felt like it. (Reverse scored) (physiological needs)

3. Most of the money that I earn is spent before I get it. (physiological needs)

4. Money I earn here goes in the bank for things I might need in the future. (security needs)

5. My pay I earn makes me feel more secure about my future. (security needs)

6. Plans I have for the future depend largely on what I earn today. (security needs)

7. The money I earn means that I will have more friends and fun in the future. (social needs)

8. I like earning money so I can have some fun with friends after work. (social needs)

9. If I earn more than usual, I generally will have a better relationship with my friends (social needs)

10. My earnings show my supervisor how good an employee I am. (esteem needs)

11. I like earning more money because it helps gain some respect from others. (esteem needs)
12. I think people respect me more if I earn more than most other people. (esteem needs)

13. The amount of money I earn indicates how successful I am. (self-actualization)

14. The more money I earn the better I feel about myself. (self-actualization)

15. If my earnings are low I feel like I have failed. (self-actualization)

Each of these items was attached to a six-point Likert scale with no neutral point. Anchors on this scale ranged from "strongly disagree" to "strongly agree" with point values from 1 to 6 respectively.

Reliability, in the form of internal consistency, was estimated both for the pretest and for the surveyed subjects by coefficient alpha analysis.

**Age**

Age is the first of two variables hypothesized by the research model (shown in Figure 3 on page 35) to be related to importance of pay. The survey instrument included one item to determine the age of the respondent. This item was worded as "In what year were you born?" rather than the more direct (and personal) "How old are you?"
*Protestant Ethic*

The Protestant ethic is the second of the two variables hypothesized by the current research model to be related to importance of pay.

A measure of the Protestant ethic was developed by Mirels and Garrett (1971) and consists of 19 items on a six-point scale with no neutral or undecided points. This scale was developed through item and factor analyses of data from three student samples totaling 448.

In one of these samples Mirels and Garrett (1971) found, using 222 students, a KR-20 coefficient of .79 for the 19 items in their Protestant ethic Scale. Lied and Pritchard (1976) reported a coefficient alpha of .70, while Ganster (1980) reported a coefficient alpha of .75. Ganster's (1980) study found a significant correlation of .28 between this measure and self-report measures of effort.

Pertinent to the current study is a report which found the Protestant ethic score positively related to time spent working on a repetitive task, subjects who scored high on the measure working for a longer time on the task than those who scored lower (Merrens and Garrett, 1975).

Each of the 6 items in the Mirels and Garrett (1971) Protestant ethic scale was scaled with "strongly disagree" = 1 and "strongly agree" = 6. Six items were used instead of the full 19 items due to time constraints imposed on questionnaire administration. The six items were selected because they appeared to be most directly tied to work and working.
Although the importance of pay is an explicit part of the Protestant ethic, items chosen for this study are not money or pay related. This was done to reduce the risk that the Protestant ethic Scale was tapping the same underlying construct as the importance of pay scale. Items from this scale are:

1) Most people waste too much of their life not getting anything done.

2) Most people who don't succeed in life are just plain lazy.

3) Any person who is able and willing to work hard has a good chance of succeeding.

4) Life would be more meaningful if we had more leisure time. (Reverse scored)

5) If you work hard enough it is possible to make a good life for yourself.

6) I feel uneasy when there is little work for me to do.

Workgroup Affiliation

Using McClelland’s research findings on needs (McClelland, Atkinson, Clark, and Lowell, 1953), Steers and Braunstein (1976) developed and validated a research instrument capable of measuring four need constructs: achievement, affiliation, autonomy, and dominance, using behaviorally based scales. The resulting Manifest Needs Questionnaire (MNQ) provides several items used in a scale to measure affiliation need on the job.

Steers and Braunstein (1976) found that the MNQ demonstrated both convergent and discriminant validity when correlated with the Personality Research Form (Jackson, 1967).
In the Steers and Braustein (1976) study reliability was established though both test-retest and coefficient alpha measures. On the test-retest 41 subjects were tested two weeks apart, yielding a correlation of .75 for affiliation. The internal consistency investigation yielded an alpha of .56 for affiliation. Steers and Braunstein indicate these are acceptable correlations and that they compare favorably with other measures of the construct. However, more recently, several studies have indicated that the Steers and Braunstein MNQ has demonstrated unacceptably low internal consistency (Dreher and Mai-Dalton, 1983; Williams and Woodward, 1980). The pilot study for this current study confirmed these findings. Consequently only three items from the MNQ were used (the first three items below). The remaining scale items were taken from a questionnaire used previously in a piecework setting which were found to have an acceptable coefficient alpha. Items on the affiliation scale are:

1) I pay a good deal of attention to the feelings of others at work.
2) I express my disagreements with others openly. (reverse scored)
3) I often talk to those around me about things not related to work.
4) I don't mind helping a friend at work even if it costs me a little time.
5) Having friends at work is important to me.
6) This job would be better if I had more time to talk to friends.
7) Friendships at work are not very important to me. (reverse scored)
8) It is important to me to have some time to talk to friends on the job.
9) I don't mind losing a little money when I visit with friends on the job.
10) Even on the job there are some things, like friendship, that are more important than money.
11) Having a group of friends here helps me get through the day.

The scale consists of these eleven items, each using a six-point Likert scale, with no neutral point, with responses ranging in from “strongly disagree” to “strongly agree.”
Workgroup affiliation is considered important because previous studies have shown that affiliation may serve to restrict performance. However, it is possible that affiliation will serve to increase performance if the workgroup has high performance norms. In order to ascertain if there is an awareness by the employee of a workgroup standard or interest in an individual’s performance, the following two items were used:

1. There seems to be a standard set by employees among themselves for how much they should produce each day.

2. Other employees don’t really care how much I produce. (reverse scored)

If the employee was not aware of the interest of other employees in her production then the employee’s data were removed from this specific analysis. If the employee was aware of a workgroup interest in her quantity of production, it was necessary to determine if that interest encouraged or restricted performance. This encouragement or restriction of production was determined by the following items:

1. Other employees encourage me to produce as much as possible. (Reverse scored)

2. Other employees around me sometimes put pressure on me to produce less each day than I actually could.

3. If I produce too much other operators will be angry with me.

The relationship between workgroup affiliation and performance was analyzed, as noted, only if (1) the employee was aware of a group pressure or interest in her output and (2) only if the employee answered questionnaire items indicating an enjoyment of the workgroup affiliation. Again, if there was no awareness of work standards, or no interest in workgroup affiliation then this employee was removed from the analysis of the relationship between group affiliation and performance. If there was an awareness of group pressure, the direction of that pressure for that employee was assessed and
assigned a value of "+" (encourage performance) or "-" (restrict performance). Only after assigning values to awareness and direction was the analysis between performance and group affiliation performed. This combined variable continues to be called "importance of workgroup affiliation" but the meaning of the variable has been expanded conceptually to include these awareness and direction considerations.

The current research hypothesized, from the findings of previous studies, that three employee characteristics are related to importance of workgroup affiliation: (1) urban/rural background, (2) off-work group activity, and (3) affiliation need.

Urban/Rural Background

The urban/rural background measure included an item taken directly from the National Opinion Research Center (University of Michigan) (1972-1980) survey plus two additional items:

(1) Looking back on where you spent most of your childhood, would you say where you grew up was:
   1. on a farm
   2. in the country, but not on a farm
   3. in a small town
   4. in a medium size city
   5. in the suburbs of a town or city
   6. in a large city

(2) I consider where I grew up as being very much in the country. (Likert, six responses, reverse scored)

(3) I grew up in a city. (Likert, six responses)
Off-Work Group Activity

Dalton (1948) notes that those employees who adhered to group restriction were frequently Catholic and Democratic. Dalton hypothesized that these Catholic and Democratic employees were frequently involved in the group activities associated with these affiliations. In the current research, rather than ask the sample population if they were Catholic or Democratic, a more direct measure of off-work group activity was used. Items used to make up the off-work group activity scale are:

1. During my off work hours I spend this many HOURS doing social activities such as bowling, scouts, etc. (chose one of six categories 0 to 6 hours per week).

2. During a usual week I could easily spend 5 hours doing group activities such as bowling, church meetings, parties, or other types of get-togethers away from work.

3. I spend very little time each week doing things with groups of friends. (Reverse scored)

4. I take time to do things with groups of friends away from work.

Items for this scale were developed to determine the extent to which subjects were involved in group activities away from work. A previously developed scale for measuring amount of off-work group activity was not found in the literature. Responses to these items were on a six-item Likert scale with no neutral point, and responses ranging from "strongly disagree" to "strongly agree."

Affiliation Need

Both the urban/rural and the off-work group activity scales are surrogate measures for the affiliation need of the individual. They simply investigate physical manifestations
of affiliation need. This study also collected a measure of affiliation need, determined by the following items:

1. Having friends is important to me.

2. Being with friends is an important part of my life.

3. I spend a good bit of time talking with friends.

4. When I have an important decision to make I usually discuss it with my friends.

5. I would usually have more fun doing things by myself than with a group of friends. (Reverse scored)

These five items were scored on a six-point Likert scale with no neutral point. These items were developed for this study after a review of the literature revealed no suitably short affiliation need measure. This scale was developed in order to investigate the relationship between a person's general need for affiliation and the work-specific "importance of workgroup affiliation" measure, discussed above. A relationship between these two variables would be a further indication that certain individuals have a propensity toward workgroup affiliation, and might be more accepting of workgroup production standards.

Motivation

Basic to this study is the postulate that motivation in the piecework environment (depicted in the research model as "force(v1 + v2)") is in large part the importance an
individual attaches to pay and workgroup affiliation. Therefore, a "motivation" measure was created by combining a measure of each of these variables of importance of pay and importance of workgroup affiliation. Notably lacking from this measure is expectancy or instrumentality measures. It is possible, and even probable, that either instrumentality or expectancy could add to an understanding of piecework motivation. Previous piecework research, however, has indicated that it is primarily the valence of performance outcomes which has influenced an individual's performance. For this reason this research will investigate the relationship of the valences (and the combination of two valences as a limited form of "motivation") to performance.

The scores of the two valence measures are combined by adding the mean importance of workgroup affiliation score to the mean importance of pay score, for each individual. Since it is possible that the workgroup could encourage or discourage piecework performance the importance of workgroup affiliation measure will either be added or subtracted from the importance of pay measure. That is, using the data generated by the "restrict" and "encourage" questions presented under the "importance of workgroup affiliation" variable discussion, if the effect of the workgroup is perceived to impede performance then the individual's workgroup affiliation score is subtracted from her importance of pay score. If the effect of the workgroup is perceived to enhance performance, the affiliation score is added to the "importance of pay" score. This resulting total, be it larger or smaller than either score independently, is used as the force(v1 + v2) measure for testing the model depicted in Figure 3 on page 35. These scores should combine without complications because they are both calculated from six-point Likert scales and therefore have similar metrics.
Ability

Ability is considered by the full expectancy model to influence the relationship between motivation and performance. In this study, ability measures were taken from two sources. The first was the Wonderlic Personality Test, a timed twelve-minute "power" test in which the subject answers as many questions as possible in the allotted time. This is a strictly cognitive measure of ability. The second, the General Aptitude Test Battery (GATB), has been administered to approximately one hundred employees working at the research site over the last two years. These scores were not a major factor in the hiring of these employees, but were recorded as a general procedure by the Virginia Employment Commission.

For this research, both GATB and Wonderlic data were collected to be used as ability measures. However, it was considered that a sewing machine operator needs more than just pure cognitive ability to perform well on the job. In this setting, ability is conceptualized as a two-part construct. One part is the cognitive aspect of ability. Cognitive ability should be useful since no formal training is done for these jobs. Skill acquisition takes place on the job such that a person's ability to learn (equated with cognitive ability by Ghiselli, [1973] and Dreher and Sacket, [1983]) is an important component of her performance. The second part is the physical aspect of ability. The job of sewing machine operator involves reasonably complex physical manipulation. Therefore, measures of ability for this job should include psychomotor ability as well as cognitive ability. Both psychomotor and cognitive ability measures are included in the General Aptitude Test Battery (GATB), which has been used and validated extensively by departments of the U.S. government. Within the GATB are three scales to
measure cognitive ability (general intelligence, verbal aptitude, and numerical aptitude) and three scales to measure psychomotor ability (coordination, finger dexterity, and manual dexterity). These scales are grouped together as a measure of ability when used in conjunction with jobs such as sewing machine operator. Jobs that fall into this category of work are designated as "Job Family V" jobs and consequently the scores from the GATB test for sewing machine operators are reported as GATB-Job Family V scores.

Analyses were run using both the GATB and Wonderlic measures of ability. These results are compared in Chapter 4.

**Analysis**

A major goal of this study was to improve upon the early investigations of piecework performance, which were qualitative in nature. Consequently, this work is empirically based. An effort has been made to create construct measures which accurately assess the pertinent personal characteristics and traits. Thus, the validation of scales is an important facet of this study.
Scale Qualities

*Construct Validity*

Construct validity concerns the ability of the scale to represent and measure the construct of interest. Mitchell (1985) points out that a lack of construct validity appears empirically either as contamination (variance in the measure that is not present in the actual construct) or as deficiency (variance in the construct that is not captured by the measure). Therefore, since the invalid measure of a construct either "under-measures" or "over-measures" the construct, results based on an invalid construct measure are to an equal extent invalid themselves.

In any simple bivariate study, construct validity problems may occur with both the dependent and independent variable measures. Traditionally, the methods of convergent and discriminant validities have been used to help establish construct validity (Campbell and Fiske, 1959). This study, however, used content validity, reliability, and factor analysis, in sequence, to help establish the construct validity of the variable measures.

*Content Validity*

The content validity of a measure, or the adequacy with which the specified domain of content is sampled, can be improved by setting two standards: (1) a representative collection of items in the construct's measurement scale, and (2) "sensible" methods of
test construction (Nunnally, 1978). For the variables used in this study, therefore, a relatively larger number of items were used in the initial piloting of the survey. These items were kept as elements of their scales or discarded depending on their influence on the scale's consistency. For the age, off-work group activity, and urban/rural variables, items were created that asked respondents directly for specific biographical information; construct validity was not a concern with these scales. For the Protestant ethic scale and part of the importance of workgroup affiliation scale, existing items for previously constructed scales were used. For the affiliation need scale, the importance of pay scale, and the balance of the importance of workgroup affiliation scale, items were created which were screened for content validity. That is, new items for these scales were considered by the researcher's Doctoral Committee and subjected to pilot testing to see if they fit in with other items on the scale (convergence of items on respective scales). When content validity was established, construct validity was pursued using factor analysis.

**Factor Analysis**

The mathematical procedure of factor analysis has begun to receive acceptance as an indicator of construct validity. Essentially, factor analysis utilizes a linear approach to the reduction and summarization of data as a method of allowing the researcher to construct a commonality of measure within a scale (Davis and Cosenza, 1985). To this end, each of the construct measurement scales (detailed in the "Measures and Scale Construction" section above) was subjected to factor analysis to determine if, indeed, this commonality of measure did exist. The decision rule adapted for this study was to accept the factor analysis version of a scale if the variance of the factor explained by
the item was greater than .30. Further, the item must make sense in the scale in terms of its content fit with the other items in the scale. Finally, the item must enhance the coefficient alpha of the scale, over its original form. Factor analysis was carried out on 46 items. Chapter 4 elaborates on the changes made to the scales due to factor analysis.

Reliability

As has been noted (Guion, 1965), the reliability of a measure is of prime importance to its usefulness. If a measure is not reliable, i.e. free from random error variance which would cause inconsistent measures, any inferences made from its use are meaningless. Consequently, each of the scales used in this study was subjected to a coefficient alpha analysis of internal consistency. Coefficient alpha examines the average correlation among the items of a scale in conjunction with the number of items (Carmines and Zeller, 1981). Nunnally (1978: 245) gives as acceptable, for the early stages of development of scales, alphas of .70. This level of reliability served as the benchmark for each of the currently used scales. Coefficient alphas were determined at the pretest stage, and several scale adjustments were made at that time. After the actual instrument administration each scale was re-examined in light of coefficient alpha, and adjusted to achieve the highest possible correlation while using no fewer than three items per scale.

The following section describes the statistical methodology used to investigate the relationships indicated by the conceptual model of piecework performance, seen in Figure 3 on page 35.
Statistical Methodology

Each of the hypotheses investigated by this study and the variables used in those hypotheses were examined using essentially the same three step-procedure:

• Examination of the variable’s underlying distribution to check for normality.
• Pearson’s product moment analysis.
• Inclusion in a multiple regression model.

These steps are discussed below.

Normality of Variables

Each of the dependent and independent variables was examined for an underlying normal distribution. Confirmation of the assumption of normality is necessary to use the parametric methods proposed for this study’s hypothesis testing. Normality was investigated by examining the skewness and kurtosis of each variable (Kendall and Stuart, 1958) as well by a Statistical Analysis System (SAS) procedure (Univariate) which gives a likelihood estimate of normality (Kolomogorov D-Statistic) of the variable in question. Guion (1965) and Nunnally (1978), however, stress that the assumptions inherent in correlation studies (i.e., that variables must be linearly related, normally distributed and homoscedastic) must be seriously violated in order to make the correlation obtained non-interpretable.
**Pearson Product-Moment**

Product-moment correlation is a measure of the degree of relationship between two variables, expressed as a standard score. The usefulness of this procedure is that the product-moment correlation indicates the strength, the direction (negative or positive) of the relationship, and the percentage of variation explained between the two variables.

**Multiple Regression/Partial Correlation**

For several of the relationships indicated by the research model shown in Figure 3 on page 35, multiple regression analysis proved useful. Multiple regression provided several useful insights into relationships proposed by the conceptual model of piecework performance. First, the use of partial correlations from the linear model generated by multiple regression can provide a single measure of association between two variables, while adjusting for the effects of one or more additional independent variables. Partial correlations, then, specify the unique contribution an independent variable makes toward explaining the variance of the dependent variable. Hence, partial correlation analysis demonstrates the value of a variable to the model. For example, partial correlation was used to investigate the relationship between "importance of pay" as the dependent variable and "age" and "Protestant ethic" as the two independent variables. Partial correlation analysis was also used to examine the relationship between "importance of workgroup affiliation" and the independent variables of "off-work group activity," "urban/rural background," and "affiliation need."
The actual partial correlation analysis was done using "partial sum of squares" (SSIII) provided by SAS's GLM program.

Second, using multiple regression, total variability accounted for by the model is available through the use of $R^2$. This value allows for the comparison of different models of dependent variables, using the criterion of variance explained.

The relationships between the independent variables were examined for the presence of collinearity and multicollinearity. Collinearity exists when there is an empirical correlation between two (or more in the case of multicollinearity) of the independent variables. If the collinearity is severe then the interpretation of the $R^2$ is meaningless. For example, in a severe case of multicollinearity it is possible to have a significant model, but at the same time have no significant single independent variable. Further, collinearity will increase the variance of the slope coefficient estimates for the independent variables. Examination for collinearity entails examination of the correlation matrix of independent variables for correlations in the neighborhood of .7 and above (Gunst and Mason, 1980: 118). Examination for multicollinearity uses the "collin" option in the SAS Regression program. This program provides Variance Inflation Factors which, if found to be greater than 10 for any variable, indicate a severe multicollinearity condition. The "collin" option also provides Conditions Index Numbers, which, if greater than 30, indicate a multicollinearity problem in the data (Montgomery and Peck, 1982). Both methods are equally important tools in the analysis of multicollinearity (Myers, 1986).
Operational Hypotheses

The following section restates the conceptual hypotheses given in Chapter 2 as operational hypotheses. The statistical approach used to analyze each hypothesis is also presented.

To clarify the presentation of each of the operational hypotheses, as each dependent variable is introduced for investigation, its hypothesized association with independent variables will be highlighted in a small reproduction of Figure 3 on page 35.

Importance of Pay and Performance

This direct linkage of "importance of pay" to "performance" sets aside temporarily the concept of "force(v1 + v2)" so that the relationship between this single valence and performance can be examined. The two valences of "importance of pay" and "importance of workgroup affiliation" are combined into the "force(v1 + v2)" measure, and related to performance, in Hypothesis 11. Hypothesis 1, testing the relationship between importance of pay and performance, is depicted in Figure 5:
The conceptual hypothesis addressing the relationship between importance of pay and performance as presented in Chapter 2 is:

H1: An employee who has a higher interest in pay has correspondingly higher performance than the employee with less interest in pay.

The relationship between importance of pay and performance in a piecework setting was tested using the following operational hypothesis:

OH1: There is a significant ($p < .05$) positive correlation between importance of pay and performance.

The test of this relationship was carried out using Pearson Product moment analysis after examining the variables for normality of their underlying distributions.

The corollary hypothesis, Hypothesis 1(a), extended Hypothesis 1 to include ability. Hypothesis 1(a) states:

H1(a): An employee who has a higher interest in pay and high ability has correspondingly higher performance than the employee with less interest in pay and low ability.
This hypothesis was operationalized as follows:

\[ \text{OH1(a): A significant (p < .05) positive correlation exists between performance and a multiplicative combination of importance of pay with ability.} \]

The tests of these relationships were carried out using Pearson Product moment analysis after the ability measure was combined multiplicatively with the importance of pay measure.

**Importance of Pay and Personal Variables**

The following three hypotheses examine the relationship between several personal characteristic variables and importance of pay. Each conceptual hypothesis presented in Chapter 2 was rephrased as an operational hypothesis suitable for statistical investigation.

*Age and Importance of Pay*

Age is hypothesized to be related to importance of pay as shown in Figure 6.
H2(a): Pay is less important for older employees than for younger employees up to age 40.

H2(b): Pay is more important for older employees than for younger employees above the age of 40.

These hypotheses were operationalized as follows:

OH2(a): For employees 40 years old and younger there is a significant ($p < .05$) negative correlation between age and importance of pay.

OH2(b): For employees above the age of 40 there is a significant ($p < .05$) positive correlation between age and importance of pay.

The test of these relationships were carried out using Pearson Product moment analysis after examining the variables for the normality of their underlying distributions.
Protestant Ethic and Importance of Pay

Along with age, Protestant ethic was investigated as related to importance of pay, as highlighted in Figure 6. This hypothesized relationship, as stated in Chapter 2, is:

H3: Employees with a strong Protestant ethic have a correspondingly high interest in pay.

In order to investigate this conceptual hypothesis the following operational hypothesis was tested:

OH3: There is a significant (p < .05) positive correlation between importance of pay and Protestant ethic.

The test of this relationship was carried out using Pearson Product moment analysis after examining the variables for the normality of their underlying distributions.

Personal Variables Combined and Importance of Pay

Both of the personal variables that are hypothesized to be related to importance of pay, as shown in Figure 6 on page 74, were used together to explain observed variance in importance of pay as suggested by the following hypothesis:

H4: Age and Protestant ethic together are useful in understanding an individual's level of importance of pay.

This conceptual hypothesis was operationalized as follows:

OH4: Age, Protestant ethic, and their interaction term, in a linear regression model account for significant (p < .05) variability in the dependent variable importance of pay.
As independent variables, Protestant ethic and age were predicted to be significant both individually and together in this model of importance of pay when an interaction term is included. Statistical analysis entailed a multiple regression model of the dependent variable. It was hypothesized that significant variation would be accounted for in the dependent variable, and that examination of the partial correlations would show each independent variable and their interaction term, would to be significant within the model.

Importance of Workgroup Affiliation and Performance

This direct linkage of importance of workgroup affiliation to performance sets aside temporarily the concept of "force(v1 + v2)" so the relationship between this single valence and performance can be examined. The two valences of "pay" and "workgroup affiliation" are combined into the force(v1 + v2) measure and then related to performance in Hypothesis 11. This relationship between performance and importance of workgroup affiliation is highlighted in Figure 7 on page 77.
The hypothesis, as presented in Chapter 2, states:

**H5**: Workgroup affiliation will influence an individual’s performance in accordance with the workgroup’s performance standards.

This hypothesis was operationalized as follows:

**OH5**: There is a significant (p < .05) correlation between importance of workgroup affiliation and performance.

One point needs to be mentioned again. Before a statistical analysis of Hypothesis 5 could be carried out, it was necessary to determine if there was a group influence on the individual’s performance and, if a group influence was found, the direction of that influence. To find the effect of workgroup affiliation on the individual it was first necessary to determine if the individual was aware of a group influence on performance. If no influence was noted by the employee, the employee was removed from the analysis. If influence was seen, then direction (restrict or encourage) was determined. It was hypothesized that as the individual manifested a higher level of workgroup affiliation, performance would be more greatly influenced in the perceived direction.
Further, if the individual indicated no interest in workgroup affiliation then that individual was also removed from the analysis since the workgroup would apparently have no effect on their performance. The test of this relationship between importance of workgroup affiliation and performance was carried out using Pearson Product moment analysis after examining the variables for the normality of their underlying distributions.

The corollary hypothesis, Hypothesis 5(a) extended Hypothesis 5 to include ability. Hypothesis 5(a) stated:

\[ H_5(a): \text{Workgroup affiliation and ability are positively related to an employee’s work performance, when the workgroup is perceived to encourage performance.} \]

This hypothesis was operationalized as follows:

\[ OH_5(a): \text{When the workgroup is perceived to encourage performance, a significant (} p < .05) \text{ positive correlation exists between performance and a multiplicative combination of importance of workgroup affiliation with ability.} \]

As noted in Chapter 2, to conduct this hypothesis test it will be first necessary to determine if the workgroup encourages or discourages performance. If the group encourages performance then the interactive effect of ability and “motivation” (importance of workgroup affiliation) can be seen. If the group discourages (restricts) performance then the hypothesis will not be testable since the interactive effect of ability on motivation will be hidden by the adherence to the group work standard.

The test of this relationship was carried out using Pearson Product moment analysis after the ability measure was combined multiplicatively with the importance of
workgroup affiliation measure for those individuals who perceive the workgroup as encouraging performance.

The Importance of Workgroup Affiliation and Personal Variables

This section reviews the hypotheses concerning the relationship between several personal variables and the importance of workgroup affiliation, as shown in Figure 8.

The first of these to be discussed is the urban/rural variable.
Urban/Rural Background and Importance of Workgroup Affiliation

The conceptual hypothesis presented to investigate the relationship between a person's background, as a degree of "ruralness," and importance of workgroup affiliation is:

\( H_6: \) Employees from a more urban setting place a greater importance on work-group affiliation than employees from a more rural setting.

This conceptual hypothesis was operationalized as follows:

\( OH_6: \) There is a significant (p < .05) positive correlation between the urban/rural background measure and the importance of workgroup affiliation.

This relationship was tested using Pearson Product moment analysis after examining the variables for the normality of their underlying distributions.

Off-Work Group Activity and Importance of Workgroup Affiliation

Off-work group activity is one of three variables hypothesized to be related to importance of workgroup affiliation as shown in Figure 8 on page 79. To investigate this relationship, the following conceptual hypothesis was proposed in Chapter 2:

\( H_7: \) Employees who use a larger amount of their off-work time in group activities will have a greater interest in workgroup affiliation.

This conceptual hypothesis was operationalized as follows:

\( OH_7: \) There is a significant (p < .05) positive correlation between off-work group activity and the importance of workgroup affiliation.
This relationship was tested using Pearson Product moment analysis after examining the variables for the normality of their underlying distributions.

**Affiliation Need and Importance of Workgroup Affiliation**

To investigate the possibility that those who have higher affiliation needs are those who find high valence in workgroup affiliation, the following conceptual hypothesis was presented in Chapter 2:

H8: Employees with a higher affiliation need also have a greater need for workgroup affiliation than those employees with a lower affiliation need.

This conceptual hypothesis was operationalized as follows:

OH8: There is a significant (p < .05) positive correlation between affiliation need and importance of workgroup affiliation.

**Personal Variables Combined and Importance of Work Group Affiliation**

All of the personal variables that were hypothesized to be related to importance of workgroup affiliation, as suggested by Figure 8 on page 79, were used together to explain observed variance in performance as is suggested by the following hypothesis:

H9: High levels of rural background, off-work group activity, and affiliation need will yield high levels of importance of workgroup affiliation.

This conceptual hypothesis was operationalized as follows:

OH9: Urban/rural, off-work group activity, and affiliation need, in a linear regression model account for significant (p < .05) variabil-
ity in the dependent variable of importance of workgroup affiliation.

Motivation as the Sum of Two Valences

One of the main tenets of this study is that piecework motivation, designated as “force(v1 + v2)” in this research, is made up of importance of pay and importance of workgroup affiliation. This compiled motivation measure should, according to the research model shown in Figure 3 on page 35, explain significant variability in piecework performance. This proposed relationship is highlighted in Figure 9.

![Figure 9. Hypotheses 10-12: Relating Force(v1 + v2) and Ability to Performance]

Conceptual Hypothesis 10, presented in Chapter 2, states:

H10: An individual’s level of performance can be explained by the importance the individual attaches to both pay and workgroup affiliation.

This conceptual hypothesis was operationalized as follows:
OH10: The valences of importance of pay and importance of workgroup affiliation combined additively, have a significant \( (p < .05) \) positive correlation with performance.

The combined measure's relationship with performance was tested using Pearson Product moment analysis after examining the variables for the normality of their underlying distributions.

**Ability as Predictive of Performance**

Using two measures of ability, HO11 postulates that ability will be predictive of performance. Conceptual Hypothesis 11, presented in Chapter 2, states

\[ H11: \text{Individual performance will be predicted by ability level.} \]

This conceptual hypothesis was operationalized as follows:

\[ \text{OH11: Ability has a significant (p < .05) positive correlation with performance.} \]

Ability's relationship with performance was tested using Pearson Product moment analysis after examining the variables for the normality of their underlying distributions.
Testing the Full Model

Expectancy theory calls for combining the ability measure with the motivation measure multiplicatively. The product of these measures is then examined for a significant relationship with the performance measure. A multiplicative relationship is specified by expectancy theory, because if either of these measures, ability or motivation (for this study force(v1 + v2)) is 0 then the value of the combination (performance) must also be 0. For example, a child may have great motivation to be a baseball player, but if the ability is 0 then the resultant performance will also be 0. The hypothesis examining this question is:

H12: An individual's level of performance can be explained by the importance the individual attaches to pay, workgroup affiliation and the level of their ability.

This hypothesis was operationalized as follows:

OH12: A multiplicative combination of ability with force(v1 + v2) has a significant (p < .05) positive correlation with performance.

Summary

This chapter has detailed the methodology that was used to conduct this investigation into the personal characteristics of high and low performers in a piecework setting. This methodology calls for surveying piecework employees on a number of personal characteristics and relating these characteristics to a quantitative measure of each em-
employee's performance. A modified version of the expectancy theory model was presented as the framework for this investigation.

Of particular concern is the validation of the constructed scales used in this study, and this chapter has presented a procedure to help establish this. Figure 10 reviews the operational hypotheses that were investigated by this research.

---

**Figure 10. Operational Hypotheses Investigated.**

**Relating Importance of Pay to Performance:**
- OH1: There is a significant ($p < .05$) positive correlation between importance of pay and performance.
- OH1(a): A significant ($p < .05$) positive correlation exists between performance and a multiplicative combination of importance of pay with ability.

**Relating Individual Characteristics to Importance of Pay:**
- OH2(a): For employees 40 years old and younger there is a significant ($p < .05$) negative correlation between age and importance of pay.
- OH2(b): For employees above the age of 40 there is a significant ($p < .05$) positive correlation between age and importance of pay.
- OH3: There is a significant ($p < .05$) positive correlation between importance of pay and Protestant ethic.
- OH4: Age, Protestant ethic, and their interaction term, in a linear regression model account for significant ($p < .05$) variability in the dependent variable importance of pay.

**Relating Workgroup Affiliation to Performance:**
- OH5: There is a significant ($p < .05$) correlation between importance of workgroup affiliation and performance.
- OH5(a): When the workgroup is perceived to encourage performance, a significant ($p < .05$) positive correlation exists between performance and a multiplicative combination of importance of workgroup affiliation with ability.

**Relating Individual Characteristics to Workgroup Affiliation:**
- OH6: There is a significant ($p < .05$) positive correlation between the urban/rural background measure and the importance of workgroup affiliation.
- OH7: There is a significant ($p < .05$) positive correlation between off-work group activity and the importance of workgroup affiliation.
- OH8: There is a significant ($p < .05$) positive correlation between affiliation need and importance of workgroup affiliation.
- OH9: Urban/rural, off-work group activity, and affiliation need, in a linear regression model account for significant ($p < .05$) variability in the dependent variable of importance of workgroup affiliation.

**Investigating the Full Model:**
- OH10: The valences of importance of pay and importance of workgroup affiliation combined additively, have a significant ($p < .05$) positive correlation with performance.
- OH11: Ability has a significant ($p < .05$) positive correlation with performance.
- OH12: A multiplicative combination of ability with force($v_1 + v_2$) has a significant ($p < .05$) positive correlation with performance.
Chapter 4: Results

Introduction

Chapter 4 opens with a discussion of the sample's demographics. A discussion of scale construct validity follows, including results of scale factor analysis and coefficient alpha investigation. The remainder of this chapter presents the results of the hypothesis tests.

Sample Characteristics

The population consisted of all employees working the day of the survey, including the focus sewing group, cutters, inspectors, and training, making the total size being 453. The Company wanted all production employees to take the survey since any less than the full population could be seen as unfair by the non-surveyed employees. The pop-
ulation was entirely female. No statistics were collected on the racial demographics of the sample, but it is estimated that less than 5% of the population was black or Hispanic.

For a complete listing of actual sample demographics see Table 1 on page 88. As shown in Table 1, the average age of the sample was 34 years old, with the oldest being 58 and the youngest being 18. Noting that the standard deviation for age was 9.2 years, this indicates that, given a normal distribution, approximately 70% of the company’s sewing machine operators were between the ages of 23 and 43. Average tenure with the company was almost ten years, with the longest tenure being 32 years and the shortest less than one month. Sixty-three percent of the survey group had been doing sewing assembly work for more than three years. The average educational level was 11th grade. The average Wonderlic intelligence score of 22 was at the national norm for semi-skilled workers and indicates that the intelligence level of the sample, on average, was equivalent to an IQ test score of 104. The average Job Family V (GATB) score was 73, with the high being a 98 and the low being a 38.

Of the population of 453 sewers, only 251 had useful production records. The details of the reduction of the population to the sample are discussed more fully in the following paragraphs.

---

9 Males included in this survey were those working as cutters and spinners. These men participated in the survey on a separate day, and their data was not included in this study as they were not working on a piecework basis.

10 This measure of IQ is termed "Wonderlic IQ" (Dodrill, 1981). Dodrill notes that for a group this IQ measure is within 1 point of the Wechsler Adult Intelligence Scale IQ measure.
<table>
<thead>
<tr>
<th>VARIABLE</th>
<th>SAMPLE</th>
</tr>
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<tr>
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<tr>
<td>Min</td>
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</tr>
<tr>
<td>Max</td>
<td>58.0</td>
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<tr>
<td>Gender:</td>
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<tr>
<td>Female</td>
<td>100</td>
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<tr>
<td>Tenure:</td>
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</tr>
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<td>Std Dev</td>
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<td>Min</td>
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<tr>
<td>Max</td>
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</tr>
<tr>
<td>Education:</td>
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<tr>
<td>Less than 8th grade</td>
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</tr>
<tr>
<td>9th or 10th grade</td>
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</tr>
<tr>
<td>Didn’t finish HS</td>
<td>11.8</td>
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<tr>
<td>Finished HS</td>
<td>68.6</td>
</tr>
<tr>
<td>Some college</td>
<td>11.4</td>
</tr>
<tr>
<td>College degree</td>
<td>1.8</td>
</tr>
<tr>
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</tr>
<tr>
<td>Max</td>
<td>37</td>
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</table>

- Sample size: $n = 251$
- Employees with mean performance > 100%
Reliability and Validity of Measures

Performance

The performance measure was discussed at length with the plant supervisor. The performance measure is an actual count of the number of items produced by the machine operator. The operator tallies output by the number of bundles produced, within each bundle being a fixed number of the produced items. Each bundle is ticketed with a distinct identification number and as each step in the assembly process is completed, the operator's identification number is assigned to that bundle so that the operator is paid for the work, and quality problems can be traced. By this process an accurate measure of employee output is achieved. The number of bundles is known and the hours worked is recorded such that the percent of standard can be calculated.

Empirically, the performance measure was checked for reliability in the form of internal consistency by means of coefficient alpha. The performance measure was entered into the analysis as 9 weeks (items) and was found to have a coefficient alpha of .987. Further analysis showed that the average inter-item correlation was .90 with a minimum of .82 and a maximum of .95. The coefficient alpha analysis and the inter-item correlation analysis indicate that the performance data for the surveyed employees has internal consistency and reasonable consistency over time.
Survey Measures

Principal components factor analysis utilizing varimax rotation was used to examine the underlying factor structure of the survey measures. The scales investigated included importance of pay, importance of workgroup affiliation, affiliation need, off-work group activity, and Protestant ethic. It is acknowledged that factor analysis provides the researcher with only indications of the validity of the scale in question, because this form of analysis demonstrates the explained variability of the underlying factor by each item. Therefore, it is conceivable that an item, while efficient in explaining variability, would not be appropriate for the scale if it were conceptually inappropriate (Nunnally, 1978). Thus, factor analysis was used as a guide to the construction of the scales, rather than the final arbitrator of which items to include.

Results of the factor analysis of questionnaire items indicated that several scales needed closer consideration as to inclusion or exclusion of specific items. The criteria for this decision were: (1) indicated magnitude of the loading for the item on the original scale, (2) the "face validity" of the item for the original scale, and (3) the marginal increase in internal reliability of the scale as indicated by the subsequent change in coefficient alpha. The factor loadings determined by this analysis are seen in Table 2 on page 92. Fortunately, loadings were unambiguous; items were not found which "straddled" two factors.

It was found by the factor analysis that the importance of pay scale needed to be modified. The original version, as discussed, consisted of 15 items such that each of the five Maslow needs was addressed by three items. Factor analysis indicated that
two subscales, "pay addressing esteem needs" and "pay addressing physiological needs," had separate underlying factors that separated them into unique factors distinct from the other three needs together. Further, factor analysis indicated that one item should be dropped from one of the remaining three needs. This meant that the "importance of pay" scale in its reduced form consisted of only eight items relating to pay addressing three needs: self-actualization (three items), security (three items), and social (two items). These items are seen in Table 3 on page 94. This reduced scale had a coefficient alpha of .80. Factor analysis indicated that one Protestant ethic item (#44) should be included in the "importance of pay" scale. This item was not included as the loading of the item was .31 (cutoff normally at .30) and the item ("I feel uneasy when there is no work to be done") seemed to overlap the self-actualization items already include in the Protestant ethic scale.

Factor analysis also indicated that the "importance of workgroup affiliation" scale needed modification. Two items (#49 & #51), originally included in the scale, were noted as unrelated to the common underlying factor. These two items were: "Having friends at work is important to me," and "Friendships at work are not very important to me." However, when these items were removed from the workgroup affiliation scale the resulting coefficient alpha dropped from .73 to .45. Further, it seems these items do address the construct of "value of having friends at work" since in both items the words "friend" and "work" are used. These items were found to load, instead, with the general "affiliation need" items. It seems reasonable that these items loaded with the general affiliation need scale since there is a general affiliation item (#17): "Having friends is important to me." This item seems closely related to the wording of the two work affiliation items (#49 and #51) since the two work items are simply opposites of
Table 2. Factor Loadings

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<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tr>
<td></td>
<td>#20</td>
<td>0.177</td>
<td>0.430</td>
<td>0.056</td>
<td>0.242</td>
<td>0.036</td>
<td>0.078</td>
<td>-0.039</td>
</tr>
<tr>
<td></td>
<td>#21</td>
<td>0.051</td>
<td>-0.302</td>
<td>-0.064</td>
<td>0.148</td>
<td>-0.057</td>
<td>0.068</td>
<td>-0.164</td>
</tr>
<tr>
<td>IMPORTANCE OF WORKGROUP AFFILIATION</td>
<td>#22</td>
<td>-0.000</td>
<td>0.211</td>
<td>0.615</td>
<td>-0.105</td>
<td>-0.004</td>
<td>0.078</td>
<td>-0.049</td>
</tr>
<tr>
<td></td>
<td>#23</td>
<td>0.087</td>
<td>0.254</td>
<td>0.601</td>
<td>0.000</td>
<td>-0.029</td>
<td>-0.001</td>
<td>0.058</td>
</tr>
<tr>
<td></td>
<td>#24</td>
<td>-0.159</td>
<td>0.054</td>
<td>0.543</td>
<td>0.100</td>
<td>0.065</td>
<td>-0.071</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>#25</td>
<td>-0.075</td>
<td>-0.070</td>
<td>0.522</td>
<td>-0.014</td>
<td>0.125</td>
<td>0.029</td>
<td>0.029</td>
</tr>
<tr>
<td></td>
<td>#26</td>
<td>-0.025</td>
<td>0.180</td>
<td>0.422</td>
<td>0.031</td>
<td>0.008</td>
<td>-0.122</td>
<td>-0.059</td>
</tr>
<tr>
<td>OFF-WORK GROUP ACTIVITY</td>
<td>#27</td>
<td>0.190</td>
<td>0.343</td>
<td>0.409</td>
<td>-0.015</td>
<td>-0.029</td>
<td>-0.002</td>
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</tr>
<tr>
<td></td>
<td>#28</td>
<td>0.030</td>
<td>0.059</td>
<td>0.083</td>
<td>0.599</td>
<td>0.187</td>
<td>-0.068</td>
<td>0.153</td>
</tr>
<tr>
<td></td>
<td>#29</td>
<td>-0.070</td>
<td>0.441</td>
<td>-0.018</td>
<td>0.573</td>
<td>0.056</td>
<td>0.129</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>#30</td>
<td>0.081</td>
<td>0.051</td>
<td>-0.084</td>
<td>0.477</td>
<td>0.015</td>
<td>-0.000</td>
<td>-0.030</td>
</tr>
<tr>
<td></td>
<td>#31</td>
<td>0.065</td>
<td>-0.130</td>
<td>0.012</td>
<td>-0.537</td>
<td>-0.126</td>
<td>-0.120</td>
<td>-0.094</td>
</tr>
<tr>
<td>PAY/ PHYSICAL NEEDS</td>
<td>#32</td>
<td>-0.071</td>
<td>-0.038</td>
<td>0.054</td>
<td>0.086</td>
<td>0.671</td>
<td>0.076</td>
<td>0.097</td>
</tr>
<tr>
<td></td>
<td>#33</td>
<td>0.011</td>
<td>0.194</td>
<td>0.113</td>
<td>0.333</td>
<td>0.478</td>
<td>0.139</td>
<td>0.129</td>
</tr>
<tr>
<td></td>
<td>#34</td>
<td>0.294</td>
<td>-0.011</td>
<td>-0.081</td>
<td>-0.069</td>
<td>-0.463</td>
<td>0.000</td>
<td>0.083</td>
</tr>
<tr>
<td></td>
<td>#35</td>
<td>0.204</td>
<td>0.029</td>
<td>0.022</td>
<td>-0.043</td>
<td>-0.663</td>
<td>0.003</td>
<td>0.092</td>
</tr>
<tr>
<td>PAY/ESTEEM NEEDS</td>
<td>#36</td>
<td>0.205</td>
<td>-0.103</td>
<td>0.037</td>
<td>-0.007</td>
<td>0.038</td>
<td>0.699</td>
<td>0.068</td>
</tr>
<tr>
<td></td>
<td>#37</td>
<td>0.311</td>
<td>0.001</td>
<td>-0.004</td>
<td>0.073</td>
<td>0.058</td>
<td>0.657</td>
<td>0.115</td>
</tr>
<tr>
<td></td>
<td>#38</td>
<td>0.227</td>
<td>0.043</td>
<td>-0.075</td>
<td>0.009</td>
<td>0.008</td>
<td>0.289</td>
<td>0.028</td>
</tr>
<tr>
<td></td>
<td>#39</td>
<td>0.010</td>
<td>-0.013</td>
<td>-0.065</td>
<td>-0.107</td>
<td>-0.148</td>
<td>-0.224</td>
<td>0.123</td>
</tr>
<tr>
<td>PROTESTANT ETHIC</td>
<td>#40</td>
<td>0.060</td>
<td>0.173</td>
<td>-0.113</td>
<td>-0.054</td>
<td>-0.014</td>
<td>-0.020</td>
<td>0.514</td>
</tr>
<tr>
<td></td>
<td>#41</td>
<td>0.119</td>
<td>0.009</td>
<td>0.113</td>
<td>0.088</td>
<td>0.015</td>
<td>0.133</td>
<td>0.505</td>
</tr>
<tr>
<td></td>
<td>#42</td>
<td>0.217</td>
<td>-0.047</td>
<td>0.083</td>
<td>0.152</td>
<td>-0.100</td>
<td>0.082</td>
<td>0.485</td>
</tr>
<tr>
<td></td>
<td>#43</td>
<td>0.164</td>
<td>0.111</td>
<td>0.004</td>
<td>0.054</td>
<td>0.119</td>
<td>-0.039</td>
<td>0.419</td>
</tr>
</tbody>
</table>

VARIANCE EXPLAINED: 3.250 2.645 2.014 1.898 1.639 1.514 1.436

the same idea. Further, these two items simply add the words "at work" to the general affiliation need item #17.
Factor analysis also indicated that items #49 and #51 might be included in the general affiliation need scale (as noted above). Again, however, when the new items were analyzed in the affiliation need scale the coefficient alpha of this new scale was not improved. Further, both the items were work-related and this affiliation need scale was created in an attempt to isolate a general affiliation need for the employee, unrelated to the need for affiliation at work. Thus, items #49 and #51 were left as originally conceptualized in the importance of workgroup affiliation scale.

The Protestant ethic scale used was made up of four of the original six Mirrels and Garrett (1971) items. Two items were deleted because the reduced scale yielded a greater internal reliability and these two items loaded on a separate factor when subjected to factor analysis. Coefficient alpha obtained with the modified Protestant ethic scale was .60.

The makeup of the scales and the loadings of the individual items included in the scales are shown in Table 2 on page 92. The actual items included in each of the scales used for hypothesis testing are shown in Table 3 on page 94. Descriptive information for each of the variables investigated is found in Table 4 on page 95. Table 4 presents summary data collected for each investigated variable including sample size, mean, standard deviation, maximum and minimum values. For the variables importance of pay, importance of workgroup affiliation, Protestant ethic, urban/rural, off-work group activity and affiliation need the statistics are reflective of the six-point Likert scale used as the response format. Each of these variables was measured such that "1" was a strongly negative response to the variable, and "6" was a strongly agree" to the variable. For example, by looking the summary statistics for affiliation need on Table 4 it can be seen that, on average, the employees have an affiliation need (mean = 5.04
Table 3. Measure Composition and Reliability Estimates

<table>
<thead>
<tr>
<th>Protestant Ethic (α = .60)</th>
</tr>
</thead>
<tbody>
<tr>
<td>41. Any person who is able and willing to work hard has a good chance of succeeding.</td>
</tr>
<tr>
<td>40. Most people who don’t succeed in life are just plain lazy.</td>
</tr>
<tr>
<td>39. Most people waste too much of their life not getting anything done.</td>
</tr>
<tr>
<td>43. If you work hard enough it is possible to make a good life for yourself.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Importance of Pay (α = .80)</th>
</tr>
</thead>
<tbody>
<tr>
<td>27. The more money I earn the better I feel about myself. (SA)</td>
</tr>
<tr>
<td>28. How I feel about myself is greatly influenced by how much I earned in the week. (SA)</td>
</tr>
<tr>
<td>29. The pay I earn makes me feel more secure about things. (SEC)</td>
</tr>
<tr>
<td>38. When my earnings are low for the week I feel disappointed in myself. (SA)</td>
</tr>
<tr>
<td>26. I would be much more worried about the future if I wasn’t earning money now. (SEC)</td>
</tr>
<tr>
<td>30. I seem to get along better with friends when I have earned more that week. (SOC)</td>
</tr>
<tr>
<td>35. I worry less about life when I am earning money. (SEC)</td>
</tr>
<tr>
<td>25. The more I earn the more fun I can have with my friends after work. (SOC)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General Affiliation Need (α = .72)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. Being with friends is very important to me.</td>
</tr>
<tr>
<td>15. Having friends is very important to me.</td>
</tr>
<tr>
<td>17. I spend a good bit of time talking with friends.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Urban/Rural (α = .81)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6. Looking back where you spent most of your childhood, would you say where you grew up was: (check one of 6)</td>
</tr>
<tr>
<td>8. I consider where I grew up as being very much in the country.</td>
</tr>
<tr>
<td>9. I grew up in a city. (reverse scored)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Off-work Group Activity (α = .68)</th>
</tr>
</thead>
<tbody>
<tr>
<td>12. During a usual week I could easily spend 5 hours doing group activities such as bowling, church meetings, parties, or other “get togethers” away from work.</td>
</tr>
<tr>
<td>14. I take time to do things with groups of friends away from work.</td>
</tr>
<tr>
<td>11. During my off work hours I spend this many hours doing social activities such as bowling, scouts, PTA etc. each week. (six possible responses in hours)</td>
</tr>
<tr>
<td>13. I spend very little time each week doing things with groups of friends. (reverse scored)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Importance of Workgroup Affiliation (α = .73)</th>
</tr>
</thead>
<tbody>
<tr>
<td>45. I pay a good deal of attention to the feelings of others at work.</td>
</tr>
<tr>
<td>46. I don’t mind helping a friend at work even if it costs me a little time.</td>
</tr>
<tr>
<td>48. I often talk to those around me about things not related to work.</td>
</tr>
<tr>
<td>49. Having friends at work is important to me.</td>
</tr>
<tr>
<td>50. This job would be better if I had more time to talk to friends.</td>
</tr>
<tr>
<td>51. Friendships at work are not very important to me. (reverse scored)</td>
</tr>
<tr>
<td>52. It is important to me to have some time to talk to friends on the job.</td>
</tr>
<tr>
<td>53. I don’t mind losing a little money when I visit with friends on the job.</td>
</tr>
<tr>
<td>54. Even on the job there are some things like friendship that are more important than money.</td>
</tr>
<tr>
<td>55. Having a group of friends here helps me get through the day.</td>
</tr>
</tbody>
</table>

SA = Self Actualization need
SEC = Security need
SOC = Social need

out of 6 points possible), and a fairly low amount of off-work group activity (mean = 2.98 out of 6 points).
<table>
<thead>
<tr>
<th>MEASURE</th>
<th>N</th>
<th>MEAN</th>
<th>STANDARD DEVIATION</th>
<th>MINIMUM VALUE</th>
<th>MAXIMUM VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of Pay</td>
<td>251</td>
<td>3.95*</td>
<td>0.87</td>
<td>1.50</td>
<td>5.87</td>
</tr>
<tr>
<td>Importance of Workgroup Affiliation</td>
<td>251</td>
<td>4.70*</td>
<td>0.54</td>
<td>2.70</td>
<td>6.00</td>
</tr>
<tr>
<td>Protestant Ethic</td>
<td>251</td>
<td>4.17*</td>
<td>0.78</td>
<td>1.25</td>
<td>6.00</td>
</tr>
<tr>
<td>Urban/rural</td>
<td>250</td>
<td>4.70*</td>
<td>1.18</td>
<td>1.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Off-work Group Activity</td>
<td>249</td>
<td>2.98*</td>
<td>1.05</td>
<td>1.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Affiliation Need</td>
<td>251</td>
<td>5.04*</td>
<td>0.73</td>
<td>2.00</td>
<td>6.00</td>
</tr>
<tr>
<td>Age</td>
<td>251</td>
<td>33.40</td>
<td>9.21</td>
<td>18.00</td>
<td>58.00</td>
</tr>
<tr>
<td>GATB</td>
<td>42</td>
<td>72.90</td>
<td>16.37</td>
<td>38.00</td>
<td>98.00</td>
</tr>
<tr>
<td>Wonderlic</td>
<td>221</td>
<td>21.67</td>
<td>5.33</td>
<td>9.00</td>
<td>37.00</td>
</tr>
<tr>
<td>Performance</td>
<td>251</td>
<td>117.79</td>
<td>14.36</td>
<td>100.11</td>
<td>203.00</td>
</tr>
</tbody>
</table>

* Measured by 6-point Likert scale, where 6 is the strongest agreement with the trait.

Testing Assumptions of Normality of Distributions

As part of the statistical analysis, the underlying distribution of each variable was investigated. The intention was to confirm an assumption of normality of the variable's
distribution so that correlation and regression analysis, which depends on a normal distribution, could be used.

Two guidelines were used to accept an assumption of normality: (1) Kendall and Stuart's (1958) rule of thumb calling for a relative skewness moment of less than 2.0 and a relative kurtosis moment of less than 5.0, and (2) Kolomogorov D-statistic yielding a probability of less than .05.

Using these two methods only one variable was questionable: the GATB scores. The underlying GATB distribution yielded a D-statistic probability of greater than .15. However, it was judged that this D-statistic was due to the small sample size available (n = 52), since the relative skewness and relative kurtosis moments were within the Kendall and Stuart (1958) guidelines and a histogram for the data was not overly distorted from the normal bell curve.

**Testing for Collinearity and Multicollinearity**

Multicollinearity, or redundancy in the independent predictor variables, was not found to be a factor in any analysis done for this study. Investigation of the relationships between the variables found no highly correlated single variables (collinearity) or combination of variables (multicollinearity) which would lead to problems in analysis. The largest correlation between independent variables found was between affiliation need and off-work group activity ($r = .334$). This is substantially below the .70 rule of thumb given by Gunst and Mason (1980). VIF investigation confirmed these initial findings: multicollinearity was not a problem in this study.
Correlates of Importance of Pay

Results from testing Operational Hypotheses 1 through 4, investigating relationships between importance of pay, performance and personal characteristics, are presented below.

Performance and Importance of Pay

Operational Hypothesis 1 tested the relationship between importance of pay and performance:

OH1: There is a significant \( (p < .05) \) positive correlation between importance of pay and performance.

OH1 was supported. Using the 8-item importance of pay scale, a significant \( (r = .22, p = .0004, n = 251) \) correlation was found between importance of pay and performance, as seen in Table 5 on page 99. Table 5 presents the findings of each of the Operational Hypotheses (1 - 3) investigating how importance of pay relates to performance (Operational Hypothesis 1) and how age and importance of pay relate to importance of pay (Operational Hypotheses 2 - 3). Table 5 presents these findings in correlational matrix form. Each of the investigated variables is shown with its correlation (and the significance level of this correlation) to the other variables of interest. While all possible correlations are shown in this 4 X 4 matrix, the hypothesized relationships are shown in the importance of pay row, such that, for example, it is seen that importance of pay is correlated with Protestant ethic .33 \((p < .0001)\).
Operational Hypothesis 1(a) tested the relationship between importance of pay combined with an ability measure and performance. This relationship was stated:

OH1(a): A significant (p < .05) positive correlation exists between performance and a multiplicative combination of importance of pay with ability.

For this operational hypothesis two measures of ability were used, the GATB and the Wonderlic. Using the GATB score the combination was found significantly correlated with performance (r = .42, p = .0052, n = 42). Using the Wonderlic the combination was also found significant (r = .176, p = .0089, n = 221).

Age and Importance of Pay

Operational Hypotheses 2(a) and 2(b) tested the relationship between age and importance of pay:

OH2(a): For employees 40 years old and younger there is a significant (p < .05) negative correlation between age and importance of pay.

Operational Hypothesis 2(a) was supported. Using those employees for whom productivity data was available age for employees 40 and under was negatively correlated with importance of pay (r = -.19, p < .0039, n = 240).\(^\text{11}\) This result is seen in Table 5 on page 99.

OH2(b): For employees above the age of 40 there is a significant (p < .05) positive correlation between age and importance of pay.

\(^{11}\) Using the full data set (including those with no productivity data) a significant negative (r = -.21, p < .0001, n = 350) correlation was found between age and importance of pay.
Table 5. Correlates of Importance of Pay and Performance

<table>
<thead>
<tr>
<th>Measure</th>
<th>Importance of Pay</th>
<th>Protestant Ethic</th>
<th>Age &lt; 40</th>
<th>Age &gt; 40</th>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance of Pay</td>
<td>1.0000</td>
<td>.3305</td>
<td>-.1653</td>
<td>-.2133</td>
<td>.2199</td>
</tr>
<tr>
<td></td>
<td>.0000</td>
<td>.0001</td>
<td>.0223</td>
<td>.1020</td>
<td>.0004</td>
</tr>
<tr>
<td></td>
<td>251</td>
<td>251</td>
<td>191</td>
<td>60</td>
<td>251</td>
</tr>
<tr>
<td>Protestant Ethic</td>
<td>1.0000</td>
<td>-.1484</td>
<td>.04601</td>
<td>.1338</td>
<td></td>
</tr>
<tr>
<td></td>
<td>.0000</td>
<td>.0404</td>
<td>.7270</td>
<td>.0340</td>
<td></td>
</tr>
<tr>
<td></td>
<td>251</td>
<td>191</td>
<td>60</td>
<td>251</td>
<td></td>
</tr>
<tr>
<td>Age &lt; 40</td>
<td>1.0000</td>
<td>.0000</td>
<td>.1259</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.0000</td>
<td>.0000</td>
<td>.0826</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>251</td>
<td>00</td>
<td>191</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age &gt; 40</td>
<td>1.0000</td>
<td>.0873</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>.0000</td>
<td>.5070</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>60</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Performance</td>
<td>1.0000</td>
<td>0.0000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>251</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Table entries are: [correlation p-value sample size]

Operational Hypothesis 2(b) was not supported. A nonsignificant correlation (r = -.15, p = .199, n = 71) was found between age over 40 and importance of pay. This relationship can be seen in Table 5.

---

12 Using the full data set (including those with no productivity data) a nonsignificant (r = -.069, p = .49, n = 102) relationship was found between age over 40 and importance of pay.
Protestant Ethic and Importance of Pay

Operational Hypothesis 3 tested the relationship between a measure of Protestant ethic and importance of pay:

OH3: There is a significant (p < .05) positive correlation between importance of pay and Protestant ethic.

Operational Hypothesis 3 was supported. As seen in Table 5 on page 99, a significant positive correlation (r = .33, p < .0001, n = 251) was found between the Protestant ethic measure and importance of pay.

Modeling Importance of Pay

Operational Hypothesis 4 tested a model of the dependent variable, importance of pay, using two independent variables, age and Protestant ethic:

OH4: Age, Protestant ethic, and their interaction term, in a linear regression model account for significant (p < .05) variability in the dependent variable importance of pay.

Operational Hypothesis 4 was supported with importance of pay significantly modeled by the two variables in question (F = 12.33, p < .0001, n = 251). Findings from the partial correlation procedure (SSIII) indicate that Protestant ethic and the interaction term are significant in the model when the alternative regressors are held constant. The $R^2$ term was .130. Table 6 presents the findings of the regression model of importance of pay with the regressors of age, Protestant ethic and their interaction. In this model, as is shown in the Table 6 column headed "Type I SS," age was not sig-
Table 6. Modeling Importance of Pay

DEPENDENT VARIABLE: IMPORTANCE OF PAY

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>DF</th>
<th>SUM OF SQUARES</th>
<th>MEAN SQUARE</th>
</tr>
</thead>
<tbody>
<tr>
<td>MODEL</td>
<td>3</td>
<td>24.82</td>
<td>8.27</td>
</tr>
<tr>
<td>ERROR</td>
<td>247</td>
<td>165.65</td>
<td>0.671</td>
</tr>
<tr>
<td>CORRECTED TOTAL</td>
<td>250</td>
<td>190.470</td>
<td></td>
</tr>
</tbody>
</table>

MODEL $F = 12.33$  
R-SQUARE = 0.130  
PR > $F = 0.0001$

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<td>2.74</td>
<td>4.09</td>
<td>0.0443</td>
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</table>

significant in the model when it is entered following Protestant ethic. However, Table 6 also shows that there is significant interaction. This interaction can be seen in Figure 11 on page 102.
A significant interaction appears in this figure as the nonparallel lines between the Protestant ethic groupings. A significant interaction indicates that direct interpretation of the regression results is not possible, since this interaction could mask a significant age effect between cell means within a specific Protestant ethic level (class). This means simply, that the significant interaction between age and Protestant ethic could be hiding
a significant difference in the importance of pay between age groups in, for example, the high Protestant ethic group.

Consequently, differences in importance of pay for the age groups within levels of Protestant ethic were examined. Results indicate that no significant relationships were being hidden since the difference between the importance of pay means within levels of Protestant ethic were not widely divergent. Consequently, the results of the regression hold; Protestant ethic and not age is significant in the modeling of importance of pay.

**Correlates of Importance of Workgroup Affiliation**

Results from testing Operational Hypotheses 5 through 9, investigating relationships between importance of workgroup affiliation, performance and personal characteristics, are presented below.

**Performance and Importance of Workgroup Affiliation**

Using a data set that was reduced to include only those employees who enjoyed friends at work and who perceived that the workgroup was interested in what they produced, Operational Hypothesis 5 tested the relationship between importance of workgroup affiliation and performance:
OH5: There is a significant ($p < .05$) correlation between importance of workgroup affiliation and performance.

Operational Hypothesis 5 was not supported. The correlation between importance of workgroup affiliation and performance was found to be a nonsignificant -.02 ($p = .830, n = 113$).

The finding of a nonsignificant relationship between workgroup affiliation and performance indicates that either the workgroup does not influence performance, or that the methods used by this research were not adequate to address this aspect of workplace behavior. Consequently, results from Hypothesis 6 - 10 are considered not relevant to this study since the model is considered misspecified. A respecified model of piecework motivation will be presented in the following chapter. The presentation of the findings of this research continues, then, with the results of Hypothesis 11.

**Ability as Predictive of Performance**

Operational Hypothesis 11 tested the relationship between ability and performance:

**OH11:** Ability has a significant ($p < .05$) positive correlation with performance.

OH11 was supported using GATB scores for the ability measure. With this measure of ability a significant positive relationship ($r = .286, p = .041, n = 42$). However, using Wonderlic scores as the ability measure, a nonsignificant relationship was found ($r = .016, p = .800, n = 269$). These results are presented in Table 7 on page 105.
Figure 11 reviews the operational hypotheses that were investigated by this research and summarizes the conclusions of the hypotheses tested as either "accept" or "reject." The investigation of these Operational Hypothesis has found that importance of pay was related to performance and to the individual characteristics of Protestant ethic and age.

The investigation of these Operational Hypothesis has found that importance of workgroup affiliation was not related to performance, consequently further analysis entailing this variable was eliminated.

Ability, in the form the GATB score was found to be related to performance.
Figure 12. Results of Operational Hypotheses Tests.

Relating Importance of Pay to Performance:

OH1: There is a significant (p < .05) positive correlation between importance of pay and performance.

   Conclusion: accept OH

OH1(a): A significant (p < .05) positive correlation exists between performance and a multiplicative combination of importance of pay with ability.

   Conclusion: accept OH

Relating Individual Characteristics to Importance of Pay:

OH2(a): For employees 40 years old and younger there is a significant (p < .05) negative correlation between age and importance of pay.

   Conclusion: accept OH

OH2(b): For employees above the age of 40 there is a significant (p < .05) positive correlation between age and importance of pay.

   Conclusion: reject OH

OH3: There is a significant (p < .05) positive correlation between importance of pay and Protestant ethic.

   Conclusion: accept OH

OH4: Age, Protestant ethic, and their interaction term, in a linear regression model account for significant (p < .05) variability in the dependent variable importance of pay.

   Conclusion: accept OH

Relating Workgroup Affiliation to Performance:

OH5: There is a significant (p < .05) correlation between importance of workgroup affiliation and performance.

   Conclusion: reject OH

Relating Ability to Performance:

OH11: Ability has a significant (p < .05) positive correlation with performance.

   Conclusion: accept OH
Chapter 5: Discussion of Results

Introduction

This chapter discusses the results of hypothesis testing given in Chapter 4. Conclusions are drawn regarding the value of the research model, and implications for performance improvement are presented. Limitations inherent in this study are discussed. Chapter 5 concludes with a summary of findings and suggestions for future research.

The following sections discuss the results of hypotheses dealing with importance of pay and importance of workgroup affiliation. Later sections discuss how these constructs are related to performance.
Personal Variables and Importance of Pay

The following section discusses the findings regarding the relationship between importance of pay and age and Protestant ethic.

Importance of Pay and Age

Herzberg et al.'s (1957) review of the literature on the effect of age as a modifier of the importance of pay suggested that these two variables are negatively related at least until the age of 40. After this age, it was hypothesized that that age would be positively related to importance of pay. Thus, this study expected to find that younger employees valued pay more than older employees at least to the age of 40. This relationship was confirmed by this research. The relationship between age up to 40 and importance of pay was a significant and negative (-.19). This finding indicates that older employees do have less interest in pay than younger employees within this age group. Above the age of 40, however, the relationship between age and importance of pay dissolved to a nonsignificant relationship indicating that either the relationship did not exist or that our methods were not adequate to distinguish an existing relationship. For this study, it appears that the relationship could exist (r = -.21, p = .10, n = 60) but the sample size is too small to distinguish it.

Forty was found to be the separation point at which the younger group manifested the strongest negative relationship with importance of pay. That is, if the groups were di-
vided at 42 or 38 the younger group had a larger p value and the older group had a lower (though not significant) p value.

It is important to remember, however, that this is not a longitudinal study. This study has found that older employees value pay less than younger employees at this plant, but there is no evidence that, as an employee grows older, pay loses importance for that specific individual.

**Importance of Pay and Protestant Ethic**

The qualitative studies done in the 1940's and 1950's suggested that the Protestant ethic could be strongly linked to importance of pay in a piecework environment. In those early studies, employees who were characterized as having a strong Protestant ethic were also characterized as "rate busters" and described as "hard-working" and "valuing a dollar." Thus, it would follow that a person who measured higher in this Protestant ethic would also attach a high value to pay. Since Hypothesis 3 (relating Protestant ethic and importance of pay) was supported, it appears that there is a linkage between these two variables.\(^\text{13}\)

One caveat needs to be noted; the coefficient alpha of this Protestant ethic scale was a somewhat low .60. As discussed, Nunnally (1978) gives as acceptable .70. This weaker alpha means that the results of this hypothesis test must be taken as only indicative of the relationship until a stronger scale can be developed.

\(^\text{13}\) While not stated as a hypothesis, it is interesting to note that Protestant ethic was related to the performance measure \((r = .134, p = .02, n = 300)\).
Modeling Importance of Pay

Only Protestant ethic and the interaction term between age and Protestant ethic were significant in the model of importance of pay. However, before was possible to interpret these findings from the regression analysis it was necessary to investigate the nature of the interaction term. Using ANOVA with the sample trisected on both the age and Protestant ethic variables the age variable was seen to not be significant on any of the three Protestant ethic levels. However, this analysis did show that there was, at each level of Protestant ethic, a nonsignificant trend toward lower importance of pay levels. This is a reflection of the significant negative correlation that was found when age (under 40) was correlated with importance of pay. While it is tempting to say that "as a person grows older the importance of pay diminishes" this is not possible. Since this is not a longitudinal study it is quite possible to imagine that the older age group would simply have a different orientation toward money from their backgrounds than does the younger group. It would take a longitudinal study of 20-30 years to address the question of whether or not the individual’s level of importance of pay changes over the years. What can be said, as shown in Figure 11 on page 102, is that Protestant ethic has a greater effect on importance of pay than it does for the oldest group (compare the range for the importance of pay variable for these two groups). Further, this plot shows the apparent effect the age (about) 40 has on importance of pay.
Importance of Workgroup Affiliation

This study's has found that this data does not support the contention that workgroup affiliation will affect an individual's level of performance. As noted, this indicates that there is no effect taking place, or the methods of this research are inadequate to capture this workplace behavior. Since the effect was not found, the hypotheses dealing with personal variables and need for work affiliation and those using a combined motivation measure were not investigated further since it was considered, at this point, that the research model was misspecified. Rather, a more realistic model might be as seen in Figure 13.

![Figure 13. A Model of Performance in a Piecework Setting](image-url)
This respecified model is simply the original research model without workgroup affiliation considerations.

**Performance and Importance of Pay**

Within the piecework environment, there is the assumption that money motivates. OH1, as seen in Figure 5 on page 72, investigates this assumption. This hypothesis, that employees who attach a greater importance to pay are higher piecework performers, was supported. While this relationship was a key aspect of this study, another major aspect was the construction of the importance of pay scale. This scale seems to have construct validity as is shown by the internal consistency measure of .80, the evident content validity, and an underlying factor structure.

While the research model was supported, in part, by establishing this link between importance of pay and performance, the weakness of the relationship was somewhat surprising. With a correlation of .22, less than 5% of the variation in performance was explained by the variable which is supposed to be the motivating factor in this environment. While “ability” is yet to be discussed, there must be one or more other variables crucial to the individual’s level of performance (see “Modeling Performance: Using Individual Variables...”)

Chapter 5: Discussion of Results
Performance as a Function of Ability

As noted in Chapter 3, ability was measured in two ways: most employees surveyed (92%) completed the Wonderlic test, while about 99 employees had GATB scores as well as Wonderlic scores. Again, as noted in Chapter 4, the Wonderlic, which is a straight cognitive ability test, was not significantly related to performance. Obviously, however, the job of sewing machine operator has an important element of physical dexterity associated with it. Consequently, any ability measure for this job should incorporate a dexterity measure as well as a measure of cognitive abilities. The GATB Job Family V measure is such a measure, made up of 44% cognitive abilities (general learning, verbal, numerical) and 56% psychomotor ability (motor coordination, finger dexterity, manual dexterity). The GATB Job Family V score was found to be related to performance in a piece-rate sewing environment, and was found to be the strongest single predictor of performance with an $R^2$ of .08. Importance of pay, the next most predictive single variable, had achieved an $R^2$ of .06, or 75% as much performance variability explained as the GATB. These findings indicate that in this environment, ability has a substantial influence on performance, perhaps equal to motivation. Use of the GATB burdened this model of performance, however, since GATB data was available for so few employees who had production useful records. For a further discussion of this problem see below, "Threats to Statistical Conclusion Validity" and "Reduction in the Sample Size."
Modeling Performance: Using Individual Variables to Maximize $R^2$

As a final analysis, the Statistical Analysis System (SAS) procedure "Rsquare" was used to look at the variables suggested by the proposed model in relation to performance. This examination, while not part of the original set of hypotheses, was seen to be another method of testing the research model used for this study and presented originally in Figure 3 on page 35. This test simply throws all independent variables into the "Rsquare" procedure to determine which variables, and in what order, would be significant in modeling performance.

Table 8 on page 115 displays the sequential modeling of performance, using as criteria the greatest improvement in $R^2$. Each variable added to the model is that variable which can most help the escalation of the resultant model's $R^2$. This table demonstrates that the research model is partially supported. This support is seen in that the first four variables added to the model, based on maximizing $R^2$, include three congruent with the theory of the research model. The four-variable model consists of: importance of pay, importance of workgroup affiliation, ability (GATB), and age. These four variables account for 88% of the variability accounted for by the full eight-variable model shown in the final iteration.

In the four-variable model only age is not consistent with the research model since, according to the model, ability and the valences should be the most useful in the explanation of performance. This is to say that the research model specifies that importance of workgroup affiliation should enter the model before age.
Table 8. Correlates of Importance of Pay and Performance

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<tr>
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<td>0.081275 GATB</td>
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<tr>
<td>2</td>
<td>0.144891 GATB, IMPORTANCE OF PAY</td>
</tr>
<tr>
<td>3</td>
<td>0.173410 GATB, IMPORTANCE OF PAY, AGE</td>
</tr>
<tr>
<td>4</td>
<td>0.193185 3 VARIABLES ABOVE + IMPORTANCE OF WORK AFFIL.</td>
</tr>
<tr>
<td>5</td>
<td>0.214567 4 VARIABLES ABOVE + AFFILIATION NEED</td>
</tr>
<tr>
<td>6</td>
<td>0.219022 5 VARIABLES ABOVE + PROTESTANT ETHIC</td>
</tr>
<tr>
<td>7</td>
<td>0.219786 6 VARIABLES ABOVE + OFF-WORK GROUP ACTIVITY</td>
</tr>
<tr>
<td>8</td>
<td>0.219787 7 VARIABLES ABOVE + URBAN/RURAL BACKGROUND</td>
</tr>
</tbody>
</table>

Notice, in Table 8 on page 115, that the four-variable model does include importance of workgroup affiliation. This variable, though not seen by this research as significantly related to performance, does pick up a small amount of variability (.02%) in performance that was not captured by those variables that are more closely related to performance.

Finally, the five-, six-, seven-, and eight-variable models of performance add in variables which were used in this study to model importance of pay and importance of workgroup affiliation, and therefore were not related directly to performance. Thus, from the point of view of modeling performance using all independent variables discussed in this study, the proposed model is supported with the exception that age is entered into the model prior to importance of workgroup affiliation.
Implications for Managers

Performance and the importance of pay are seen to be related within the piecework environment. Consequently, if the applicant pool is adequately large and the other factors are equal, job applicants who place higher importance on pay will perform better. Employees who scored higher on importance of pay were seen to be those with higher Protestant ethic and those who were younger. In this particular study, performance was found to be related to the variables shown in Table 8 on page 115 such that an $R^2$ of .21 was obtained. If these variables were used to screen potential employees, overall performance and plant productivity would improve. The value of this improvement could be shown using one of the forms of utility analysis which would take into consideration the turnover rate at the plant, standard deviation of performance (and its associated dollar value) and the dollar value to the company of each employee. It should be noted that each of these variables could be measured before a person came to work. That is, these variables do not require knowledge of work at a particular plant.

In this study, importance of workgroup affiliation was not seen to be significantly related to performance. The data indicate that, for this particular research site, output workgroup affiliation did not appear to be limiting performance. Consequently, screening individuals on this particular variable would probably not be useful.

Ability and performance were shown to be significantly related. Therefore, use of the GATB as part of the selection procedure would result in a more productive workforce over time as the overall performance of the workforce increases. The Wonderlic was
not seen to be useful in understanding performance. This is due to the strict mental ability aspect of the measure, unlike the GATB, which includes a psychomotor measure.

Managers can draw encouragement from the finding of no apparent rate restriction at this plant. Early piecework studies from Taylor (1919) to Roy (1953) indicate that rate restriction is inherent to piecework systems. This study seems to indicate that hard work with high productivity need not be seen, by employees, as leading to a restructuring of the rates. The bottom line on this finding is that rate restriction is the result of poor management practices rather than the piecework system itself.

It should be encouraging for piecework managers to see that importance of pay is related to performance. This study did find that generally the more a person valued pay the higher the corresponding performance level would be. Interestingly, however economic need and performance were not related. Before the importance of pay scale was factor analyzed, three items were included in a sub-scale which dealt with the individual's perceived need for money to cover immediate monetary needs such as bills. These three items were isolated, by factor analysis to their own scale (see Table 2 on page 92). This was the "pay/physical need" or "perceived capacity for money to address physical needs" subscale. Further analysis determined that this construct was not significantly related to performance \( (r = .03, p = .59, n = 251) \). This indicates that perceived economic need is not necessarily a motivator of performance in a piecework environment. Conversely, those with low performance are not necessarily those who have plenty of money and don't need to work hard.
Study Limitations

Findings from this study must be considered within the framework of external validity of results, causality between variables, and variables which have not been considered. It is necessary, as well, to consider threats to statistical conclusion validity. The purpose of the following discussion, therefore, is to provide a context within which to consider the findings of this study.

External Validity

The company used in this study is well known nationally and has a substantial impact on the local labor market. Further, this company has been in business for many years and has "developed" its method of working with employees over these years. These factors yield a rather specific set of work environment variables. The lack of perceived informal rate standard combined with management's overt encouragement of performance (paid vacations, and assigned parking spots for high performers) reflect a trust that must be felt by employees regarding the fixing of rates. Working conditions in the plant are excellent, reasonable rest periods are provided, and an up-to-date cafeteria is available to employees. Because of these provisions by management, the adversarial relationship noted by researchers between management and employees may not have developed. Thus, the findings of no rate restriction could be situation-specific, and not typical of other workplaces.
This study has focused on one form of incentive pay: a piecework incentive system. One can only speculate on how the findings from this study regarding the importance of pay and its correlates would fit into another form of incentive system, for example a merit pay environment. For a manager to take the findings from this study into another form of incentive environment without investigation would be a risky undertaking at best.

The sample used in this study was 100% female. This restricted sample could further influence these findings such that it would be risky to generalize these findings to even another piecework environment if the workforce was predominately male.

Cross-sectional Study

The fact that this study was a cross-sectional study and not longitudinal in design limits the conclusions that can be drawn from it. For example, the fact that individual employees were not followed over time means that the results of the hypothesis test regarding the relationship of age to importance of pay can only be stated as "younger employees tend to value pay more than older employees," rather than the more definitive "as a person gets older, pay loses value for the employee." Further, a longitudinal design would allow this research to follow the ups and downs of a person's value of pay to see if this impacts the performance of that individual. Thus, the cross-sectional design limits the conclusions that can be drawn from these hypothesis tests.
Threats to Statistical Conclusion Validity

An adequate sample size was available for most investigated relationships. (See Schmidt, Hunter, and Urry [1976], for details on statistical power.) However, this study suffered when any relationship using the GATB score was investigated. Any relationship using the GATB measure was of questionable statistical validity since only 99 individuals had GATB scores, and they were mostly new hires. These new hires frequently had only been with the company for a short period and therefore did not have a useable performance record. Consequently several of the analyses using the GATB were done with 50 or fewer employees. Cohen and Cohen (1983) have calculated that a sample size of 84 is necessary to have power of .80 to detect medium effect size (GATB had a .29 correlation with performance) with an alpha of .05. With a smaller sample size power diminishes substantially, increasing the probability of a Type II error (failure to reject Ho when it is false).

One problem that arose from this research was what to do with the employees (and their questionnaires) for whom no performance data was available. Performance data were gathered from records made available by plant management. When these data were entered into the computer, it was found that performance data had only been received for 339 employees while 453 questionnaires had been collected. This discrepancy existed because 114 of the employees surveyed came from cutting, inspection, training, or other areas which were not on an incentive system comparable to the sewing machine operators. Since this study was specifically interested in employees working under a piecework incentive system, the decision was made to not use any data.
from the other individuals. This meant that data from these employees dealing with background characteristics and affective measures were not used in any aspect of the study. The data set was further reduced when the decision was made to use only data from employees with average performance above the standard 100% standard performance measure. This was done because those employees below the 100% standard were either new employees or employees with overly variable performance records who were being moved from job to job. Finally, 62 more employees were removed from the analysis since they indicated on the questionnaire that they had recently changed jobs and were earning less than they would normally be earning. In summary, the reduction in the data set from 453 went as follows: Loss of 114 due to lack of performance records, loss of 26 who had average performance records below the 100% cutoff score, and loss of 62 who felt that their production was low due to a recent change in jobs. This yielded a useable sample of 251.

The reduced sample did change the strength of some correlations. For example, when examining the relationship between importance of pay and performance, the full performance sample yielded a correlation of .15 (p = .0086, n = 326) as compared to the reduced sample’s correlation of .22 (p = .0004, n = 251). In both situations the relationship was significant, but the strength of the relationship was increased by the removal of those who were working a new task.

T-tests comparing the analyzed and removed groups revealed that significant differences between the two groups existed for two variable means: age and performance. Since these groups were distinguished by performance this difference between the two groups’ means is not surprising. The significant difference between the two groups on the age variable is somewhat surprising since age was not seen as related to perform-
ance. This could be explained by simply noting that many of these lower producers (below the 100% standard) are just out of training and newer employees, hence younger.

The final conclusion on this investigation of the effect of removing 202 people from the analysis is that the removal strengthened any relationships using the performance variable, and changed the significance level of the other relationships mainly due to reduced sample size. It is felt, therefore, that the actual difference between the two groups was the average level of performance, which not surprising as performance was the criteria for the distinction between the groups initially.

Lack of Causality

Cook and Campbell (1979:296) note that "within the literature on regression techniques, one can find an explicit distinction between 'predictive regression' (i.e., forecasting) and 'structural regression' (i.e., causal inference or something close to it)." While this study has shown that certain independent variables were predictive of certain dependent variables, this is not an indication of causality. From a forecasting (or "prediction") view, saying one variable is predictive of some "outcome" is acceptable. Predictive, however, is not the same as causal, and it cannot be said that one variable causes another's level of response in the relationships investigated by this study.
Unexamined Variables

Productivity has been studied since the early 1900's. To commence a study on this topic requires some focus and exclusions, particularly at the initial stages of an investigation. Since this study focused on the valences associated with the outcomes of performance in a piecework environment, certain previously studied variables linked to performance were left undiscussed. Specifically, it would be worth investigating the influence of individually determined goal-setting on the level of performance. In an environment with quantifiable performance it is likely that goals, also easily quantifiable, could have a strong impact on the individual's level of performance.

Inherent in this study of the effect of valences on performance is the question "What about the other expectancy theory variables you left out?" These variables could offer additional explanation of performance. In fact, items addressing instrumentality and expectancy were included in the questionnaire administered to these employees and and a cursory analysis indicates that the expectancy variable itself does offer significant additional explanation of performance variance.

Other variables that could be considered range from monthly climate factors and home influences (spouse working) to supervisor influence. Personality variables might also be useful in predicting performance. Piecework sewing is repetitive, indoor work in close proximity to other people. These job factors indicate that certain types of people should fit this work better than others. Considering the performance variance left unexplained by this study, further variables must be examined.
Summary of Findings

Performance at the research site ranges from the standard of 100% to a high of 203%, with a mean of 117.79%. Approximately 70% of all employees surveyed produce between 103% and 132% of standard. Given this variation in performance among employees who essentially perform very similar functions, it would seem that any understanding of piecework performance which could serve to raise the average performance level at this plant would be welcome. This study has provided at least some of that understanding.

Piecework systems are built on the tenet that money motivates. However, given the range of performance at this plant, a more accurate phrase would be “to a certain degree, money motivates some people more than others.” The implied question “who is motivated by money?” appears to be germane to any organization that uses an incentive pay system. At this plant this study has shed some light on exactly who might be motivated by money.

Under the assumption that rate restriction lowers company productivity, the current study sought to identify those employees who valued workgroup affiliation and those who did not. It was hypothesized that those who were not interested in workgroup affiliation would be those who would be high performers, not shackled by the group-imposed quotas. This aspect of the research failed to find much of significance. It appears that rate restriction was not in effect at this plant; consequently personal variables linked to the need for workgroup affiliation diminished in importance. The in-
fluence of the workgroup on performance was zero. This is to say, while there was no restriction, there was no encouragement either.

On a more positive note, one ability measure used, the General Aptitude Test Battery, holds real promise for distinguishing high-performing piecework employees. While it had a limited sample size (and perhaps because of this small size), the correlation between the GATB scores and performance were reasonably strong. However, those employees with GATB scores were newer hires, and how this correlation holds up over the years remains to be seen.

Suggestions for Future Research

The nature of this study was exploratory, since little work has been done on formulating a theory of piecework incentive performance. Relationships indicated by this study need further investigation.

Use of the constructed importance of pay scale in another study should help confirm its usefulness in money/motivation studies. Of particular interest would be the coefficient alphas generated in other environments, and continued investigation of the construct validity of this scale. Further, continued investigation of the usefulness of the GATB ability measure in predicting performance could lead to a valuable management selection tool.
While it was discovered that there was not a group effect on productivity, future research could focus on what exists in the workplace which encourages or discourages this behavior. While it is obviously good to not have rate restriction, it also means that employees are not encouraging each other to higher levels of production which would be useful to the plant.

As noted in the literature review of this study, only limited quantitative research has been done in the piecework environment. As perhaps the most basic incentive system, the piecework setting offers the researcher a good environment (fewer confounding variables) in which to investigate the relationship of money to motivation. This study has suggested that certain individual characteristics are conducive to piecework performance. However, this research has left this author with an unsettled frame of mind; if money is the motivator why is a substantial portion of the variability found in performance still unaccounted for. Even using the ability measure, fully 78% of the performance data movement is left unexplained. As noted in the above section, both goal-setting and the expectancy theory variables of expectancy and instrumentality need investigation in this piecework setting, perhaps these considerations will be of help.

Within the context of importance of pay, several other background variables might be considered. For example, the economic environment in which the employee was raised, and gender considerations would be worth investigating.

Research into these areas of personality and background variables should provide further insight into how performance is related to employee characteristics. As these characteristics are understood, better use of incentive systems will be possible. Study
findings indicate that performance can be seen as the culmination of specific motivation and ability components. Managers concerned with increasing plant productivity through enhanced employee performance might do well to make use of these findings.


BIBLIOGRAPHY


Rosenberg, M. *Occupations and Values*. Glencoe, Ill.: Free Press.


BIBLIOGRAPHY


Confidential
Virginia Tech University
Work Questionnaire

PART 1: Your Background
The following items ask a variety of background questions. Please mark your answers accordingly by circling the number or filling in the blank of the answer which applies to you. PLEASE REMEMBER THIS SURVEY WILL BE KEPT STRICTLY PRIVATE, AND NO ONE CONNECTED HANES KNITWEAR WILL EVER KNOW WHAT YOU ANSWERED.

1. You are
   1) female
   2) male

2. About how many years have you worked as a sewing machine operator?

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   less than 1
   between 1 and 2
   between 2 and 3
   between 3 and 4
   between 4 and 5
   more than 5

3. How long have you worked for this company since the most recent time you were hired here.
   ___ years and ___ months

4. Have you recently changed job titles so that you are producing more or less now than before?
   (please check one)
   ___ yes
   ___ no

5. In what year were you born? 19___

6. Looking back on where you spent most of your childhood, would you say where you grew up was:
   (Please circle the number of one choice)
   a. on a farm
   b. in the country, but not on a farm
   c. in a small town
   d. in a medium size city
   e. in the suburbs of a town or city
   f. in a large city

7. How far did you go in your schooling?

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   less than 8th or 10th didn't finish
   finished some college
   8th grade
   grade
   high school
   college
   degree

PART 2: What You Value in A Job
What do you value? We want to find out how important each of the following aspects of a job is to you. Place a 1 by the item you would consider the most important to have on a job, a 2 by the thing you would consider the second most important, and so on until you have put a number by each item in the list. When you are finished there will be a DIFFERENT number between 1 and 10 next to each item.

   a. a job that your family approves of
   b. friendly people working around you
   c. having a good supervisor
   d. not being too tired at the end of the day
   e. recognition for good work
   f. good pay
   g. doing work that I enjoy
   h. good working conditions
   i. having a good chance at promotion
   j. job security, knowing that you will always have a job with the company if you do good work.

PART 3: You and Your Work
The following items present statements about you and your work. Please CHECK the numbered box that best indicates how you feel about that statement.

8. I consider where I grew up as being very much in the country.

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   strongly disagree
   slightly disagree
   slightly agree
   strongly agree

9. I grew up in a city.

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   strongly disagree
   slightly disagree
   slightly agree
   strongly agree

Appendix A. QUESTIONNAIRE
Appendix A. QUESTIONNAIRE

10. When I am off from work I spend most of my time doing things with and for my family.

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11. During my off work hours I spend this many HOURS doing social activities such as bowling, scouts, PTA, etc. each week.

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<th>0 to 1</th>
<th>2 to 3</th>
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<th>4 to 5</th>
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<th>6 or more</th>
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12. During a usual week I could easily spend 5 hours doing group activities such as bowling, church meetings, parties, or other "get togethers" away from work.

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13. I spend very little time each week doing things with groups of friends.

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14. I take time to do things with groups of friends away from work.

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15. Having friends is very important to me.

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16. Being with friends is an important part of my life.

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17. I spend a good bit of time talking with friends.

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18. When I have an important decision to make I usually discuss it with a friend.

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19. I would usually have more fun doing things by myself than with a group of friends.

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20. I have the ability to make 140% production for a whole week.

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21. I believe I have the ability to be a top earner here.

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22. I think I produce more than average at this plant.

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23. I would rate my ability on the job as:

<table>
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<tr>
<th>poor</th>
<th>fair</th>
<th>good</th>
<th>pretty good</th>
<th>very exceptional</th>
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24. When I earn more my supervisor respects me more.

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25. The more I earn the more fun I can have with my friends after work.

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136
26. I would be much more worried about the future if I wasn't earning money now.

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27. The more money I earn the better I feel about myself.

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28. How I feel about myself is greatly influenced by how much I earned in the week.

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29. The pay I earn makes me feel more secure about things.

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30. For some reason I seem to get along better with friends when I have earned more that week.

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31. The pay I earn is absolutely essential for my household.

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32. I could save half of my paycheck if I felt like it.

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33. Most of the money that I earn is "spent" on bills and necessities before I get it.

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34. A good bit of what I earn is spent on activities with friends.

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35. I worry less about life when I am earning money.

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36. I like earning more money because it helps gain some respect from others.

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37. I think people respect me more if I earn more than other people.

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38. When my earnings are low for the week I feel disappointed with myself.

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39. Most people waste too much of their life not getting anything done.

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40. Most people who don't succeed in life are just plain lazy.

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41. Any person who is able and willing to work hard has a good chance of succeeding.

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42. Leisure time is more important to me than is work time.

43. If you work hard enough it is possible to make a good life for yourself.

44. I feel uneasy when there is little work for me to do.

45. I pay a good deal of attention to the feelings of others at work.

46. I don't mind helping a friend at work even if it costs me a little time.

47. I express my disagreements with others openly.

48. I often talk to those around me about things not related to work.

49. Having friends at work is important to me.

50. This job would be better if I had more time to talk to friends.

51. Friendships at work are not very important to me.

52. It is important to me to have some time to talk to friends on the job.

53. I don't mind losing a little money when I visit with friends on the job.

54. Even on the job there are some things like friendship, that are more important than money.

55. Having a group of friends here helps me get through the day.

56. My production can be influenced by how much other operators think I should produce.

57. There seems to be a standard set by employees among themselves for how much they should produce each day.

Appendix A. QUESTIONNAIRE
Appendix A. QUESTIONNAIRE.
74. Other employees around me judge me by how much I produce each day.

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75. It is important to me to earn a certain amount of money each week.

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76. I have a goal for how much I want to earn each week.

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77. If I see I am not going to make my earnings goal I work harder.

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78. After I set a goal to earn in a week I would slow down a bit if I am going to make it easily.

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79. I might not work so hard if I didn't have a goal to earn each week.

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<td>slightly disagree</td>
<td>slightly agree</td>
<td>agree</td>
<td>strongly agree</td>
</tr>
</tbody>
</table>

80. My supervisor often talks to me about keeping up production.

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>strongly disagree</td>
<td>disagree</td>
<td>slightly disagree</td>
<td>slightly agree</td>
<td>agree</td>
<td>strongly agree</td>
</tr>
</tbody>
</table>

81. Does following a schedule appeal to you, or cramp you?

| strongly disagree | disagree | slightly disagree | slightly agree | agree | strongly agree |

82. Are you more careful about people's feelings, or their rights?

| strongly disagree | disagree | slightly disagree | slightly agree | agree | strongly agree |

83. Are you inclined to value sentiment more than logic, or value logic more than sentiment?

| strongly disagree | disagree | slightly disagree | slightly agree | agree | strongly agree |

84. Are you easy to get to know, or hard to get to know?

| strongly disagree | disagree | slightly disagree | slightly agree | agree | strongly agree |

85. Are you usually a "good mixer", or rather quiet and reserved?

| strongly disagree | disagree | slightly disagree | slightly agree | agree | strongly agree |

86. Do you get more annoyed at fancy theories, or people who don't like theories?

| strongly disagree | disagree | slightly disagree | slightly agree | agree | strongly agree |

87. Do you prefer to arrange dates, parties, etc. well in advance, or be free to do whatever looks like fun when the time comes?

| strongly disagree | disagree | slightly disagree | slightly agree | agree | strongly agree |

88. Can you talk easily to almost anyone for as long as you have to, or find a lot to say to only certain people or under certain conditions?
89. When you are with a group of people, would you rather
____ join in the talk of the group, or
____ talk individually to people you know well?

90. When you start a big project that is due in a week, do you
____ take the time to list the separate things to be done and the order of doing them, or
____ plunge in?

91. When something starts to be the fashion, are you usually
____ one of the first to try it, or
____ not much interested?

92. Would you rather be considered
____ a practical person, or
____ an ingenious person?

93. In a large group, do you more often
____ introduce others, or
____ get introduced?

94. Would you rather have as a friend someone who
____ is always coming up with new ideas, or
____ has both feet on the ground?

95. When you go somewhere for the day, would you rather
____ plan what you will do and when, or
____ just go?

96. Would you rather
____ support the established method of doing good, or
____ analyze what is still wrong and attack unsolved problems?

97. Do you more often let
____ your heart rule your head, or
____ your head rule your heart?

Look at EACH pair of words listed below and circle that word

WHICH WORD APPEALS TO YOU MORE?

98. systematic ... OR ... spontaneous
99. build ... OR ... invent
100. convincing ... OR ... touching
101. reserved ... OR ... talkative
102. statement ... OR ... concept
103. soft ... OR ... hard
104. forgive ... OR ... tolerate
105. hearty ... OR ... quiet
106. impulse ... OR ... decision
107. sensible ... OR ... fascinating
108. facts ... OR ... ideas
109. compassion ... OR ... foresight
110. orderly ... OR ... easy-going
111. systematic ... OR ... casual
112. thinking ... OR ... feeling

Thank you very much for your help. This is private information and WILL NOT BE SHARED WITH ANYONE AT ALL. We need your Hanes Knitwear number in order to match this questionnaire to a later questionnaire if there is one and to any other information gathered. Also filling in the blanks below enters you in the prize drawing for each group.

Hanes Knitwear Employee Number: __/__/__//

Are you Qualified? ____ (Yes) _____ (No)

Job Title: ________________________________

Time with this Job Title: _____ (Years) _____ (Months)
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