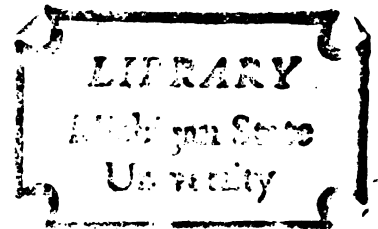


AN EXAMINATION OF THE EFFECTS OF
PAY EXPECTANCY AND INDIVIDUAL
DIFFERENCES ON THE PERCEPTION
OF INEQUITY

Dissertation for the Degree of Ph. D.
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ABSTRACT

AN EXAMINATION OF THE EFFECTS OF PAY EXPECTANCY AND INDIVIDUAL DIFFERENCES ON THE PERCEPTION OF INEQUITY

By

John A. Fossum

Adams' theory of inequity presumes that individuals are motivated to maintain balance between inputs and outcomes. Inputs and outcomes are cognitively valued and perceptually compared with internal standards. If the comparison yields an imbalance, one is presumed to behave in a manner to restore balance or to cognitively revalue inputs or outcomes to attain equity. On the other hand, expectancy theory presumes one will act in ways to maximize cognitively valued outcomes regardless of perceived input levels.

To test the robustness of equity theory, an experiment with a presumed high pay-performance relationship, in the absence of any equity manipulation, was run. Seventy-six females worked for three one-hour sessions presuming that their pay was contingent on performance when, in fact, they were randomly rewarded. If equity theory were to be supported, subjects should have behaved in a manner to avoid over- or underpay, given performance and/or been less satisfied with pay than appropriately-rewarded subjects.

However, the results generally supported an expectancy interpretation as subjects who received bonuses were more satisfied,

regardless of performance. Within pay levels, equity theory was weakly supported with overpaid and underpaid subjects less satisfied than appropriately-paid bonus recipients and non-recipients.

Perceptions of performance related by the subjects were more highly related to relative pay treatment than actual performance, indicating that communications to a worker may result in revaluation of the instrumentality component in the expectancy model.

Neither ability nor degree of input orientation were related to satisfaction with pay in this experiment, although clerical ability was significantly related to performance.

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By

John A. Fossum

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For pressure for clarity and logic; my dissertation committee and my wife, Alta.

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As you may have noticed there is one individual who has contributed in all of these areas. While she professes to know little

about the area on which I have written or my field in general, I think the lady "doth protest too much" because her ability to clarify some of the muck of earlier drafts belies her statement. This contribution in itself would have been more than plenty, but her continual understanding and sacrifice through three years of sporadic progress and setbacks, two one-thousand-mile moves, and two new children without losing her sanity is a tribute to her strength and a reflection on the fact that this is hers as much as mine.

I dedicate this to Alta with the realization that the work does not adequately reflect her sacrifices in its completion.

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CHAPTER 1

REVIEW OF THE LITERATURE

1.1 Introduction

The slogan "a fair day's pay (work) for a fair day's work (pay)," (depending on whether labor or management is espousing the dictum), summarizes one of the underlying themes in the history of industrial relations and personnel management. The very fact that the two variables, pay and work, are included in a statement in which both are modified by "fair" gives some indication that fairness or a return equivalent to effort is viewed as an important consideration in the employment relationship. This concept is important in psychological, sociological, and economic frameworks, particularly as it pertains to the compensation relationship.

The concept of fairness, stated in elemental economic terms, requires that an equilibrium exists in the relationship between investments and returns across all individuals. This idea of fairness connotes a comparison process between individuals; hence, it is a social process. Fairness is also perceptually evaluated; and as such, is a psychological process. It is the psychological aspect of fairness or equity that will be dealt with here.

While it would be fascinating to explore, as other disciplines have done, the relationship of "fairness" to legal questions, to

politics, etc., space permits only a brief exposition of the fairness concept's meaning in economic and sociological frameworks, while its meaning within a psychological framework will be rather fully explored. This study explores the theoretical aspects of fairness or equity; second reviews previous research in this area; develops a method for this study; explains this study's findings; and interprets the results.

1.2 Economic Theories

Economists see an equilibrium or fairness resulting from inevitable forces related to each individual's attempt to maximize his advantage. Since all individuals are postulated to be continually attempting to gain more, any opportunity for the accrual of an advantage with less effort will attract persons to that area. Assuming that a fixed amount of "advantage" exists at a given time, this movement from less to more advantageous positions soon exhausts the excess advantage which existed in some areas, and equilibrium is restored. (This is not to say that all outcomes are equal across the population, since even the earliest economists (Smith, 1937) recognized that input levels may vary given the individual. Smith's concept of advantage included the following variables: hardship, dirtiness, dishonorableness, difficulty and expense of training, constancy of employment, trust, and probability of success. Each of these was essentially viewed as an input by Smith and outcomes were seen to vary depending on the inputs so that if inputs were equal for some group, outcomes would tend toward equilibrium over time.)

In the *Wealth of Nations* (1937), Smith stated that:

"The whole of the advantages and disadvantages of the different employments of labour and stock must, in the same neighborhood, be either perfectly equal or continually tending to equality. If, in the same neighborhood, there was any employment evidently either more or less advantageous than the rest, so many would crowd into it in the one case, and so many would desert it in the other, that its advantages would return to the level of other employments. This at least would be the case in a society where things were left to follow their natural course, where there was perfect liberty, and where every man was perfectly free both to choose what occupation he thought proper, and to change it as often as he thought proper. Every man's interest would prompt him to seek the advantageous and shun the disadvantageous employment."

Following this, economists have generally seen that attainment of an equilibrium results from each individual pursuing a strategy likely to maximize his own outcomes. Since others also are attempting to maximize their outcomes, the competition for easy or more profitable outcomes reduces their availability and restores the balance. The ultimate balance occurs when the utility (satisfaction) that a good or activity yields compared to another good or activity is exactly equal to the ratio of their prices. Thus, in the purchase situation, inputs are the resources allocated for the good (price paid) and outcomes are the satisfactions derived from the consumption of that good (cf., Ferguson, 1969; Chapters 15 and 16 for a discussion of general economic equilibrium and welfare economics).

1.3 Sociological Theories

Sociological theories of equilibrium have concentrated on individual's rewards in an exchange relationship with other individuals or groups (Gouldner, 1960; Homans, 1950, 1953, 1961; Whyte, 1955; Zalesnik, 1956).

Homans' (1961) exchange theory perhaps best typifies the sociological approach. In an exchange relationship one engages in activities he feels will meet his needs or be rewarding. The individual is assumed to engage in this relationship to the point where the marginal increase in cost or effort is equal to the marginal gain in utility or satisfaction. As such, the model assumes that one is interested in a profit accruing through the relationship. But, Gouldner (1960) points out that certain norms held by society may moderate the profit aspect of the exchange relationship.¹ The exchange theory concept basically emphasizes that both parties in a relationship should profit and expect to be better off as a result. Further, each should continue the relationship up to the point at which his efforts and returns are equal.

Homans' (1961) formulation reflects the strong effect that Paretian thought has had on sociological theory. Pareto's influence is also felt in the general equilibrium formulations of economists. This explains sociologists' inclusion of and preoccupation with marginal values as determiners of whether or not an exchange relationship is satisfactory or should be continued.

Unfortunately there has been little empirical research by sociologists testing exchange theory and that research which is offered in support does not explicitly test the marginal properties of the

¹For example, the parent is expected to give more help to a child than he receives in return. However, one might interpret the behavior of the child in receiving the help as being rewarding. This borders on the tautological, however, and recalls the Krebs-Hebb (Hebb, 1971; Krebs, 1970; Krebs, 1971) controversy on altruism.

theory. Homans (1953) reported the findings of a field study involving an electrical utility which were offered as support for the theory.

Two groups of employees worked in the same physical area: one posted receipts to accounts while the other maintained account changes, answered customer inquiries and helped the posters to finish any excess work at the end of the day. Both groups were paid the same wage. All account maintenance personnel had been promoted from poster positions. In terms of the exchange relationship, the marginal cost or effort required of the account maintenance personnel was substantially greater than that of the posters, while the marginal return was equal with the assumed exchange relationship being between the worker and the electric utility. The unbalanced exchange relationship was resolved through the election of a new bargaining agent to negotiate a change in the wage level for the account maintenance personnel.

1.4 Sociological and Economic Theory Similarities

The prominent exchange or general equilibrium theories in these two disciplines flow from a common source, Vilfredo Pareto. Both statements of equilibrium are concerned with the yield in utility or satisfaction given increments of marginal effort. The departure is in the theoretical and logical rigor of the theories. The economic theories require that, at equilibrium, utility yields at the margin be equal for all involved in the system, and that utility derived is equal to the price paid for a commodity. Thus, if one expends \$1 of his resources for good A and his neighbor spends \$3 for good B, good A will

yield one exactly one utile of satisfaction, and good B will yield his neighbor three utiles of satisfaction.

The sociological exchange theory is not nearly so precise, nor do predictions about specific types of behavior flow as freely from the model. One must determine a posteriori what variables influenced the quality of the satisfaction in the exchange relationship rather than explicitly predicting outcomes since behavioral consequences of certain variable combinations are not spelled out.

1.5 A Psychoanalytic Theory of Fairness in Compensation

Elliot Jaques' (1961) book, Equitable Payment, details his theory of equity in employment compensation. He has been one of the leading theorists in defining the concept of fairness as related to compensation for an individual's work. Jaques' theory describes work, the measurement of work, social norms related to pay, the progression of pay throughout one's working life, the relationship between levels of work and pay, and individual adaptations to inequitable payment situations.

Briefly, the theory may be summarized as follows. When one works for an employer he is paid to exercise discretion within certain defined limits. The level of the work performed is measured in terms of time-span of discretion (TSD), which is the time between the assignment of a task and review of task progress by a superior. For each level of work (or TSD) all members of society intuitively know what the fair payment level is. This intuitive concept is called the shared social norm of felt fair pay (FFP). Workers vary in their potential

capacity for work, both among themselves as a group, and within themselves as individuals over time. Since the theory is based in a psychoanalytic framework, Jaques posits that the awareness of present capacity for work, level of present work, and payment equitability are subconsciously known. Thus, the tension created by inequity, under Jaques' theory, originates subconsciously rather than as a result of social comparison. He does note, however, that there is a societal perception of what constitutes fair pay for given jobs so subconscious evaluations appear to have a common denominator.

Individuals have present capacities for work and discriminating expenditure. This level is one at which an individual's tastes match the pay commanded by his capacities. He neither squanders his money on extravagances nor hordes the excess he makes over and above some minimum subsistence level.

A variety of conditions (such as underabundant employment, collective bargaining, societal tolerance of inequity, labor market uncertainties, and perpetuation of returns too high for work capacity) may disturb the move toward and maintenance of an equilibrium.

The main points of interest in Jaques' theory for compensation theorists are: (1) the measurement of level of work through assessment of the TSD; (2) the concept of shared social norms of felt fair pay; (3) the individual's continual unconscious awareness of his present capacity for work; and (4) the proposition that work which has a TSD equal to current capacity and pay which equals the FFP for that TSD will be viewed as equitable by the job incumbent.

Unfortunately, Jaques has not adequately operationalized or empirically tested his theories. He relied on several short cases derived from his studies in the Glacier Metal Company in the United Kingdom to support his postulates. As a result, critics have assailed his theory. Hellreigel and French (1969) claimed that the measure of TSD is contaminated by other reviews scheduled on periodic bases and unrelated to the actual exercise of discretion for the work itself. Gordon (1969) concluded that Jaques' system relies only on the manipulation of pay to achieve equity. Further, he claimed that Jaques had failed to consider individual background variables related to preferences between various modes of pay, such as straight salary, deferred compensation, or fringe benefits; individual differences in terms of perceptions of changes in the level of pay and the utility of pay; and finally, the fact that mandatory retirement policies make the longitudinal interaction between capacity for work, TSD and FFP impossible to extrapolate over the life of the individual.

One could also criticize the tautological nature of the theory in terms of the circularity of the capacity for work-capacity for discriminating expenditure-FFP-TSD system. Another criticism centers on the difficulty of testing a theory which attributes motivation towards equitable treatment as arising from and being subconsciously controlled. There really are no acceptable operational measures of one's subconscious processes. Further, Jaques makes no real predictions about the processes one might use to restore equity. While he does note that individuals might alter their situations in some manner, he does not indicate whether this is subconsciously, consciously, or behaviorally accomplished.

Emphasizing the difficulty of testing the theory, Jaques (1961) warns that respondents to interviews may not believe promises of confidentiality for answers and: (1) may not answer faithfully about their perceptions; and (2) even believing that confidentiality is insured, may not be able to unlock "secret feelings" about the equitability of pay from their subconsciouses. In view of the roadblocks laid in the path of testing this theory, it is not surprising that little empirical evidence bearing on the validity of the theoretical constructs is available. Only one comprehensive study (Richardson, 1971) tests Jaques' theory in a U. S. industrial setting.

Richardson was interested in determining what variables were viewed as inputs in an employment setting. He also wanted to see whether some measures of inputs commonly used by salary determination systems were more strongly related to present salary than TSD. Finally, he wanted to see if superiors and subordinates independently agreed on measures of TSD and FFP for the subordinate's job.

Richardson drew a sample of 180 middle managers employed in three Minneapolis divisions of Honeywell, Inc. Managers were drawn from three different functional areas across three separate salary levels. Table 1.1 shows the sample breakdown. Richardson used patterned interviews to obtain data to test Jaques' theory. In his pilot study, test-retest reliabilities of TSD measures ranged between .80 and .87 while FFP measure reliabilities were all over .90.

One of the main relationships to be tested was the degree of agreement between manager's perceptions of the TSD for a subordinate's job and the subordinate's perceptions of FFP for his job. When results

Table 1.1. Sample Size by Salary and Function.

	Factory	Eng.	Adm.	Total
Greater than \$1,300	20	20	20	60
\$1,100 - \$1,300	20	20	20	60
Less than \$1,100	20	20	20	60
Total	60	60	60	180

for all functions and salary levels were pooled, the correlation between managerial TSD measures for subordinates and subordinate FFP perceptions was .86. Table 1.2 gives detailed results.

Table 1.2. $r_{TSD_{sup} FFP_{sub}}$ by Salary Level and Function.

	Eng.	Factory	Adm.	Total
Greater than \$1,300	.63	.80	.64	.69
\$1,100 - \$1,300	.75	.72	.64	.70
Less than \$1,100	.90	.83	.81	.83
Total	.84	.90	.87	.86

When differences between levels and functions for TSD and FFP were examined, TSD's were significantly different between grade levels

1

($F = 85.90, P < .01, \eta < .75$)² and functions ($F = 4.94, P < .01, \eta < .25$), while FFP was significantly different between levels only ($F = 143.08, P < .01, \eta < .80$). A level by function interaction also resulted for TSD ($F = 2.77, P < .05, \eta < .25$). Factory TSD's were lower than administrative TSD's at the same level. Although Richardson ignored the question, this finding may be related to the greater monetary responsibility of factory managers reflected as an input which administrators may not have.

When traditional wage and salary program design variables along with TSD and FFP were regressed on TSD_{sup} (sup = superiors) and FFP_{sub} (sub = subordinates) in separate regressions, it appeared that TSD_{sub} and FFP_{sub} predicted the major portion of the variance of TSD_{sup} while TSD_{sup} and actual pay predicted FFP_{sub} . When other background variables such as years since degree, experience on the job, and other demographic and compensation treatment variables were partialled out, the correlation between FFP_{sub} and TSD_{sup} appeared to settle around .70.

Richardson's results are impressive, particularly in view of the fact that attenuation due to unreliability would probably lead to a decrease in the level of corrected correlations from the middle .90's to the observed .86. But at the same time several problems must be considered. The high reliabilities for TSD and FFP measures reported by Richardson, and the high correlations between superior and subordinate perceptions of FFP conceal three problems: (1) correlations between boss and subordinate perceptions ignore mean differences in FFP, reflecting only that higher FFP_{sub} are related to higher FFP_{sup} and vice versa;

²Friedman's (1968) η .



(2) actual pay of the subordinate was already known to both superior and subordinate thus leading to the possibility of criterion contamination; and (3) if traditional salary determiners were regressed on FFP without TSD, and if R^2 were as high, a competing, but less parsimonious, hypothesis could be supported.

Further, Richardson's study only evaluates the relationship between TSD and FFP for one company. The compensation program for this company has been very systematic and has led to standard treatment across divisions for any given geographical area. Additionally, there is considerable mobility between the two divisions in this study since both are part of the military products group. Significant differences between TSD-FFP relationships across divisions could cast doubt on the validity of Jaques' (1961) theory. Finally, if there are shared social norms relating FFP to TSD, a test across companies for the same job would be necessary to confirm this relationship.

Milkovich and Campbell (1972) dealt with the FFP problem in the same labor market area in a job where TSD is not allowed to vary much across companies. The prescribed component of the job was very large while the discretionary component was relatively circumscribed. These researchers hypothesized that if TSD were equivalent across firms, FFP should be within Jaques' hypothesized range of plus to minus 5% for that job.

Milkovich and Campbell asked 167 key punch operators in five different organizations for their perceptions of FFP for their work. Across all firms only 43% of respondents' FFP's were within the plus to minus 5% of the mean. Percentages within this area varied from a low

of 23% for one firm to a high of 64% for another. When FFP was correlated with background or input variables, correlations for perceptions of FFP and age, tenure, and performance ratings were .82, .89, and .75, respectively.

This finding appears to indicate that FFP is seen as related to input or present capacity variables more than the TSD for the job. Thus, the circular aspect of Jaques' theory linking FFP-TSD-capacity for work-capacity for discriminating expenditure may not be so inter-related after all. The fact that FFP was related to input variables in a job where TSD was constant lends support to a cognitive balance or equity theory.

1.6 Equity Theory

The most complete statement of the bases of equity theory was made by Adams (1965). Equity theory is a logical extension of Festinger's (1957) theory of cognitive dissonance. According to Adams, individuals are aware of their possession of attributes which might lead to the accomplishment of work. These include such variables as age, experience, training, ability, dexterity, etc. The actual possession or lack of an attribute is not important as far as the study of equity is concerned, [but the individual's perception of the relative degree to which he possesses attributes and their relevance for task accomplishment is important.] Any attribute that an individual perceives as relevant for the accomplishment of a certain task and possessed by him is defined as an "input."

"Outcomes," on the other hand, are defined as those rewards, changes, or payments which accrue to the individual as a result of his application of inputs. These are also evaluated perceptually. Like inputs, outcomes must be recognized to be evaluated; and, they must be viewed as relevant by the perceiver. Thus, the perceived value of an outcome may not be equivalent to either its market price or the perceived value placed on it by the donor.

If the perceived value of the inputs equals the perceived value of the outcomes, equity may be assumed to exist according to Adams' scheme. This is a necessary, but not sufficient condition for maximum equity to exist. When inputs (I) and outcomes (O) are not perfectly balanced, feelings of inequity may arise. These feelings are similar to feelings of dissonance as defined by Festinger (1957) since there are obverse elements (different levels of I and O) currently existing in the individual's cognitions of the situation. He should then be motivated either to attempt to change one element to achieve consonance, or to leave the field.

According to Adams (1965) one must make a comparison before he can perceive whether or not inequity exists in a situation. "Person" thus compares his ratio of outcomes to inputs with some relevant "Other's" ratio to arrive at his evaluation. This comparison process occurs as follows:

"Person is any individual for whom equity or inequity exists. Other is any individual with whom Person is in an exchange relationship or with whom Person compares himself when both he and Other are in an exchange relationship with a third party. . . (Adams, 1965, p. 280)"

Equity exists when the ratio of Person's outcomes to inputs equals the ratio of Other's (c) outcomes to inputs:

$$(1.1) O_p/I_p = O_c/I_c.$$

This formulation makes no assumption about the within person ratio, only with the between person ratio. In other words, if Person's outcomes exceed his inputs, there can be no assumption that inequity exists as long as Other is in the same situation. What is necessary is that the ratios of outcomes and inputs for both parties be equivalent, not that outcomes and inputs be balanced within individuals. However, most of Adams' work (Adams and Rosenbaum, 1962; Adams and Jacobson, 1964) has used an experimental design which only examines relationships where O_p/I_p is not equal to 1.

Weick (1966) made a general extension of the theory by suggesting that inequity could occur when the comparison Other was actually Person's perception of his O/I ratio and later demonstrated that this comparison takes place (Weick and Nessel, 1968).

Since equity theory has evolved from dissonance theory, the main consequence of a situation where ratios are not in balance, is the situation where unlike cognitive elements are in existence simultaneously; thus, the individual is assumed to be motivated to attempt to restore consonance. Quite obviously, the individual can attempt to alter his level of inputs, change his outcomes, or leave the field. These may all be accomplished behaviorally. On the other hand, he may cognitively change his perceptions of inputs or outcomes, both for himself and for Other.

According to Adams (1965) there are several modes Person might use to attempt to reduce or eliminate inequity. First, Person may alter his inputs. He should be more likely to lower his inputs when his outcomes fall below a comparison Other's than he would be to raise them if his outcomes were higher. This assumption relates to the hypothesis that the threshold for inequity is higher for overpay than underpay and that individuals will seek to minimize costs and maximize gain. In other words, efforts to reduce inequity will follow more often when the O/I ratio is not in favor of Person. This hypothesis, in itself, would be contradictory unless one includes the idea that individuals cognitively value their inputs and outcomes; hence, revaluation in the overpay situation may be easier than devaluation of their valued inputs in the underpay situation. Person's view of his value might be extremely resistant to change downward. Adams notes that Person also cannot alter his inputs without simultaneously altering the outcomes of Other. Thus the resolution involves a joint function of Person's and Other's present O/I ratio.

Second, Person can alter his outcomes. The increase of outcomes serves to meet the maximum gain criterion, while decreasing outcomes may be difficult to do without altering inputs. However, since the individual determines the value of his outcomes, he may, in terms of dissonance theory, enhance the cognized value of the chosen alternative (or mix of his outcome elements relative to Other's), or alter his level of satisfaction by revaluing some intrinsic aspect of the job, e.g., altering perceptions of relative working conditions.

Third, Person may leave the field. If this is easier or more comfortable than altering inputs and/or outcomes a person might choose to join another group where his outcomes may be higher. This is probably a common mode in industrial settings.

Fourth, Person may attempt to persuade Other to change his level of inputs and/or outcomes to achieve balance. Since Other is presumed to be governed by the maximum gain hypothesis as well as Person, it is likely that attempts to get Other to lower inputs or increase outcomes will be more successful than the obverse.

Fifth, Person may change his comparison Other to restore balance. By shifting comparison to one with whom his ratio is already in balance, no effort to change inputs or outcomes is required.

Finally, when Person has a choice about the mode he will use to reduce inequity, Adams (1965) proposes that, ceteris paribus:

(a) Person will maximize positively valent outcomes and the valence of outcomes.

(b) He will minimize increasing inputs that are effortful and costly to change.

(c) He will resist real and cognitive changes in inputs that are central to his self-concept and to his self-esteem. To the extent that any of Person's outcomes are related to his self-concept and to his self-esteem, this proposition is extended to cover his outcomes.

(d) He will be more resistant to changing cognitions about his own outcomes and inputs than to changing his cognitions about Other's outcomes and inputs.

(e) Leaving the field will be resorted to only when the magnitude of inequity experienced is high and other means of reducing it are unavailable. Partial withdrawal, such as absenteeism, will occur more frequently and under conditions of lower inequity.

(f) Person will be highly resistant to changing the object of his comparison, Other, once it has stabilized over time and, in effect, has become an anchor (Adams, 1965, 295-296).

The problems related to Adams' (1965) formulation; namely, the cognitive elements of the theory, the incompatibility of equity and the maximum gain hypothesis, and the failure to specify more completely the valence of possible outcomes, have all led to theoretical criticisms.

Further, the research supporting the theory has been criticized (Opsahl and Dunnette, 1966; Lawler, 1968b; Pritchard, 1969; Goodman and Friedman, 1971) on the grounds that the subject's self-esteem has been attacked to lower cognitions of inputs, that job security may be threatened leading to artifactual results, that the subjects are not representative of the overall population, that the length of the experiments does not allow one to leave the field as a mode of inequity reduction, and that most subjects are isolated from others working in an experiment and have a great deal of trouble choosing a comparison Other. These criticisms and theoretical modifications are discussed below.

1.7 Theoretical Modification of Adams (1965) Theory and Criticisms

Outside of the experimental area where modifications to be explained and tested are proposed as part of the research article, there have been some major criticisms and modifications offered. Weick (1966) proposed that there may be relative differences in the perception of inequity or the level of discomfort of inequity depending on the identity of the comparison Other. He indicated that comparison inequity would be more uncomfortable the more similar the comparison was perceived to be. Further, equity in terms of comparing Person's O/I ratio alone would be less likely to cause discomfort than comparing Person's O/I to the ratio of an Other. Weick (1966) also noted that underrewarded

persons tend to enhance their tasks and express a greater degree of satisfaction with their work. This cognitive alteration of outcomes is an important consideration when dealing with experimental results.

Opsahl and Dunnette (1966) summarized the equity theory development and research results and concluded that equity theory was deficient in several areas. One of their main criticisms was the failure of the theory to specify the order of preference for the choice of a mode of resolving inequity. Since so many different modes could be used, the resolution can be easily explained, a posteriori, but difficult to predict, a priori. Further, they contended that the theory ignores individual differences outside of recognizing that some background variables such as age, education, seniority, etc., can be considered as inputs.

Lawler (1968b, 1971; and Porter and Lawler, 1968) has been generally critical of equity theory because some of the predictions based on the theory do not fit an expectancy theory model of motivation. Lawler's latest review (1971) concluded that neither overpayment nor underpayment predicted quantity or quality of performance in hourly pay situations. And, according to expectancy theory, it shouldn't since pay is not contingent on performance. In piece-rate pay situations, expectancy theory would predict that if pay were important and if Person could clearly see a relationship between high performance and pay, he should produce in a manner which should maximize his returns. Lawler (1971) saw equity as being related to the valence of an actual sum of money and reflected in satisfaction.

Pritchard (1969) felt that a number of problems existed in equity theory tests made to that point, including the likelihood that manipulations designed to lower the level of input perceptions may actually have attacked Person's self-esteem or created feelings of job insecurity. Further, subjects usually worked on tasks where quantity and quality were free to vary and thus the experimenter could not measure independently input effects on one without including the other. Finally, situations involving inequity were not allowed to occur naturally, but were instead induced, thus subjects may have responded to perceived demand characteristics of the experiment rather than the equity situation itself.

Other specific criticisms such as the mode of inequity reduction and choice of comparison, among others, have led to specific research studies. The motivation for these studies will be discussed below as will be the specific criticisms. This consideration of studies which propose modifications, answer criticisms, offer alternative explanations, or extend the validity of equity theory is necessary to see whether or not some of the problems have been resolved.

1.8 Research Results for Equity Theory

The research studies are dealt with chronologically. Following this, they are summarized as to tests, results, level of support for the theory, and alternative interpretations.

Patchen (1961)

While Patchen's study predated the formal presentation of equity theory (Adams and Rosenbaum, 1962), its theoretical constructs

flowed from dissonance theory. Patchen was interested in finding out what comparison Other Person would choose when asked to do so. A consonant comparison is one where the relationship in (1.2) holds while a dissonant comparison is one where the ratio of earnings is incongruent with the ratio of background variables. The essential difference between

$$(1.2) \quad \frac{\text{my pay}}{\text{his pay}} = \frac{\text{my position on dimensions related to pay}}{\text{his position on dimensions related to pay}}$$

this formulation and Adams' (1965) formulation is that Adams requires that:

$$(1.3) \quad O_p/I_p = O_c/I_c,$$

while Patchen's is:

$$(1.4) \quad O_p/O_c = I_p/I_c.$$

Patchen anticipated that dissonance would occur when (1.2) was an inequality. He hypothesized that Person would be dissatisfied if comparisons could be viewed objectively as dissonant. Upward comparisons would be dissatisfying if the Other was of similar status or if the chances of movement to his position by Person were small. Persons who were earning less than the average for their jobs would be expected to choose upward comparisons more often and would choose those who were more likely to be of similar rather than different status. Those Persons who saw their positions as resulting from "fate" or "luck" would tend to be more dissatisfied with upward comparisons. Outcomes would be perceived to be outside their control. Those who had been told by others that their inputs exceeded their outcomes would be more dissatisfied with upward comparisons.



Patchen collected his data from 489 non-supervisory employees in a non-union Canadian oil refinery. Structured interviews were conducted covering a variety of topics in which the wage comparison questions were embedded. Any comparison could be named; co-workers or others employed outside the refinery.

Generally, Patchen found that men who chose upward comparisons were less satisfied than others. As the comparison Other appeared to be increasingly similar, upward comparisons became increasingly dissonant. If the man were dissatisfied, he usually justified it on the basis of input comparisons. Where downward comparisons were dissonant, men generally tended to justify and rationalize them on the basis of "luck." Persons whose mobility chances were higher chose more upward comparisons.

Generally, persons who felt that their positions were not a result of "luck" were more satisfied with upward comparisons while Persons who were highly paid within a classification chose fewer downward comparisons and fewer comparisons who were similar on input factors.

Adams and Rosenbaum (1962)

This first study reported by Adams was designed to test some hypotheses related to dissonance theory. Adams and Rosenbaum proposed that dissonance existed when Person's cognitions about his job inputs and/or outcomes were obverse to those of Other. If the outcome or payment mode were fixed, Person might alter his inputs to restore a balance. If the outcome mode were variable, Person again could alter the makeup of his inputs to reorder outcomes.

In their first experiment, 22 undergraduates were hired as interviewers at the rate of \$3.50 per hour. All subjects (Ss) were

told that this would be a continuing job. Ss were randomly assigned to two groups: one which received interviewing instructions only (controls) and one whose qualifications were attacked prior to receiving instructions.

Upon their return, mean productivity per minute measures were calculated, and a χ^2 median test using above or below median production on one margin and control or overpay inequity on the other was run. The test supported the hypothesis that the dissonant group would be more productive ($\chi^2 = 4.55$, 1 d.f.). Mean productivity for the overpay group was .2694 while the control group mean was .1899.

Their second experiment added a piece rate condition. For this experiment, 36 undergraduates were hired and randomly assigned to: hourly dissonance, hourly control, piece rate dissonance, and piece rate control conditions. The Ss performed the same interviewing task and dissonance was induced by attacking qualifications.

The results indicated that hourly dissonant workers produced more than hourly controls (.2723 vs. .2275) while piece rate dissonant workers produced less (although not significantly less) than piece rate controls (.1493 vs. .1961). Productivity by pay method was significantly greater for hourly workers than piece rate workers ($\chi^2 = 4.00$, 1 d.f.). This may have meant that \$3.50 per hour was viewed as overpay by both dissonant and control Ss when compared to piece rate Ss. The two-way interaction of payment method and dissonance condition was significant ($\chi^2 = 7.11$, 1 d.f.), indicating that hourly and piece rate workers in conditions of dissonance use opposite methods for reducing this dissonance.

Adams and Jacobsen (1964)

Sixty students were hired to proof galleys for 30¢ per page. Ss were randomly assigned to one of three conditions: (1) high inequity, (2) reduced inequity, and (3) low inequity. In the high and reduced inequity groups, Ss qualifications were attacked. The rate of pay was reduced to 20¢ per page for the reduced inequity group, supposedly commensurate with their ability levels. Ss were also assigned randomly to two conditions on a second factor, job prospects. Ss were told either that it was a one-time job or prospects would be good for more work later.

Productivity was measured by the number of pages proofed, and quality was measured by the number of errors detected per page proofed. Since outcomes per page were fixed, the hypothesis suggested that over-paid Ss would increase their level of inputs to restore balance. Since reduced inequity Ss were made to feel that the reduced 20¢ rate was fair given their ability level, no difference between their performance and the low inequity group was hypothesized.

Results of the experiment indicated that the high inequity group detected significantly more introduced errors than other Ss ($F = 32.27$, $P < .01$, $\eta^2 < .75$), and classified significantly more non-errors as errors ($F = 10.24$, $P < .01$, $\eta^2 < .55$). In terms of productivity, the high inequity group produced significantly fewer proofed pages ($F = 23.67$, $P < .01$, $\eta^2 < .70$). There were no significant differences between the reduced inequity and low inequity groups, nor were there significant dissonance-job prospects interactions.

The higher number of non-errors noted by the high inequity group may not necessarily be interpreted as higher inputs since they actually reduce quality. One might interpret this as confirming the E's assumed suspicions about their input abilities.

Weick (1964)

While Weick's experiment was not explicitly designed to test an aspect of equity theory, the results suggest one mode used by persons who view their outcomes as inequitable. Weick recruited 100 undergraduates for a study by indicating they would receive course credit for participation. Half of the Ss formed a control group while the other half was given a letter when they reported informing them that the experimenter had been told he was not authorized to grant them credit. E acted very high-handedly, and told Ss they "might as well stay" as long as they were there.

Ss were then put to work on a project requiring them to find uses for common objects. The high dissonance group expended significantly more effort, accomplished significantly more, and set significantly more cautious goals. Those in the high dissonance group saw the task as more interesting and the necessity for reaching correct solutions as more important. Further, high dissonance Ss indicated a dislike for E.

The results indicated to Weick that high dissonance (no credit) Ss reduced dissonance regarding extrinsic outcomes by enhancing the importance and attractiveness of the task; thereby cognitively increasing outcomes. However, it appears that both their inputs and outcomes,

cognitively and behaviorally, exceeded the control group since both effort and satisfaction increased.

Andrews (1967)

Andrews felt that previous equity experiments confounded feelings of job insecurity and lowered self-esteem with naturally occurring dissonance. His experiment was designed to test differential effects of underpay and overpay and the effect of previous wage level earned in relationship to the present experimental level. Andrews hypothesized that if the experimental payment level were higher than that previously experienced, workers would reduce quantity and increase quality; underpaid workers (piece rate) would expand quantity at the expense of quality; and, a small degree of underpayment would have as great or greater effect on productivity than a large overpayment.

Ss were 96 male undergraduates randomly assigned to three piece rates (15¢, 20¢, 30¢) on one of two tasks (data checking or interviewing).

Andrews found that the quantity produced by persons with higher previous wages was significantly higher across conditions (21.0 for those who had earned \$2.25 an hour or more, 20.0 for \$1.60 to \$2.20, and 16.0 for \$1.55 or less). As wage rates increased by task, quantity decreased significantly. Further, quality of output (measured by frequency of errors or length of interviews) decreased significantly when persons had earned a higher previous wage (-.19, -.12, .38 from high to low wage levels). Work rates approximated that required to produce an S's previous wage level. Finally, the threshold for underpay inequity appeared to be substantially smaller than that for overpay inequity.

Friedman and Goodman (1967)

Friedman and Goodman were concerned about cognitions of self-qualifications, task difficulty, pay equity, and experimenter perceptions of a S's qualifications as seen by the S. Some of the possible cognitions might include high or low self-qualifications; high or low superior's perceptions of qualifications; high, equal, or low relationship of outcomes in relation to Other; and easy or hard levels of task difficulty.

In an hourly situation, it was hypothesized that production would be higher if outcomes were greater than perceived qualifications. If qualifications were perceived as high, then productivity was hypothesized to be higher, regardless of outcome levels.

Ss were 51 undergraduates randomly assigned to control and experimental conditions for an interviewing task. All Ss filled out an application and E attacked qualifications for experimental group Ss. After the induction, Ss filled out a questionnaire which included perceptions of clarity of instructions and task difficulty. Ss also filled out another questionnaire on their return.

An analysis of performance indicated that the number of interviews completed did not differ by experimental condition. When the groups were split on the basis of qualifications for interviewing, qualified Ss produced significantly more. Means for the groups were: qualified controls, 39.4; unqualified controls, 23.9; qualified overpays, 34.0; and unqualified overpays, 26.3. The qualified control, unqualified experimental group difference was significant and opposite of Adams' (1965) formulation. Friedman and Goodman interpreted these

data to mean that self-consistency is more important than between person equity in the resolution or prevention of dissonance. For this group, high qualifications led to high productivity regardless of the E's induction.

Lawler and O'Gara (1967)

The hypotheses tested here are related to the idea that Ss may reduce dissonance through altering their cognitions about the job by enhancing the task (Weick, 1964). Lawler and O'Gara noted that equity theory makes no mention of the effect of personality or individual difference variables as moderators of feelings of dissonance. Their study represents the first inclusion of these variables in the analysis.

Forty male undergraduates were hired for a two-hour interviewing job to be paid at a piece rate. Ss were randomly assigned to pay rates of 10¢ (underpay) and 25¢ (equitable pay) per interview. After interviewing, Ss completed the California Psychological Inventory prior to debriefing.

Results indicated that the underpaid group produced significantly more interviews (29.6 vs. 20.0, $t = 4.42$, $\omega^2 = .32$) of significantly lower quality (42.9 vs. 60.6, $t = 2.91$, $\omega^2 = .16$); but felt the job was significantly more interesting (6.1 vs. 5.1, $t = 3.06$, $\omega^2 = .17$), less important (3.6 vs. 4.4, $t = 1.86$, $\omega^2 = .06$) and less challenging (3.6 vs. 4.5, $t = 2.07$, $\omega^2 = .08$). Significant correlations between CPI scales and productivity were found for Social Presence (-.49), Sociability (-.36), Well-being (-.39), and Good Impression (-.54). Significant correlations between quality and CPI scales were found for Responsibility (.38), Tolerance (.60) and Good Impression (.54). Lawler

and O'Gara concluded that ascendancy, poise, and self-assurance were related to productivity while sociability, maturity, and responsibility were related to quality. Thus, individual differences may be as important in determining the productivity, both in terms of quality and quantity, as perceptions of equity.

Zedeck and Smith (1968)

These authors were concerned with an extension of psychophysical measurement techniques into the study of perceived thresholds of inequity for currently employed individuals.

Ss in this study were 25 male junior executives and 96 female clerical workers employed by a large midwestern university. Questionnaires were sent to the Ss asking them to indicate what they perceived to be an equitable pay rate for their jobs, what would be the lowest dollar meaningful difference from this present salary, and what proportional addition would be the least possible to be noticed. Of the initial sample, responses of 15 junior executives and 18 clericals were returned and usable.

Results showed that the perceived equitable pay level and just meaningful difference in dollar pay level were significantly greater for junior executives. The proportional difference was not large or significantly different from present salary (although sample size was small).

This study appears to indicate that the salary changes necessary to induce inequity in Person may be quite small. It also may indicate that small increases in compensation level may stimulate more

productivity than previously thought if they generate overpay inequity and this is resolved by greater productivity.

Lawler, Koplin, Fadem, and Young (1968)

These authors were concerned with whether or not need for money and an extension in time of the usual equity study would moderate the effects found in previous studies.

Ss were hired through newspaper ads to interview at a 30¢ piece rate for three separate two-hour sessions. The 40 Ss were randomly assigned to equitable and overpay groups. All Ss completed an application blank containing an interviewer qualification scale. Overpay Ss had their qualifications attacked. After each session, Ss returned with their work and rerated their qualifications. No further attacks were made on the overpay Ss. After the third session, Ss indicated their need for money.

Results indicated that overpaid Ss produced significantly less than equitably paid Ss ($F = 4.43, P < .05, \eta < .35$), but that there was also a strong sessions effect ($F = 15.18, P < .01, \eta < .55$) and a strong equity by sessions interaction ($F = 15.79, P < .01, \eta < .55$). Ss whose qualifications were attacked produced significantly less only in the first session (19 pieces vs. 27, $F = 17.8, P < .01, \eta < .60$). The overall quality effect was not significant, but there was a significant decrease in quality by session ($F = 11.75, P < .01, \eta < .50$), and a significant equity by session interaction ($F = 4.43, P < .05, \eta < .35$) with the overpays reducing quality more from session one to two, but being higher over all sessions. Need for money for equitably paid Ss was not significantly related to quality, and to quantity ($r = .38$) only in session three. For overpaid Ss, need

for money was not related to quality, but was significantly related to quantity for all three sessions (.51, .71, .70, respectively).

These findings support the maximum gain hypothesis and call into question the utility of the attack on qualifications as a non-artifactual way to induce feelings of lowering inputs. It appears that Ss were readily able to cognitively balance increased outcomes through the behavioral evidence available here. The study also supports an expectancy interpretation since those who had a high valence for money exercised instrumental behavior to increase their earnings even though they were made to feel unqualified.

Goodman and Friedman (1968)

These experimenters were concerned with the type of behavior Ss used to resolve inequity. They hypothesized that Ss who viewed their outcomes as exceeding their inputs would produce more when paid by the hour if they saw productivity as a method for the restoration of equity. Secondly, for Ss who viewed outcomes as exceeding their inputs, if changing quality or quantity was seen as leading to equitable payment, then quality or quantity would be increased. Finally, "equitable" production rates previously communicated to Ss were hypothesized to reduce variance in productivity over groups where a rate was not given.

Ss were 73 male undergraduates hired for a coding task. None had prior experience in this type of work and all completed an application blank and took a clerical test. E "scored" the test and announced a score to S to support the experimental manipulation. Ss were assigned to one of three groups across two conditions: known and unknown

production rate. These were overpay for "qualifications," reduced pay because of "lower" qualifications, and regular pay for qualified Ss.

Results indicated that Ss who were overpaid produced significantly more in an hourly pay condition (Mann Whitney U = 17, $p < .05$; 38.5 questionnaires scored). Reduced dissonance (attacked-reduced pay) Ss did not differ (30.8 scored) from equitably paid Ss (31.1 scored). Secondly, the variance of productivity was significantly less in the overpay group when the production rate was "known," (33.0 known vs. 38.5 unknown) and approached significance for the reduced dissonance group (30.8 known vs. 37.1 unknown; $P < .06$).

The results indicate that an external reference may alter the cognitions of the inputs required of Person given his situation. One need not find the comfortable level himself. The norms of a group, or one's past socialization may then become an important determinant of productivity. This finding, combined with the individual difference findings in Lawler and O'Gara (1967), may make a socialization-need for money-personality structure combination an interesting rival hypothesis for equity effects. It may also mean that inputs and their relative worth are not conceptualized and evaluated well by the individual. If this were the case, equity effects would be totally within the manipulation of Other if Person were in an exchange relationship with him.

Weick and Nasset (1968)

This was the first study to attempt to determine what types of inequity are most uncomfortable and what modes of resolution are most preferred (Adams, 1965; Weick, 1966).

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Weick and Nessel set up a series of comparisons in which one could ascertain the equity of his outcomes to inputs and also compare his equity to Other's equity. In each case, high outcomes were to be thought of as \$3.84 per hour, and low outcomes \$1.28. Three possible types of equity conditions could be designed: own equity, comparison inequity (e.g., H/H:L/H); own inequity, comparison equity (e.g., L/H:L/H); and own-comparison equity (e.g., L/L:L/L). The fractions constitute the standard Adams' (1965) type formulation: $O_p/I_p : O_c/I_c$.

Ss were 152 male undergraduates earning course credit for participation. Ss were told to view the comparison as a co-worker, similar in background on as many variables as possible. Ss were asked to choose the most comfortable combination of outcomes and inputs given the alternatives (e.g., L/L:H/L or H/L:L/L).

On eight items where Own equity was paired with Comparison equity, Comparison equity items were chosen significantly more often, six times, and Own equity items were chosen once. Where Own/Comparison equity was paired with Own, seven Own/Comparison and one Own item were endorsed significantly more often. Where Own/Comparison was paired with Comparison equity, two Own/Comparison and one Comparison equity item were endorsed significantly more often. Sixteen choices support Comparison equity as more comfortable while ten support Own equity as more comfortable. Ss chose equity over inequity in 81% of pairs presented. Where Own/Comparison equity could be chosen in preference to Own or Comparison, in eight of twelve cases it was chosen significantly more often. When there was a choice, overpay relative to Own inputs was chosen if it didn't tend to place Comparison in an inequitable position. Ss attempted

to avoid situations where they had Own equity but Comparison was overpaid relative to inputs.

The study lent support to the gain hypothesis, and appeared to indicate that in an interacting group Ss would prefer to alter their O/I ratio to be consonant with Other's ratio more often than attempting to restore Own equity. A social comparison situation should produce stronger attempts to restore equity than an alone condition.

Lawler (1968a)

This study proposed a rival hypothesis for the overpay effect. Lawler contended that the overpay manipulation usually connected expected performance as seen by E to payment for S. Thus S saw pay as relating to performance. If S were overpaid by circumstance, and he did not see pay as relating to performance, then according to expectancy theory, there should be no overpay effect.

Ss were 24 males and 36 females hired through newspaper ads for an interviewing task. They were to be paid by the hour and were assigned randomly to an equitably paid control group, an overpay group where qualifications were attacked, and an overpay group where circumstances (an alleged government contract pay rate) led to the overpayment. Prior to starting, all Ss completed an application blank similar to the one reported by Lawler, et al. (1968).

Results indicated that the group whose qualifications were attacked produced significantly higher than controls while the overpay by circumstances group did not significantly differ over the three experimental sessions (overpay means 24.0, 26.1, 26.8; $F = 4.25$, $P < .05$, $\eta^2 < .35$; overpay by circumstance means 21.7, 21.7, 23.3; $F = .15$;

control means 21.7, 20.9, 21.2). There were no sessions, or treatment by sessions interactions for productivity. For quality, the overpay by attacked qualifications group significantly decreased quality over sessions (means 27.0, 21.5, 20.2; $F = 3.44$, $P < .05$, $\eta^2 < .30$) and there was a significant equity by sessions interaction for quality ($F = 5.49$, $P < .01$, $\eta^2 < .35$). Generally, quality tended to go down and quantity went up for both non-attacked groups, but less than the overpay by lower qualifications group.

It appears, then, that Ss must know there is a link between pay and performance for the overpay manipulation to work. Also, there appears to be support for Weick's (1966) contention that Comparison equity is preferred to Own equity.

Adams (1968), taking his editorial privilege, made two relatively weak comments on Lawler's (1968a) paper, both lending credence to the contention that equity theory overexplains but underpredicts. He pointed out that feeling overpaid does not mean one feels inequitably paid, but depends on one's O/I ratio and its comparison to Other. Further, Person chooses his comparison Other. In this case, the relevant Other is a perception of a government worker, not a New Haven interviewer co-worker.

Goodman and Friedman (1969)

Earlier equity studies may have stressed the increases in quality as a way to resolve overpayment in a piece rate situation. By and large, according to Goodman and Friedman, the mode of payment is the area in which Ss could resolve dissonance. Perhaps a better explanation would follow from an examination of which type of behavior is most

instrumental for reducing the inequity given the situation. Overpaid Ss under a piece rate payment scheme should produce more if quantity is perceived to be instrumental for achieving equity. If some mode (e.g., quantity) is seen as instrumental for inequity reduction, then quality and quantity differences should exceed those of comparable equitably paid groups.

Ss for the study (a coding task) were 17 male and 37 female undergraduates without previous coding experience. Ss were randomly assigned to overpay groups emphasizing quantity and quality and comparable equitably paid control groups. Ss were administered a clerical test prior to assignment and overpay groups were given a low qualifications induction on the basis of their alleged "scores."

Overpaid Ss who were given a high quantity induction produced more than equitably paid Ss while Ss given an overpay quality induction made significantly fewer errors. An unhypothesized result demonstrated that the difference in performance between overpaid and control Ss in the area where the induction (quantity or quality) was not made, was greater than on the induced dimension. This demonstrated that effort was spent on the reduction of dissonance for the induced dimension at the expense of the other.

The results may be interpreted as supporting the idea that inputs are under the control of the employer. This supports the Weick and Nasset (1968) finding that Comparison equity is more important since Ss worked alone and were induced to compare with an ideal Other rather than allowed to work things out themselves.

McArthur, Kiesler, and Cook (1969)

This study was tangential to equity theory research, but bears on the specification of inputs.

Ss were male undergraduates. Experimental group Ss were told, on the basis of "psychological test" results, that they were "doers." Control Ss were told nothing. All Ss, individually, were then asked to participate in a public service project.

"Doers" participated significantly more often, indicating to the authors that to be an input; e.g., being a "doer," an attribute must be known to the possessor.

Evans and Molinari (1970)

This study was concerned with the effect of job security manipulations on Ss. While other studies have not explicitly told Ss they were on trial due to their qualifications, there may be an implied threat to job security in the attack manipulation. These authors hypothesized that if equity and job security were independent, insecure Ss should produce more than secure Ss and inequitably paid Ss should produce more than equitably paid Ss. The joint combination of the two conditions should lead to greatest productivity while the lack of both inequity and insecurity should lead to the lowest performance for these groups. If equity is a security manipulation, then insecure Ss should produce more than secure. If job security is an equity manipulation in the piece rate overpay situation, productivity should decrease from a high for insecure Ss with high qualifications to secure equitably paid and insecure unqualifieds; to the lowest, secure overqualifieds. The prediction for quality is reversed.

Ss were hired by advertisement, filled out an application and were randomly assigned to one of four groups. In this 2 x 2 experiment, Ss were told they were either qualified or unqualified for the going rate of 30¢ per interview; and were told that employment was for three additional two-hour periods or dependent on first session performance. All Ss were actually rehired for the following periods.

Results showed that for the first session quality was lower and quantity higher for the equitably paid secure group. For all four groups, quality and quantity of performance was as follows: Equitable-secure, 11.35, 39.20; Equitable-insecure, 20.90, 26.25; Overpay-secure, 20.81, 25.90; Overpay-insecure, 25.18, 27.24. There was also a security by equity interaction significant past the .10 level ($F = 3.29, \eta < .35$). Significant simple effects ($P < .05$) supported the equity for security ($F = 6.17, \eta < .45$) and security for equity ($F = 6.02, \eta < .45$) models. Over all four sessions no significant quality effects were found. For quantity over the four sessions a security main effect significant past the .10 level was found ($F = 3.17, \eta < .35$). No significant equity effect occurred. Interaction effects were found for security by equity ($F = 7.67, P < .05, \eta < .50$) and security by equity by session ($F = 3.05, P < .05, \eta < .35$). A significant session effect was also found and may be explained by learning. Generally, quantity and quality measures were negatively related with groups ordered in terms of decreasing quantity: Equitably paid-secure, Overpaid-insecure, Equitably paid-insecure, and Overpaid-secure; and in terms of increasing quality: Equitably paid-secure, Overpaid-secure, Equitably paid-insecure, and Overpaid-insecure.

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The authors concluded that if security is not an issue, the pay induction has an effect, but not if security is an issue. The security by equity by sessions interaction also reinforces the conclusions of Lawler, et al. (1968) concerning the transitory nature of the equity induction in an overpayment situation.

Wood and Lawler (1970)

The interrelationship of quantity and quality may confound tests of the theory. Generally, increasing quality sacrificed quantity and vice versa. Adams (1965) suggested that a quantity reduction was most salient in reducing outcomes. Wood and Lawler proposed to test this hypothesis where quality was not free to vary.

Thirty-seven Ss were hired through a newspaper ad for two hours of work connected with a "linguistic study." Ss read aloud a five-sentence test passage over the phone prior to reporting for the job. When they came to work, Ss completed an application including reasons for taking the job and a perceived reading ability scale. Sixteen Ss were assigned to a control group while ten Ss had their vocal qualities attacked and eleven had their reading ability attacked. Each S was to read orally some mildly interesting articles for 6¢ per page. Ss could choose easy or difficult articles. Further, Ss could read silently, at will, some diversionary articles for no pay.

Results indicated that pause times were significantly greater for overpaid Ss (mean times in seconds, overpaid, 884.6; equitably paid 599.1; $t = 2.29$; $\omega^2 = .14$). The attack method made no difference. Also, there was no significant difference in difficulty level chosen ($t = 1.39$) or the number of pauses taken between groups ($t = .60$).

It appeared that the motivation in this group was to reduce outcomes through quantity reduction. While Ss could choose difficulty levels, a supposed surrogate for quality, quality was not intrinsically stressed or proposed as an alternative as in other studies.

Andrews and Valenzi (1970)

These authors felt that the literature in equity theory research did not support a view that the job security threat in the attack manipulation was of importance.

Ss in this study were 80 psychology undergraduate students (19 males, 61 females). Using a role playing method, a typical equity study attack induction was acted out. Ss were then asked to tell how they would feel if they were the attacked applicant and whether it would make a difference in their work. Following this, 13 short paragraphs describing feelings of own or comparison equity, or consistent self-image were given.

Results indicated that none of the 80 open-ended responses mentioned equity as a feeling after attack. "I'll show him" types of responses predominated two to one over "I give up" types. When the paragraph choices were analyzed, self-image descriptions were chosen most often. None mentioned wages. But, another study indicated that when one worker in a group was identified as overpaid, equity was mentioned.

Two interpretations of these data are important. The first concerns the classroom setting and the possibility of demand characteristics being related to the Ss and this type of elicitation. The second relates to the fact that the second group perceived inequity while the

first didn't, leading one to believe that inequity is more readily recognizable when the comparison Other is described and specified to the perceiver.

Valenzi and Andrews (1971)

This study was concerned with two problems of equity research: (1) the attack as possibly lowering self-esteem; and, (2) an expectancy explanation for productivity in a piece rate condition. In an hourly pay condition, only inputs can be altered. Further, reduction of inputs in an hourly situation would require a "revenge" motive. The authors claimed that this was the first equity study to achieve three conditions: (1) creation of overpay and underpay inequity without confounding them with job security or self-esteem; (2) establishment of Ss inequity relative to both self and Other; (3) contact between other S workers in the group; and, (4) manipulation by E of outcomes instead of inputs.

Thirty-one female Ss were hired for a coding task to last six weeks. At a group meeting all Ss were told they would be paid \$1.40 per hour. Quantity and quality were experimentally independent in this study. After the first session, some Ss were raised in pay to \$2.00 and some lowered to \$1.20 as a result of a random drawing. This manipulation should have produced Other inequity for the drawing session and Own inequity when compared to the earlier session.

Results using non-parametric techniques showed there was no significant difference in performance. With no challenge to qualifications, the effect was not present. However, Ss in the pay cut group tended to quit.

Two questions are of importance here. The first concerns the assumption that \$1.40 is seen as equitable by Ss at the beginning. Second, the reduction of pay induction is not realistic when compared to real-world compensation practices holding external alternatives constant.

The following two studies are linked temporally and methodologically and use the same Ss in their analyses.

Pritchard, Dunnette, and Jorgenson (1972)

To avoid confounding self-esteem or job security with inequity and to allow both inputs and outcomes to vary, five requirements for an adequate test of equity theory were stated. First, no reference to individual qualifications would be made in the experimental induction. Second, a real job situation away from an academic environment would be created. Third, the task would require quality to be held constant while quantity would be free to vary. Fourth, inequity manipulations would appear to be the result of a change in "company policy" rather than an individual communication to a S telling him he is over- or under-qualified. Fifth, effects over several days would be tested. Two pay systems were used: hourly pay groups received \$2.00 per hour; and piece rate groups made \$1.60 per hour for 16 to 22 pieces; \$2.00 for 23 to 29 pieces, and \$2.40 for 30 or more pieces. This allowed Ss to vary inputs for the same outcome level. After three days on one pay plan, Ss were shifted to the other.

The hypotheses generally follow equity theory predictions in that overpaid Ss were predicted to produce more in the hourly pay treatment (H) and to be higher in performance within an interval in the piece

rate system condition (I). Ss whose pay would increase as a result of the pay plan shift should produce more. Cognitive modes would generally replace behavioral modes over time for inequity reduction. Ss overpaid in the interval condition would gradually reduce performance and hourly overpaid Ss would also gradually decrease performance. Underpaid Ss would be more dissatisfied with pay, but their performance would remain the same relative to equitably paid Ss while overpaid Ss should show more job satisfaction.

Two hundred fifty-three male college students were hired on spring break by an "overload firm" for 4 1/2 hours' work per day for seven days. The first day was an orientation period, then Ss were randomly assigned to hourly or interval conditions. The task consisted of matching prices and catalog numbers. Equitable payment groups consisted of 58 hourly (H) Ss paid the advertised rate of \$2.00 per hour and 48 interval (I) Ss paid the rates of \$1.60, \$2.00, or \$2.40 per hour depending on productivity. The overpay groups (19 interval, and 25 hourly) were told that the \$2.00 advertised rate was excessive and that the going rate was \$1.65, but that since it was the firm's mistake they would be paid at the advertised rate. The underpay groups (25 interval, 22 hourly) were told that the ads had been in error and the going rate was \$2.50 but that since they had signed up for \$2.00, that's what they would be paid. Each S's output was collected hourly and he was paid daily. As part of his job for an "SRA contract" held by the firm he completed satisfaction scales daily. At the end of three days a "policy change" shifted hourly (H) workers to interval (I) and I to H.

Results indicated that for the first day those Ss who were in the H-I treatment followed the hypothesized pattern while I-H workers did not. However, task learning processes may have prevented upper range attainment for I-H workers initially. All Ss indicated initially that they felt underpaid, but pilot study Ss said they didn't want the employer to know they felt overpaid fearing the pay rate would be lowered. While hourly performance was in the expected direction (underpay lowest, equitably paid, overpaid highest), the differences were not statistically significant ($P < .10$). Means for the interval condition were not significantly different, and were in the opposite direction from the prediction. When the naturally occurring inequity resulted from the change from interval to hourly pay plans, underpaid Ss decreased performance the most while equitably paid dropped less and overpaid stayed about the same. Since outcomes were no longer tied to performance, an expectancy theory explanation would account for the reduced output. When the shift was made from hourly to interval, overpaid produced more but there was no underpay effect. Ss decreased performance within intervals for both days 1 through 3 and days 4 through 6.

Underpays were significantly less satisfied than equitably paid while overpays were not significantly different from equitably paid on their responses to the Minnesota Satisfaction Questionnaire (MSQ). There were no significant differences for Job Descriptive Index (JDI) scores. Mean total satisfaction scores of underpays and overpays were significantly lower than equitably paid for day one in both H-I and I-H conditions measured by the MSQ.

According to the authors, equity effects are more likely to occur in an hourly condition since the expectancy that effort leads to pay is low. The shift at midweek to an interval condition shifts the equity comparison from Other to Own. Thus, the balance relationship differs and the prediction may be different. There did not appear to be much cognitive dissipation of overpay effects in these groups leading to the conclusion that the effects may be more permanent than previously thought. Underpay inequity appeared to be cognitively inconsistent for this group. Under a high expectancy (piece rate) system, workers appear to need to know pay is equitable. Further, equitable rewards appear to be related to high relative levels of job satisfaction (see also Porter and Lawler, 1968).

Generally, the main points in this study revolve around the weaker results for overpay effects than one finds when Ss qualifications are attacked, the lack of temporal dissipation of equity effects, the strength with which an expectancy explanation of performance is supported; as well as the support for the maximum gain hypothesis. Finally, the concluding remarks indicated support for the inclusion of perceived equitable rewards in an expectancy or job satisfaction model similar to Porter and Lawler's (1968) theoretical formulation.

The second study in this pair extends the contention of Lawler and O'Gara (1967) that individual differences modify feelings of equity by hypothesizing that susceptibility to perceptions of inequity is an individual difference in itself.

Tornow (1971)

Tornow hypothesized that if individuals were presented with ambiguous job elements and asked to decide whether they were required for or flowed from work, patterns of responses would emerge which would identify people in terms of susceptibility to perceptions of inequity.

From a pool of 340 items, 125 were identified which were viewed as inputs or outcomes on a 60:40 or more even ratio. A test was ultimately constructed which included 24 ambiguous items. The theory behind the presentation of items which have neutral response characteristics is the idea that if a person is presented with an ambiguous field he will provide a structure reflecting his personality.

On the test, high scorers viewed themselves as persons bringing many inputs to the job while low scorers were outcome oriented. The mean for the 24-item test was 14.22 with a split-half reliability coefficient of .58, standard error of measurement of 2.27, and test-retest reliability of .88.

The essential hypothesis surrounding the use of the developed test is that Type I (high scorers) persons would feel more underrewarded than Type 0 persons while the reverse holds for overreward.

Tornow followed up the Ss in the Pritchard, et al. (1972) study and asked them to complete the Tornow Input/Outcome Checklist (TIOC). When the Ss were subgrouped to eliminate those who might be either I or 0 types given the standard error of measurement, Tornow found that under-rewarded Type I Ss felt more underrewarded than Type 0 Ss while over-rewarded Type I Ss felt less overrewarded than Type 0 overrewarded Ss.

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Further, under- and over-rewarded Type I Ss produced less in hourly conditions and less within intervals in the interval condition.

Thus, Tornow appears to have demonstrated that susceptibility to perceptions of inequity may actually be an individual difference variable.

Finn and Lee (1972)

These authors were interested in developing a quantitative model to generate equitable salaries, identify factors influencing perceptions of pay, and study the relationship of perceptions of pay and job attitudes.

Questionnaires containing twelve questions related to work history and demographic variables, five on perceptions of job inputs, seven on salary treatment, and twenty-one on job related attitudes were sent to 350 scientists and professionals employed by a federal agency. Of the 170 returns, 93 held bachelor's degrees, 40 had master's, and 37 had doctorates. An equity group of 96 was established who thought pay was fair on a global input scale while the remaining 74 who did not formed an inequity group. The inequity group earned an average \$822 less, but were less experienced, in lower grades, and were rated lower by superiors on three of five categories supplied (other two tied). However, there were no significance tests reporting magnitudes of these differences. Finally, the grade difference probably leads to the salary difference.

The first proposition related to whether or not a quantitative model of equitable treatment could be generated. Six models were generated using the 51 questionnaire variables for 87 equitable Ss: one for

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the whole sample, one for Ph.D.'s only, one for all non Ph.D.'s, two 50-50 splits, and one overall model. An inequity model was also generated for 60 inequitable Ss. The first test was an attempt to reduce inequity by comparing differences in present salaries and perceived equitable salary and computed salary using equitable group weights for the inequitable group inputs.

Results using a stepwise regression model showed an R at step one between salary (d.v.) and education of .81; adding length of service, R rose to .91; adding years since highest degree, R became .93; and adding supervisor's perception of professional reputation, R remained at .93. As one might expect, these R's for the equitable sample basically consisted of maturity variables. For the inequity sample, \$1,831 was the mean perceived inequity. Using the estimators derived by the equity model and applying them to the inequity sample the mean discrepancy between estimated equitable salary and perceived equitable salary dropped to \$1,411. Although no S in the inequity sample said he was overpaid, Ss were divided into under- and overpaid samples. Application of the equity model resulted in proposed lower salaries for 20 Ss. The underpaid inequity was reduced from \$1,752 to \$612 using equitable estimators. The question arises: how many equitably paid Ss are overpaid given an estimated equitable income and actual income? The likelihood is that the estimation model would identify half as overpaid to some degree and half underpaid.

It appeared in this study that inequitable sample Ss chose external Others as comparisons. These Ss were more willing to consider quitting given alternatives with higher perceived outcomes.

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This study is an example of statistical overkill. Starting with a model where, in the most favorable case, the number of Ss does not exceed twice the number of variables, the authors proceeded to run stepwise regression, a method particularly sensitive to capitalizing on chance relationships. Further, in this small sample, they report R 's instead of $\bar{R}$'s which would give a better measure of variance accounted for. The input variables are also likely to be highly correlated so multicollinearity problems must be faced. Further, the high inter-correlations of some supervisor input ratings and salary suggest criterion contamination. Finally, the grade level mean difference between the two groups necessitates a reanalysis with grade effects partialled out.

While ending on a rather flat note, this has been a chronology of most of the equity studies performed over the last decade. In the next section a summarization of the research and its answers to criticisms made of equity theory will be examined.

1.9 Equity Research Summary and Criticisms Answered

This section will first summarize several of the areas in which equity studies have been criticized. Second, it will deal with several theoretical issues that have not been adequately tested. And, third, the relevance of equity theory for industrial and personnel applications will be discussed. Along with these considerations, a brief discussion of the pros and cons of laboratory vs. field research related to theory testing will be presented.

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Self-esteem

All studies that use the attack manipulation to induce overpay inequity are subject to the self-esteem attack alternative explanation. Andrews and Valenzi (1970) showed that Ss who viewed an attack scene saw productivity as a way of demonstrating to the attacker that their inputs were actually as good as Other's. Lawler, et al. (1968) demonstrated that if the attack was not repeated and even a short time elapsed, the overpay effect dissipated rapidly. In situations where inequity occurred without specifically referring to S's inputs (Lawler, 1968a; Valenzi and Andrews, 1971; Pritchard, et al., 1972) the overpay effect was not found or at least considerably diminished.

Job Security

The possibility that attacked Ss would work harder to protect future employment possibilities is another alternative explanation. Evans and Molinari (1970) found job security contingent on performance had a greater effect on overpay productivity and quality than a straight qualifications attack manipulation. Studies in which Ss were told the job would continue for some time (Adams and Rosenbaum, 1962) demonstrated significant equity effects, however.

Maximum Gain

When other variables are held constant, maximum gain hypotheses are supported. Weick and Nasset (1968) showed that Ss preferred a situation where both Person and Other received high outcomes compared to low inputs in place of Own equity. Pritchard, et al.'s (1972) finding that Ss produced more in interval situations and fewer pieces within intervals supports this contention.

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Threshold for Inequity

Studies by Friedman and Goodman (1968) and Pritchard, et al. (1972) indicate that either lesser discrepancies downward produce equivalent inequitable feelings as compared with larger differences upward, or Ss reduce inputs more for a downward shift than upward Ss increase.

Hourly vs. Interval

Pritchard, et al. (1972) have adequately demonstrated that a high expectancy pay plan leads to more behavioral manipulations to restore equity and enhance gain.

Comparison Process

The Weick and Nessel (1968) study indicated that, when provided an opportunity for choosing type of equity, Ss generally preferred maximum balance. In other words, $O_p/I_p = 1$ and all $O_p/I_p = O_c/I_c$; requiring all relevant ratios to be equal to one. If Ss were unable to accomplish this, equity in terms of comparisons with Other was preferred over Person equity.

Most of the studies have not been designed to allow the Person to compare his outcomes directly with an Other working alongside. The Valenzi and Andrews (1971) study did, however, and found that performance, or inputs, were not altered by those who were underpaid; but, underpaid Ss began to quit.

Inequity Reduction Mode

This area has received the least research to this point. How actually does Person cognitively restore equity? Most of the data relevant to equity theory is behaviorally based. Unless one states

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that supplying information about his perceptions is behavior in itself, the only method for determining if cognitive changes have been made in the absence of behavior leading one to conclude that it has, is to ask the S at various points how he perceives certain cognitive elements. Bem (1968) notes that consistency theorists postulate processes by which Person reduces dissonance, but generally rely on behavioral data to lend support to their hypotheses. According to Bem, external cues may mediate internal levels of arousal and general socialization may also mediate these internal states.

Measures of perceptions can serve as surrogates for cognitive changes and reflect these in the absence of behavioral change. Cognitive changes could be assumed to have taken place in situations where inequitably paid individuals moved their performance closer to the mean by revaluing their inputs, but this would be a behaviorally reflected measure. On the other hand, self-reports indicating increasing satisfaction with pay or other job aspects could reflect a cognitive revaluation of the individual's inputs or appropriateness of outcomes.

Discussion

The equity studies reviewed do not yield a clear indication of individuals' reactions to situations in which inequity is presumed to occur. When attacks against a person's qualifications are used, the effects are quite pronounced, but alternative explanations such as lowered self-esteem, job insecurity, or a motive to demonstrate that one can accomplish may be operating. In situations where no induction attacking qualifications is made, the hypothesized results are either not obtained or their magnitude is diminished substantially. It

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appears that Person's inputs are extremely susceptible to employer manipulation. In the presence of one who is supposedly skilled at evaluating Person's inputs, the employer, whatever cognitions Person has regarding the quality of his inputs appear to be quite readily re-evaluated. Further, when the employer explicitly suggests the mode of inequity reduction to be used, e.g., improve quality or quantity, Person directs his behavior to accomplish these suggested goals. This finding parallels the conclusion made by Graen (1969) in his test of expectancy theory where he concluded that the employer determines and communicates the appropriateness of the instrumentalities for the attainment of rewards. In an ambiguous situation, particularly for employees with little previous experience, these findings suggest that explicit communication to Person of his evaluated inputs by the employer, and suggestions from an employer on matching organizational goals and individual outcomes may well enhance performance as measured by organizational criteria.

Another major problem with much of the equity research is that either little effort is made to determine who the comparison Other might be, or Person is asked to think of Other as someone much like himself. Since equity assessments are assumed to be made as a result of social comparisons, it seems only reasonable that equity experiments would be designed to take place in a group setting. Further, if a group setting is used, all individuals in the group should not be treated similarly if comparisons are to be made. In this manner, Person is free to revalue his inputs cognitively or alter his behavioral use of them as he compares his outcomes with Other's.

The third area that has received little study is the question of how strongly individual differences are related to performance and input perceptions. Lawler and O'Gara (1967) found that personality inventory scores were related to levels of quality and quantity produced by experimental subjects. It would not be unlikely that certain aptitude measures might also be related to performance and might reduce Person's susceptibility to an attack manipulation if Person knew that he possessed a trait relevant to task accomplishment.

Experiments vs. Field Studies, Generalizability, and Industrial Applicability

The question is often asked, what relevance do experimental studies have for industrial personnel practitioners, and why can't field studies be done instead? In fact, why conduct studies with controls? Also, why experiment in laboratory situations which are obviously not equivalent to real organizations?

One of the answers to these questions results from my first personnel experience and led to my first job. In 1965 and 1966 a division of Honeywell, Inc. in Minneapolis embarked on a human relations training program for engineering project managers (Mosvick, 1966). The object was to increase the degree to which these managers exercised leadership styles characterized by increased Consideration (Fleishman, 1953). Luckily, a holdout group was obtained and both the training and holdout samples were pre-tested. Among the instruments used was Fleishman's Leadership Opinion Questionnaire (LOQ). Following several months of training sessions, the instruments were readministered and managers were now found to score higher on Initiating Structure and

lower on Consideration. Fortunately, the holdout sample was also post-tested and it was found that they decreased even more on the Consideration scale than the trainees. Why might this unhypothesized decline have occurred? In the middle of training the entire division was reorganized from a functional to a product-line organization. It is reasonable to assume that the trainee managers did not see this as a time to put into practice consultative, considerate leadership, but instead felt more motivated to make order out of the chaotic reorganization period. These practices may very well have been reflected in their answers to the LOQ. Had there not been a control group, the effect of training could not have been assessed. Further, since the training took place in an on-going organization it was impossible to separate the confounded effects of training and the reorganization. Essentially, nothing could be learned about the benefits or lack thereof due to the training program. My job as evaluator of the program was almost hopeless.

In an artificially constructed organization the experimenter controls the effects and treatments and can insure that confounding interactions from other sources will not disturb the experimental subjects. He also can control the timing of the experiment (Weick, 1965) rather than having to wait and hope that a set of circumstances will transpire in an ongoing organization (Argyris, 1958).

One drawback in many experimental studies is that the researcher treats individual differences as error (Cronbach, 1957). But with the advent of more powerful statistical techniques and the inclusion of

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individual differences as part of the experimental design, these can be assessed in terms of the magnitude of their effects.

Generally, experimentation allows the researcher to manipulate the treatment conditions at his convenience free from confounding external effects.

In terms of generalizability of experimental findings and their application to industry there are problems and areas where findings could be compared and used. One of the main problems is the failure of academic and industrial researchers to attempt to synthesize results and look for commonality among theories and empirical results.

From a statistical and design standpoint, experimental subjects often have not been randomly selected from the population or randomly assigned to treatments and in studies where college students are recruited for positions, the population one could generalize to is the population of students who would apply for this type of work. Replications of many studies using different populations of experimental Ss have enhanced the generality for application purposes.

From a macro standpoint, one is concerned first with attempting to define modes of human behavior in social situations (some of which may be industrial types). From another standpoint, one is attempting to come up with more general and parsimonious explanations of behavior. For example, if individual inputs are subject to cognitive or behavioral revaluation, and if instrumental behavior is determined by an employer, then it may appear that the goal setting phenomenon seen by Locke, Bryan, and Kendall (1968) requires employer-employee communication of inputs, outcomes, goals, and means for attaining goals.

If, in an experimental social situation, one finds that productivity is related to satisfaction of some type and that the method or quality of production can be changed by employer treatment, then this has utility for the practice of personnel management.

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CHAPTER 2

MODELS, VARIABLES, AND HYPOTHESES

2.1 Introduction

This chapter examines and selects models for a test of equity theory. It will deal with the variables included in the models and propose hypotheses extending the boundaries of equity theory.

2.2 An Economic Model

An economic model of employment would hold that if one accepted employment at an offered wage, this would demonstrate that the wage was greater than or equal to his supply price. Translated to equity theory, this would mean that Person would seek employment where wage outcomes are greater than or equal to his inputs. If, however, the wage rate were indeterminate; that is, the wage depended on how well one performs in comparison with others in terms of performance, then we could only say that one's supply price is not greater than the maximum possible wage rate. Given the information one has about preferred employment; it would seem that if one cognitively values his inputs, he then determines, from a probabilistic standpoint, his likelihood of receiving a wage greater than or equal to his supply price. In terms of equity theory, if the real wage outcome is less than the individual's value of his cognized inputs, he will feel inequity and reflect this cognitively

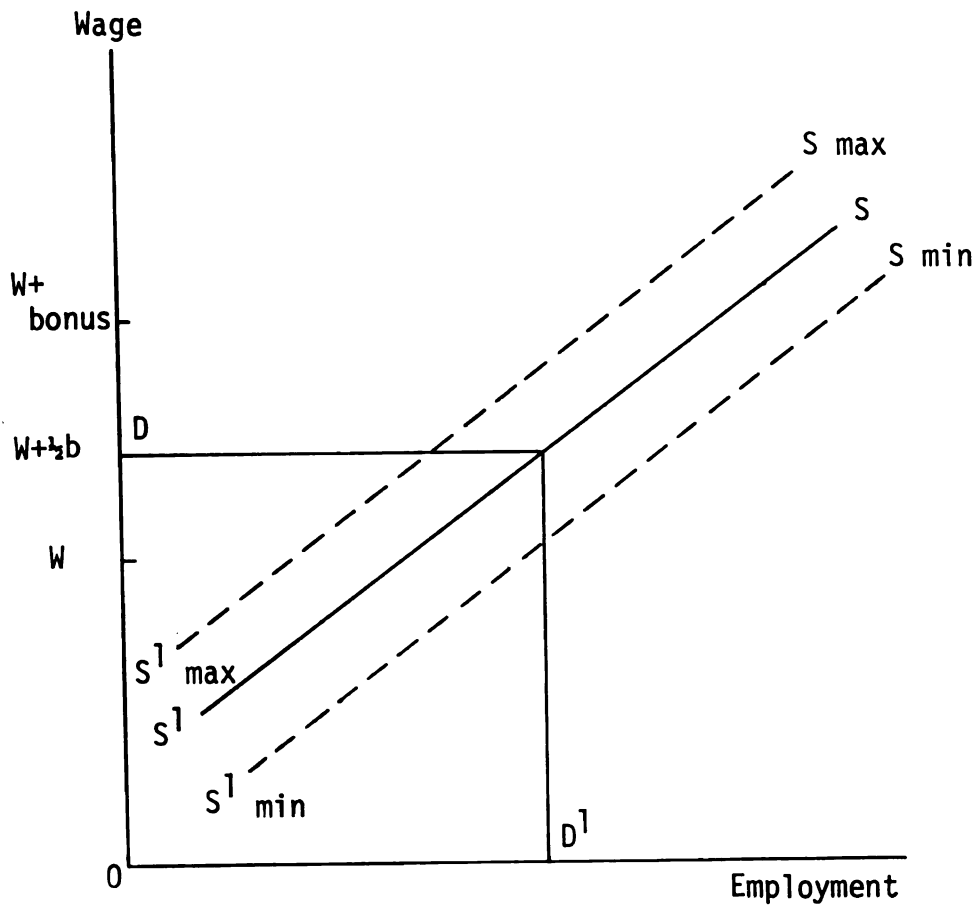
through dissatisfaction or behaviorally through decreasing performance. He might also change his cognitions regarding the task or others' inputs. If an individual were in a situation where pay is seen as depending on performance, the unrewarded individuals who see their inputs functioning at a level likely to lead to more pay should be more dissatisfied than those who don't see their inputs as high enough to attain higher outcomes. This notion essentially reverses the idea that equitable payment is a moderator in the expectancy relationship. It instead posits expectancy as a moderator of feelings of inequity.

From the standpoint of economic theory, when an employer desires to hire a certain number of workers, his demand can be filled only if enough workers are available at a supply price less than or equal to the wage offered. Thus, an employer who has a set wage rate and does not select workers but hires on a first come, first served basis, has a perfectly elastic demand curve out to the point at which he has hired all the workers he needs. At that point the curve is discontinuous and becomes perfectly inelastic. If he expects to give a bonus to 50% of his employees, his wage rate would be the base plus 50% of the bonus. The supply curves for this case would include an infinite number between the base rate and the maximum depending on the mix of applicants. Thus, the actual supply price is indeterminate. (See Figure 2.1.)

If the perceived supply price were \$1.70 per hour, then all Ss receiving bonuses might view themselves as overpaid relative to inputs.

The obverse would occur if all Ss saw their supply price as \$2.70. The actual supply curve for the job would indicate whether greater degrees of over- or underpay inequity would be felt.

Figure 2.1. Economic Model



2.3 Expectancy Models

Expectancy theory provides a possible alternative explanation for behavior in an employment relationship. In this case, the pay rate described to the applicant would be the salient valent outcome, and high performance on the task would be seen as instrumental for the attainment of high pay. Expectancy theory sees the individual subjectively evaluating outcomes and attempting to work toward those that he sees he is capable of attaining. According to Vroom (1964), certain end states or outcomes (valences) are either cognitively attractive or repellent to an individual. Two levels of outcomes are posited: first-level outcomes or instrumentalities and second-level outcomes or end-states. The individual attains second-level outcomes by achieving first-level outcomes which are instrumental for the attainment of second-level outcomes. The first-level outcome most highly related to achievement of all desired second-level outcomes will be the one an individual will seek to attain. In turn, various acts are seen as facilitating the attainment of a first-level outcome. Those acts which one sees as being most closely related to the attainment of the most valent first-level outcomes will be pursued. Expectancy is defined as the subjective probability that a certain action will lead to the attainment of a first-level outcome.

Vroom's (1964) model assumes that the individual has cognitively determined instrumentalities, the valences of these instrumentalities for the attainment of positive (or avoidance of negative) end states, and end-state outcome valences. These are subjectively valued prior to force to perform an act which is the product of all first-level

outcome valences and the expectancy that an act will lead to the attainment of this instrumentality.

Porter and Lawler's (1968) expectancy model proposes that effort is a function of reward value and the expected probability that effort will result in reward attainment. Performance (or accomplishment), in turn, is a function of the ability to perform, effort, and accurate perceptions of one's organizational role. The effort and performance variables are implicitly products of multiplicative relationships. Finally, performance leads to the attainment of intrinsic and extrinsic rewards. If these are perceived to be equitable, given performance, satisfaction will result. The more that outcomes of greater valence are satisfied, the greater overall satisfaction should be as long as equitability is perceived.

There have been a number of important studies done to test expectancy theory. Several of these will be briefly reviewed here. In an early study, Georgopoulos, Mahoney, and Jones (1957) described the results of research aimed at determining what modes of behavior workers see as being instrumental for the achievement of desired outcomes, or to satisfy certain needs. According to them, instrumental behavior is functionally related to decision-making in regard to goal directedness. They see individuals as determining (1) whether or not their needs will be reflected in attainable goals, and (2) the usefulness of certain behaviors for the attainment of these goals. These ideas fit into Vroom's (1964) later expectancy model and flow from Peak's (1955) earlier attitude model. If ability is held constant, individuals who see high productivity as instrumental for goal attainment should be high

producers. If an individual has a need to be liked and sees low productivity as instrumental for this outcome, he will be a low producer. For instrumental behavior to emerge, the goal must be salient, the need sufficiently high, and the behavior-attainment path clearly related to the goal. In their formulation, Georgopoulos, et al., see productivity as a function of path-goal perceptions, level of need, the level of freedom to pursue instrumental behaviors, and the relationship between productivity and goal attainment.

They found that their sample saw low productivity as having negative instrumentality for pay and promotions while high productivity was seen as instrumental for increased earnings. Although their study did not reveal significant instrumentality-goal relationships along all hypothesized outcomes, it was relatively clear that workers did see certain behaviors as being instrumental for need satisfaction. Due to the relative homogeneity of the industrial sample, restriction in range may have attenuated some of the correlational outcomes.

Graen (1969) reported several experiments he conducted regarding the usefulness of instrumentality theory as a predictive construct. According to Graen, instrumentality theory sees individual work behaviors as outputs of a work personality-work role system. Included in the work personality are preferences for various outcomes flowing from the attainment of work roles, the ways in which instrumentality and expectancy relationships are perceived and evaluated. Work roles consist of behaviors expected by the organization from the role incumbent. Role outcomes flow from the attainment of work roles (e.g., achievement, status, salary, etc.). This formulation suggests that the organization

determines the linkage between the instrumentality of an act and the attainment of a second-level outcome. In other words, the actual expectancy is set by the organization. The congruence between degree of role attainment and the actual work role determines the expectancy of attaining a second-level outcome. However, according to Graen, the role outcome's valence is determined by the individual. Role attainment may not consist of the behaviors the organization believes are necessary for performance but might instead be judged as the degree to which behaviors have led to outcomes rated highly by the organization.

Instrumentality is related to the attainment of a work role and its associated outcomes. However, perceived instrumentality is a cognized value and may, in reality, be different than actual instrumentality. As the difference between perceived and actual instrumentality becomes smaller, behavioral aspects of work role attainment become more congruent with the work role, and work role outcomes become more certain. If the work role outcomes are those which are seen as most positively valent among possible outcomes, then satisfaction will be greatest. If work role attainment is related to reduced variance in behavior, then a narrow and explicit group of outcomes should be used to elicit these behaviors.

According to Graen, "job satisfaction would be a function of (a) the products of attraction and instrumentalities of the job for its 'immediate' consequences and (b) the products of attraction and instrumentalities of these 'immediate' consequences for 'less immediate' consequences (p. 5)."

In his study, Graen used two job behavior models, the job incumbent model and the role of the effective performer. The input variables for the job incumbent model were the attraction of a role outcome (A) and the instrumentality of the role of job incumbent (I) which are combined multiplicatively to forecast the attainment of role outcomes, thus predicting satisfaction. The effective performer model combined (A x I) using the role of effective performer as the instrumental behavior set for the attainment of role outcomes multiplied by the expectancy (E) that effort will lead to more effective outcomes. Unfortunately, some of the results of this study cannot be meaningfully interpreted. Schmidt (1973) points out that the scale characteristics present in Graen's study (interval measures) render the use of multiplication inappropriate and the results meaningless.

Graen concluded that the receipt of a role outcome does enhance the instrumentality of the work role. (For the achievement manipulation group, mean instrumentality for achievement feedback, recognition, and human relations were significantly greater than for controls; while instrumentality of work role for salary was significantly higher in the money manipulation group.) He also concluded that the changes in perceived instrumentality lent support to an historical treatment of instrumentality.

When Graen correlated intrinsic outcomes, extrinsic outcomes, all outcomes, and instrumentalities with scores on the Hoppock job satisfaction questionnaire, he found that instrumentalities may contribute more to the determination of satisfaction than outcomes or attractions.

This finding relates to Locke's (1969) theories holding that the intensity and importance of behavior are the major components of satisfaction.

From his results, Graen concluded: (1) receipt of a role outcome following attainment of the job incumbent role increased the perceived instrumentality of the role for future similar outcomes; (2) gains in satisfaction resulted only in reciprocating climates, not in prompting or "traditional" (control) climates; (3) if effective performance is seen as instrumental, satisfaction increases only in reciprocating climates, and possibly in the control climate; (4) role outcomes are seen as dependent on attainment of the effective performer role and enhance the instrumentality of this role for like outcomes and are not independent of climate. Discussing his findings, Graen concluded that if outcomes are seen as contingent on roles, then the instrumentality of a role is enhanced. However, Graen's conclusions (1 and 4) are suspect because of his multiplication of scales.

Porter and Lawler (1968) asked managers and their superiors in government and private industry to complete several paper and pencil instruments which attempted to measure various aspects of expectancy theory. The first questionnaire sent to managers concerned their perceptions regarding the determination of pay, the importance of pay, their satisfaction with the pay they received, and the degree to which pay is seen as a satisfier. The second questionnaire asked about the role behavior required for success, and the degree to which their needs were satisfied on the job.

When measures of job performance were correlated, self-ratings of effort and performance correlated at .47, while superiors' rankings

of effort expended correlated .59 with their rankings of job performance. The only significant superior-self rating correlation was .20 for effort expended. Porter and Lawler concluded that roles are perceived differently by superiors and subordinates. They rejected the idea that the measure may have been invalid since earlier research by Lawler (1967) indicated that superiors' rankings had convergent and discriminant validity when compared with peer rankings. Porter and Lawler pointed out that self-ratings are input measures and may be related to future decisions about a job while superiors' rankings are highly related to pay and internal decisions.

When they examined relationships between perceptions of effort, performance and pay, Porter and Lawler found that managers who saw pay as depending on performance were the most effective managers. It appeared that the importance (valence) of pay had a moderating effect on the relationship between expectancy and pay. The study inferred that managers see effort and performance as synonymous since managers felt both were equally instrumental for pay rewards. Further, since effort was seen as more highly related to positive attitudes about pay than actual performance, Porter and Lawler see pay as a satisfier.

In their analysis of role perceptions, Porter and Lawler distinguished between inner- and other-directed individuals on the basis of how trait adjectives were ranked. These clusters were defined a priori and only intuitive (or face) validity can be attributed to them. Persons who scored high on the inner-directed scale tended to be rated as better performers. Further, self-ratings of inner-directed individuals tended to be higher. Porter and Lawler inferred that inner-

directedness is related to accurate role perceptions, hence, inner-directedness successfully moderates effort-reward relationships. They did not, however, report any measures relating degree of agreement between superior- and self-ratings of performance across different levels of inner-directedness. If inner-directedness is a substitute measure for accuracy of role perceptions, rating agreement should be correlated with inner-directedness. Their earlier conclusion that the low relationships found between superior- and self-ratings of effort and performance were due to differing perceptions of roles does not square with their inclusion of role perception congruency in their expectancy model.

Relating performance to satisfaction, Porter and Lawler seem to feel that the low relationship results from the large difference and low correlation between individuals' and superiors' perceptions of effort and performance. If attitudes are valences, they are cognized by the individual while performance is usually rated by the organization. In view of Porter and Lawler's findings, it is not unusual that these low performance-satisfaction relationships have been reported, even though the perceived relationship may be higher when viewed as a system by either individual or superior. This may result from the different frames of reference held by the rater representing the organization and the ratee.

Porter and Lawler examined need fulfillment and need satisfaction using Porter's (1963) need questionnaire based on Maslow's (1954) need hierarchy. The instrument consists of fifteen items which have three scaled responses each of the type: (1) How much is there

now? (2) How much should there be? and (3) How important is this to me? The instrument purports to measure need fulfillment, need dissatisfaction, and need importance. The five categories of needs purported to be measured are security, social, esteem, autonomy, and self-actualization. While many of the Porter and Lawler (1968) findings rely on the difference scores gleaned from this questionnaire, recent research (Herman and Hulin, 1973) suggests the results might be related to the technique used to gather them.

In their study, Porter and Lawler noted significant positive differences in need fulfillment for high performers (as ranked by superiors) on autonomy, and self-actualization. In addition, while differences were not significant in the other three need categories, high performers indicated greater need fulfillment in all categories. For self-ratings, need fulfillment was rated as significantly higher in all but the security category for high performers.

In terms of need dissatisfaction, low performers were significantly more dissatisfied for all categories except security, when groups were dichotomized using superiors' rankings. When self-ratings were used as a basis for the performance division, high performers were significantly more dissatisfied with security while there were no differences in other areas. It should be noted that levels of dissatisfaction were lower for "lower order" need categories for both groups.

When rated effort was used as a measure for splitting groups, significantly higher reports of need fulfillment were found for high effort individuals in the autonomy and self-actualization categories for self-ratings than when effort was rated by superiors. Using

self-ratings of effort to dichotomize groups, significant differences were found to occur in all but the security category in favor of the high effort group. Porter and Lawler concluded that effort is as closely related to fulfillment as performance is, even though the model postulates performance to be more closely related.

Other research has been performed testing the components of various expectancy models. These studies have been thoroughly reviewed elsewhere (Heneman and Schwab, 1972; Lawler, 1971; Mitchell and Biglan, 1971). The major criticism raised by these reviewers revolves around the algebraic relationship between the variables in the various models, the failure to measure force, and the very small number of valent second-level outcomes considered in most studies.

2.4 Equity Models

In the equity model, it is assumed that individuals seek to equate outcomes with inputs. In an uncertain pay situation where outcomes may not be under control of the individual, Person must alter his inputs and/or cognitively change the value of other outcomes. This leads to an equity model formulation together with considerations of inputs, outcomes, and moderators of the relationship.

2.4.1 Input Measures

In an equity model, inputs would consist of those elements which are recognized by the individual and felt to be relevant in the derivation of outcomes. In groups where age, experience, sex, and education might be assumed to be relatively homogeneous, cognized input

levels could vary depending on the degree to which one felt his abilities were related to the task, how he values his performance on the task, and how he revalues some inputs for later work as he receives outcomes.

The input measures which reflect the individual's cognitions about his level of inputs could be his rating of his overall performance, the sum of his ratings of quantity, quality, expectancy of favorable salary treatment, and overall performance; or his perceptions of competence on the task being performed.

2.4.2 Outcome Measures

Since Person also cognitively values his outcome level, regardless of its market value, the only measures here are those in which Person indicates his valuation. These measures include perceptions of his pay, the comparison of his pay to Other references, affective bonds resulting from interactions with fellow workers, the task, comparison of pay with perceived inputs, and satisfaction with the work. If the task is to be repeated, outcomes and comparisons may lead to a revaluation of inputs.

2.4.3 Moderator Variables

Individual differences may moderate the equity relationship. Tornow (1971) has found that individuals appear to be differentially susceptible to effects of inequity. The degree to which individuals see themselves as input- or outcome-oriented may moderate the equity relationship.

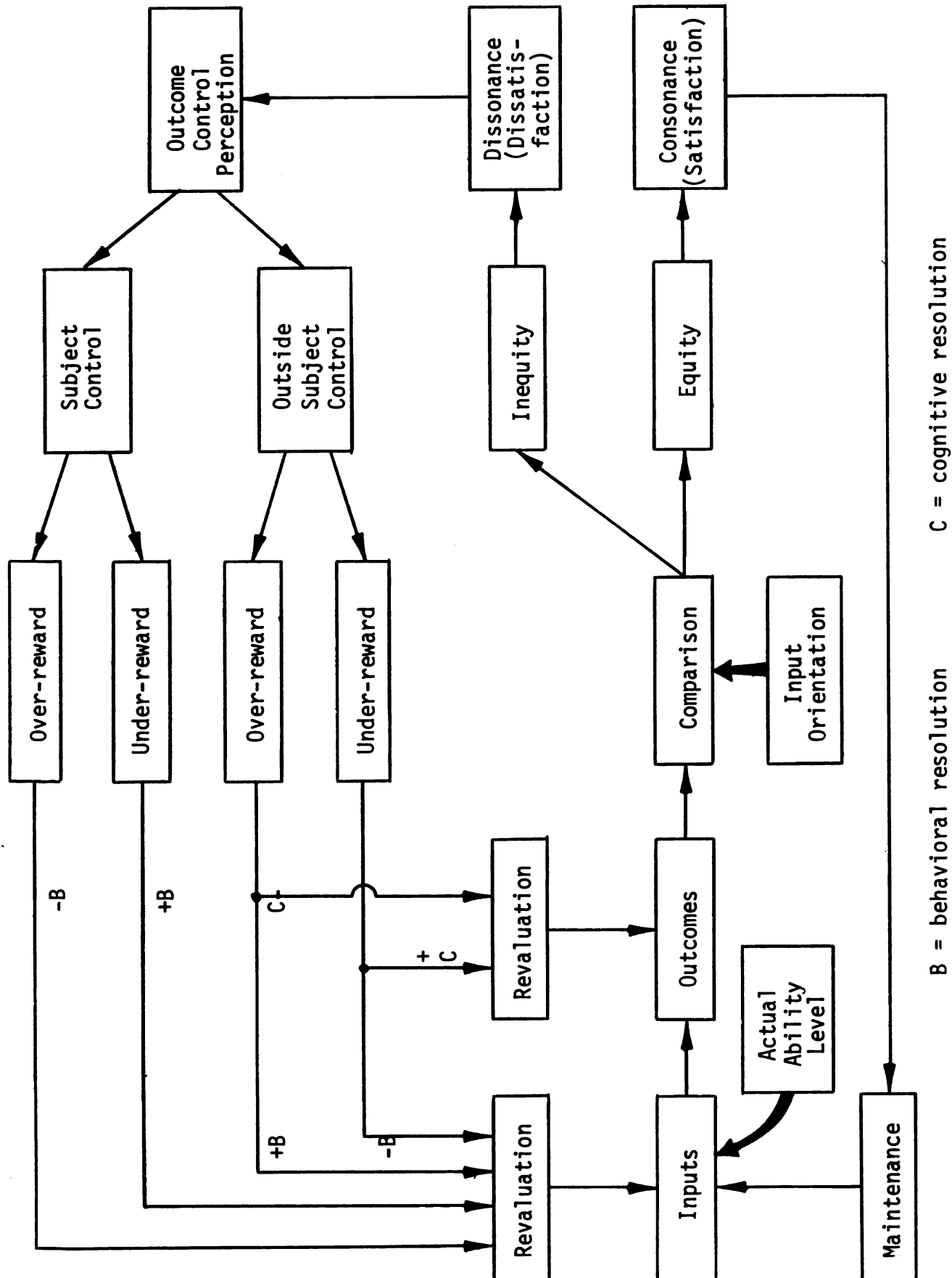
Persons also differ in their actual ability to perform a task. Even if an individual is not aware of an actual measurement of ability or its relationship to performance, he may unconsciously (Jaques, 1961) value it and incorporate it in his input perceptions. Thus, the possession of an ability that might relate to job performance could also moderate the equity relationship.

2.4.4 Equity Models and Inequity Resolution

One of the major problems encountered in tests of equity theory has been the relatively complex manner in which individuals are predicted to handle inequity and the rather simple experimental designs and analytic procedures used to test and measure modes of resolution. Since equity is a perceptual variable, the individual determines his degree of satisfaction with an O/I relationship (measured in actual value terms). Only if Person expresses dissatisfaction with some aspect of the relationship should he try to alter the ratio. Further, Person may evaluate the equity relationship by examining Own, Comparison, or Own/Comparison ratios (Weick and Nasset, 1968). Finally, if Person feels the relevant equity relationship may be altered by his overt actions, he would be expected to alter it by utilizing a behavioral mode for resolution; while if Person perceives that resolution is outside his control, he would be expected to cognitively alter the relevant O/I relationship to restore balance if withdrawal is not available. Figure 2.2 depicts the schematic equity model.

This model is essentially a closed system model with the exception that perceptions may be altered by external agents through

Figure 2.2. Equity-Inequity Determination and Resolution Model.



the "outside subject control" perception. The model also assumes that events occur in a manner whereby those events farther from the beginning of a cycle occur at a later time.

It is assumed that Person has cognitively valued his inputs (moderated by actual ability level) and later compares these against outcomes (given his input orientation). If the comparison results in perceptions of equity, consonance exists and Person would be expected to engage in the same exchange, if offered, in the future. If inequity is perceived, dissonance results, and Person may attempt to resolve the dissonance either cognitively or behaviorally. The model depicted in Figure 2.2 suggests that cognitive alterations will only be made where Person is assumed to believe that he can do nothing behaviorally to change inputs or outcomes. If inequity resolution can be accomplished behaviorally by Person through changes in effort level (subject control of outcomes), the Figure 2.2 model suggests this will be the mode used. This aspect of the model follows the research data from most piece-rate equity studies since outcomes are a function of behavioral inputs using piece-rate pay systems. If this becomes apparent over time through the failure of behavioral strategies to change the relationship, Person is expected to view outcomes as being outside personal control, and to alter his perceptions of inputs and non-outside-allocated outcomes (such as satisfaction with the task).

In equity studies, the following variables should be identified and measured to determine what perceptions Person had and if Person felt inequity, what mode he used to reduce it: (1) satisfaction, (2) type

of comparison made, (3) type of inequity felt, (4) mode of inequity resolution used, and (5) levels of inputs and outcomes.

2.5 Operational and Interpretational Relationships with an Earlier Study

A recent study by Cherrington, Reitz, and Scott (1971) tested hypotheses relating performance to satisfaction. They contended that performance and satisfaction relationships could be manipulated through consideration of reward contingencies. If rewards were distributed randomly, rather than on the basis of performance, even though Ss thought they were being rewarded for performance, performance and/or satisfaction measures subsequent to this reward were hypothesized to change in a direction predicted by the reward manipulation.

In their study, undergraduate Ss, in groups of 7 to 9, scored tests for two hours. At the end of the first hour each S indicated how he thought he had done and his work was "rated" by E. Half were randomly paid bonuses and then all completed eight semantic differential type satisfaction scales. Ss then scored tests for another hour and were retested, paid (with those who received bonuses earlier being given bonuses again), and completed another satisfaction measure.

Generally, results indicated that performance during the two hours was not significantly different between rewarded and non-rewarded Ss. Rewarded Ss indicated significantly higher levels of satisfaction on all eight scales, however. When the groups were dichotomized on the basis of first hour performance, Ss whose reward level fit their performance level performed significantly higher than inappropriately reinforced Ss during the second hour.

Correlations between satisfaction at the end of the first hour and second hour performance for Ss whose rewards were commensurate with performance were significantly positive on six of eight scales and in a positive direction for all eight. For inappropriately reinforced Ss, three of eight correlations were significantly negative and seven of eight were in a negative direction.

When second hour performance was correlated with satisfaction for appropriately reinforced Ss, performance was significantly related to satisfaction on all eight scales while correlations for inappropriately reinforced Ss were significantly negative for four of eight scales while seven of eight were in a negative direction.

Since satisfaction was essentially uncorrelated with performance when both appropriately and inappropriately reinforced Ss were pooled, Cherrington, et al. (1971) concluded that satisfaction results from rewards. However, satisfaction was significantly lower for the inappropriately reinforced group suggesting that higher satisfaction for rewarded low performers was not equal to decreased satisfaction for non-rewarded high performers. Since Ss were not told of the negative reward contingency, the findings suggest that Ss may have been sensing inequity in reward treatment.

Although this study experimentally demonstrated one possible reason for the lack of demonstrated relationships between satisfaction and performance in cross-sectional studies in industry (Brayfield and Crockett, 1955; Vroom, 1964), the interpretation of the data leaves several questions unanswered. Further, the nature of the experimental manipulation could lead to an equity theory test of the results.

Since Cherrington, et al. did not actually tell individuals what their performance was, only that they were "above- or below-average," (which may or may not have been congruent with actual performance) it appears that the individual must have compared his performance against other members of the group in forming opinions relating to satisfaction. As such, the study could be cast in terms of a Comparison equity situation (Weick and Nessel, 1968).

Equity theory (Adams, 1965) maintains that Person seeks to balance the ratio of outcomes to inputs (O/I) compared to those of Other. Both outcomes and inputs are perceptual variables, hence, their values are determined by the individual rather than through a framework of generally accepted extrinsic values. According to Weick and Nessel, the equity comparison can be made with one's own perceptions of his outcomes to inputs as well as to comparison with Other's. The following situations may be seen as creating feelings of inequity:

$$(2.1) I_p \neq O_p$$

$$(2.2) I_p/O_p \neq I_c/O_c$$

$$(2.3) (I_p \neq I_c) \text{ and } (O_p = O_c)$$

$$(2.4) (I_p = I_c) \text{ and } (O_p \neq O_c)$$

$$(2.5) ((I_p \neq I_c) \text{ and } (O_p \neq O_c)) \text{ and } ((I_p/O_p) \neq (I_c/O_c)).$$

The Cherrington, et al. study, when cast in an equity theory framework, would test model 2.1 or 2.4. This occurs because: (1) there is no a priori information that I_{ip} is unequal across all i when $i = 1, \dots, n$, and (2) outcomes differ across O_c where half of O_{ic} outcomes are $.5(O_{jc})$ where j is a subscript for rewarded Ss. It may be likely that Ss see themselves in a situation similar to model 2.4 due to the

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homogeneity of the sample used to test the hypotheses. After the first trial, however, the payment manipulation may change the individual's perceptions of his inputs making 2.5 the appropriate model for the second trial.

While there is no evidence related to the nature of the equity comparison Other, there is evidence (Tornow, 1971) that individuals differ in the degree to which they see elements in a cognitive field as inputs or outcomes. This fact, coupled with the experimental results of Evans and Molinari (1970) and Pritchard, et al. (1972) showing that equity effects are much weaker without an input attack by E, raises questions as to whether Ss perceive inequity where it arises without overt attack, and how it is cognitively and/or behaviorally resolved if it does arise.

Unique features of the Cherrington, et al. design are that: (1) the manipulation occurs as the result of previously mentioned policy (Pritchard et al. (1972) and includes no explicit attack on Ss' qualifications; (2) Ss work in the presence of others who appear to be quite homogeneous in terms of inputs, and (3) since this is a high pay expectancy situation combined with the possibility of overpay inequity, Ss might behaviorally choose the inequity reduction mode most comfortable for them.

Typical motivational models (c.f., Vroom, 1964) see performance (broadly) as determined by the product of ability and motivation. This product may be seen as the cognized inputs one brings to a job *given* the rewards offered. These cognitions may or may not be closely *related* to the real situation. In a study like the one done by

Cherrington et al., we may assume that the general motivational level was relatively equal. All Ss had accepted employment at a stated wage rate for a stated job. However, even though the sample was probably relatively homogeneous in terms of intelligence level, the task clearly called for the use of perceptual speed and accuracy, not highly related to intelligence (Tyler, 1965). Thus, broad differences in actual and cognized ability level would have been obtained in this type of group. Further, if I/O orientation is a stable individual difference variable (Tornow, 1971), the capacity of pay to satisfy Ss given equal perceived outputs would be different. Finally, if Ss see pay as one perceived outcome, then changes in satisfaction level given pay constancy may explain cognitive adaptations to inequity.

2.6 Operational Definitions

2.6.1 Input Measures

In a work situation where pay is expected to be related to performance, Person's perceptions of his likelihood of receiving rewards related to high performance may be considered to be a measure of the perceived value of his inputs for task accomplishment and the receipt of contingent rewards. Other measures might include Person's perceptions of his effectiveness as a worker over time.

2.6.2 Outcome Measures

For the two models, there are separate satisfaction measures which indicate whether some degree of dissonance is related to the payment outcome. The first for the Own Equity condition includes three

semantic differential type items relating to satisfaction with "My pay in comparison with the effort I expended." The second for the Comparison Equity model is "My pay in comparison with what others in my group received," again measured by three semantic differential type items. Other outcomes would include satisfaction with various aspects of the situation such as the task, pay, and co-workers.

2.6.3 Input Moderators

The extended model depicted in Figure 2.2 indicates that individual differences in the areas of relevant abilities and task I/O orientation may moderate input cognitions. I/O orientation is measured by the Tornow Input/Outcome Checklist (Tornow, 1971). For this task, the relevant ability is probably related to clerical performance and is measured by the Minnesota Clerical Test (Andrew, Paterson, and Longstaff, 1933). In a longitudinal sense, past production may moderate input perceptions.

2.6.4 Outcome Moderators

These variables are related to an individual's satisfaction with pay in relation to what others received. Measures moderating the outcomes for Person related to satisfaction and task enhancement would include feelings about one's relationship to the job, his pay, his pay in comparison to Others' on other known jobs, his fellow workers, the task itself, and his satisfaction with the work.

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2.7 Hypotheses

2.7.1 Inputs

In a situation where employee inputs are not explicitly attacked, before any experimental manipulation is introduced it would be expected that Person's input perceptions would be related to the level of inputs possessed which are relevant to task accomplishment. Following the introduction of the experimental manipulation, all Ss receiving bonuses would be expected to revalue inputs upward while those not receiving bonuses would be expected to devalue inputs. The following hypotheses would cover the aforementioned situations:

H_{I1} : Ability level will be related to Performance Deviations.

H_{I2} : Bonus treatment will be more strongly related than Ability to input perceptions and Perceptions of Competence.

Ss who are most resistant to devaluation of inputs may be those who are better performers and/or those who tend to be input oriented as measured by the TIOC. Thus, we might expect resistance to be greater among high scorers on both the TIOC and the MCT and among those with higher performance scores on the task.

H_{I3} : Persons who are high performers, or who are high on Input Orientation or Ability will have higher input perceptions and Perceptions of Competence.

Input hypotheses 4 and 5 generally relate to responses to outcomes over time. Equity theory would predict cognitive and/or behavioral changes for individuals whose I/O ratios are perceived to be inequitable. In this case, since pay outcomes are assumed by the Ss

to be related to relative performance, one might expect to first attempt to attain higher rewards. If this proved unsuccessful, it would be likely that unrewarded, high performing Ss might reduce later performance.

H_{I4}: Bonus recipients will be higher performers across sessions.

H_{I5}: Ss will behaviorally establish equity, i.e., high performers not receiving the bonus will decrease production relative to others while low performers receiving the bonus will increase their performance relative to others.

2.7.2 Outcomes

Since monetary outcomes are fixed by the experimenter, the only outcomes which can actually be changed by Person are his cognitive valuations. Under an expectancy interpretation, Ss receiving high monetary outcomes should be more satisfied. Those not receiving bonuses will be less satisfied with pay and other outcomes. On the other hand, equity theory would predict that Person would attempt to restore equity. One could not behaviorally accomplish this if outcomes were not manipulable. In this case, Person would be expected to revalue upward other work related aspects if underpaid, or downgrade these if overpaid to cognitively restore equity.

H₀₁: Person will be more satisfied with the task if he has received the bonus.

H₀₂: If Person was overrewarded he will have lower Task Satisfaction than if he were appropriately rewarded; while if Person did not receive the bonus, Task Satisfaction will be higher for high performers (enhancement of outcomes) than for low performers.

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2.7.3 Own Equity

According to Weick (1966) there are several possible comparisons Person might make to determine the equitability of his treatment. Two competing explanations would be (1) Person is most interested in balancing the ratio of his outcomes to inputs, and (2) Person is most interested in balancing the ratio of his outcomes to inputs with Other's ratios.

In the Own Equity model, equity results when Person's ratio of outcomes to inputs is equal. If the ratio is not in balance, Person should attempt to alter the ratio using cognitive and behavioral modes. Own Equity comparisons may obtain from past experience in similar types of work given the effort required there and the outcomes associated with them.

One aspect of the hypotheses that has received little prior attention is the question of the influence of individual differences. The hypotheses drawn here reflect the belief that Persons are differentially susceptible to inequity (holding ability constant) and upwardly value inputs believed to be relevant to the task given the Idea that Person knows to some extent the relative degree to which he possesses a relevant trait.

The dependent variable in this model is represented by a scale entitled "My pay in comparison with the effort I expended." Independent variables include the input variables, and input and outcome moderators. Hypotheses related to the Own Equity model are as follows:

H_{0E1} : Expectations of getting the bonus in the first hour will be unrelated to satisfaction with pay in comparison with effort expended.

H_{0E2} : Appropriateness of pay given performance will be related to satisfaction with pay in comparison with effort expended.

H_{0E3} : Appropriateness of pay given Ability level will be related to satisfaction with pay in comparison with effort expended.

H_{0E4} : Input Orientation will be negatively related to satisfaction with pay in comparison with effort expended.

H_{0E5} : Bonus awards will be positively related to satisfaction with pay in comparison with effort expended.

Essentially these hypotheses state that satisfaction will be related to the appropriateness of payment (but greater for Persons who receive the bonus), and reduced by higher inputs or perceptions of higher inputs. They also state that if expectations of pay are either congruent or incongruent with actual pay, satisfaction should be uncorrelated with expectation levels.

As the treatments are repeated, the hypothesized experimental effects should grow stronger. Not only that, but performance in later periods should be related to satisfaction with equity of pay in previous periods. Those individuals whose satisfaction with their pay in comparison to their efforts is low, should decrease performance if overpaid, and increase performance if underpaid.

2.7.4 Comparison Equity

This model requires that Person sees the ratio of outcomes to inputs as in balance with Other's. Again, Person may alter the balance

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cognitively or behaviorally. If this model is tested, the appropriate dependent variable is "My pay in comparison with what others in my group received." To support this model over an Own equity model, the variance in the dependent variable explained by the independent variables must be significantly greater. The hypotheses related to the Comparison equity model are essentially the same as the Own Equity model except the hypothesized relationships are for pay in comparison to others' receipts rather than own effort.

2.7.5 Temporal Effects

Since some individuals will have to adapt their behavior and/or cognitions to restore equity, and since inequitable relationships may not be easily altered behaviorally, it is expected that the cognitive elements will become more strongly associated with satisfaction through succeeding sessions.

Essentially, it is hypothesized that session two will find a greater relationship between performance and satisfaction than session one, while individual differences variables will be negatively related to satisfaction over time. These hypotheses can be stated as follows:

H_{T1} : Second hour performance will be positively related to first hour satisfaction.

H_{T2} : Input Orientation and Ability level will become negatively related to satisfaction, but will not change their relationships to Performance Deviation.

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2.8 Conclusion

Remembering that two of the complaints previously made about the bulk of equity studies were the possibilities of confounding job security and self-esteem effects related to the usual explicit self-qualifications attack and the fact that Person almost always worked alone and could not compare performance with Others in a group, the method used in this study does not attack Ss' qualifications and uses a task where Ss work in the presence of others and may converse with them on periodic breaks.

CHAPTER 3

METHOD

3.1 The Task

Two criteria were used to design the task. First, the task had to appear to be a realistic situation similar to that encountered in a typical clerical position. Second, the output must be standardized across persons so that comparisons of performance would involve samples of similar behavior.

A FORTRAN program was written to randomly generate 1500 part numbers, prices, and quantities sold. The part numbers consisted of eight characters, three leading alphabetical characters and five trailing numerical characters. Prices could range from 1¢ to \$9.99 and quantities sold could vary from 0 to 9999. Ten percent of the old prices were randomly increased while the other 90% remained the same to simulate normal price change policies. Then the randomly generated part numbers were reproduced and sorted along with their appropriate prices in ascending alphanumeric order.

The final output contained five columns: sorted part numbers, new prices for these parts, unsorted part numbers, old prices for these parts, and quantities sold. Figure 3.1 shows how a specimen of the output looked.

Figure 3.1. Sample Task Material

PART NO.	PRICE	PART NO.	OLD PRICE	QUANTITY SOLD
AAA12345	0.63	EVG14231	0.08	680
AAB67219	0.41	XZP41972	3.16	27
ABC31427	1.49	QPY32321	0.27	391
				88

The task consisted of recording the part number found in column three, the old price in column four, and the quantity sold in column five. Then the worker leafed through her listing and found the matching part number from column one and recorded the new price found in column two.

A variety of methods could have been used to complete the task. First Ss could complete each unit sequentially. Second, part numbers, old prices, and quantities sold filling one coding sheet could be recorded, then matches found sequentially and prices recorded. Third, the second method could be used with the exception that prices were found in alphanumeric order rather than sequentially, thus minimizing page flipping. Ss were only given the first mode as an example even though two and three are markedly faster. Various Ss used each of the different methods as the experiment progressed and they determined which yielded the best results for them.

All Ss were given identical material to work from, were provided special coding forms and pencils. Adequate materials were maintained at each station so that no one would run out of material. Finally, the output from which the coding was done was long enough so no S ever approached completion of all materials.

3.2 The Subjects

Six sessions were run for this experiment, three each at Michigan State University and the University of Wyoming. Numbers of Ss in each session depended on the size of the work facility available and the number of applicants. At Michigan State the facility available

held a maximum of sixteen workers. Michigan State sessions were run on July 31, August 1, and August 2, 1972 while Wyoming sessions were run September 19, October 3, and October 17, 1972. Sizes of the groups were 11, 12, 14, 17, 11, and 11, respectively. The design of this study assumes homogeneity among subjects from differing locations and does not include a regional replication factor.

The Ss were all female; largely undergraduates, with some student wives and university clerical employees, and two or three local persons who had seen the hiring solicitation. No attempt was made to record background information on the applicants. No males were hired since they would be expected to do less well on the clerical task and to have been paid more in the past than females.

3.3 Hiring Method

At both Michigan State and Wyoming advertisements were run in the help-wanted section of the student newspapers, the State News and the Branding Iron on days preceding experimental sessions. In addition, a card type ad was posted on the help wanted section of a large advertising bulletin board in the Wyoming Union. The ads all read "Data coders wanted. No experience necessary. Three hours work. [Phone number.]"

When applicants called the E inquiring about the job, they were told the following: "My name is John Fossum, and [Professor Michael Moore (used at MSU) and] I have a contract with an out-of-state firm to determine whether manual coding of data or computerized coding is cheaper and more efficient.

"To be able to make the comparison, I am hiring some data coders to code for three hours so that if the company chooses this alternative, we will be able to let them know how many coders to hire given their work load and the time they have to get a job done. Therefore, I need to know about how much data can be coded over a certain period.

"Further, if the company decides to go with the manual method, it wants to know three things.

"First, we want to find out if scores on a clerical employment test are related to performance. This would require that sometime before starting work you would come up and take a 15-minute test. Your score would have nothing to do with whether or not you're hired since we need to see the full range of applicants before we can recommend a cutting score. If you take the test you will be hired.

"Second, the company is interested in whether or not financial incentives are related to performance. The base rate of pay is \$1.70 per hour, so for the three hours you would make a minimum of \$5.10. In your group, the top 50% of performers each hour will receive a bonus of \$1.00 per hour. You then could make as much as \$8.10 depending on your performance. You will be paid in cash at the end of the evening.

"Third, the company is concerned about whether or not people are satisfied with this type of work. Therefore, we will be administering satisfaction questionnaires three times during the evening.

"Are you interested?"

If the applicant expressed interest, an appointment was made for taking the MCT.

1. The first part of the document is a list of names and addresses of the members of the committee.

When the applicant arrived for the test she was instructed by the E or a clerical assistant in accordance with the MCT test manual and given the test, usually alone. After testing, the S was told where and when to report for work and her test was collected. The S's test was not then graded and she was given no information about how well she might have done. No S asked to know her score at the time she was tested.

3.4 Experimental Setting

The Michigan State setting was a long conference table with sixteen chairs. Each S had sufficient room to work without cramping her neighbor. At Wyoming the task was run with Ss seated at tables in an accounting lecture/lab room. Seating capacity was about forty.

Each S worked independently on the same material. Ss were provided with a listing containing data to be coded, coding sheets and pencils.

3.5 Instructions and Work Procedures

When each group of Ss had assembled, coding sheets were passed out so that Ss could put their names on them, thereby not taking working time for this task. Then material to be coded was passed out. After all Ss had materials, E introduced his assistant, and told the Ss that he would read the instructions so that all groups would have the same directions in order that comparisons could be standardized.

Ss were told that they would work for three forty-five minute sessions with breaks after each. During the breaks, Ss could talk with

each other and walk around. Their behavior was not regulated in any way. At the end of the break, bonuses were to be announced and satisfaction questionnaires answered.

Ss were told to place their completed work at the top of the table at their stations so that it could be collected for scoring. The performance-bonus connection was reiterated.

Ss were then asked if they had questions. One example for completing a work unit was given and after a solicitation for further questions, Ss went to work.

At the end of forty-five minutes, E stopped Ss and collected the remainder of their work. Then he asked Ss to indicate how well they thought they had done in terms of performance and probability of getting the bonus. After completing this, Ss were asked to take the TIOC to "provide norming information for females." Ss were told that Tornow had a large number of males but no females in his sample, that E was doing this as a favor for him since he was a personal friend of E. After this, Ss went on their breaks.

When Ss returned from the break (about five minutes), E returned with a list of Ss "earning" the bonus. The names were read and Ss were given the satisfaction scale. After all Ss had completed the scale, they recommenced work.

Patterns were identical for the second and third hours except Ss did not retake the TIOC. E, when reading the names of the bonus earners, randomized the names each time.

After the last session's satisfaction questionnaires were completed, Ss were debriefed and paid with all Ss receiving the bonus.

Ss were surprised about the real nature of the study as a general rule and only one S indicated that she had arrived at the conclusion that the experiment was a "psychological study."

3.6 Bonus Awards

Those individuals to whom bonuses were to be given were selected by ordering the names by the times at which they applied, then by entering a table of random numbers and assigning one number to each S, and finally by choosing those with the highest half of the numbers to be bonus recipients.

3.7 Measurement Devices

Besides the ability test (MCT; Andrew, et al., 1933) and the input orientation measure (TIOC; Tornow, 1971), measures for inputs, outcomes, and performance were required.

One of the input measures was obtained by asking Ss to subjectively estimate their quantity of work, quality of work, overall performance, and probability of getting the bonus. These ratings were taken each hour and utilized 7-point scales (see Appendix A). When these items were pooled, coefficient alpha is .65, .65, and .69 for each of the three hours, respectively.

Performance was measured by counting the number of units of coding correctly completed. A unit consisted of coding the part number, the old price, the quantity sold, and the new price.

The satisfaction questionnaire was an adaptation of the Semantic Differential type (Osgood, Suci, and Tannenbaum, 1957) questionnaire

used by Cherrington, et al. (1971). This was used to tap feelings about pay, work, and feelings related to efficiency in a relatively unobtrusive manner, yet trying to make the responses as clearcut as possible.

Eight scales were included: (1) Me at this task, (2) My pay, (3) My pay in comparison with what others in my group received, (4) My pay in comparison with what others get for similar work on the campus, (5) My fellow workers, (6) The task, (7) My pay in comparison with the effort I expended, and (8) My satisfaction with this work (see Appendix B). The scales used by Cherrington, et al. were included to mask the equity orientation of the questionnaire and to replicate their study as part of this study. Satisfaction for the Own equity model was measured by scale seven while Comparison equity was measured by scale three.

Overpay, underpay, and appropriate pay were determined by ordering the performances for the first hour for all Ss within groups since they would be assumed to make their comparisons against known Others, then comparing their pay with performance. Overpaid Ss were those whose performance was below the median for their group, but who received the bonus. Underpaid Ss performed above the median for their groups but did not receive the bonus. Appropriately paid Ss were those whose pay (high or low) matched their performance categories (high or low). Results indicated that forty Ss were appropriately paid while thirty-six were not. Appropriately and inappropriately paid Ss were evenly divided between high and low performance groups.

3.8 Study Nomenclature

For the sake of brevity, subgroups in the study may be given abbreviated names at various times, particularly in table descriptions.

The subgroups are not all mutually exclusive or independent although some pairs or groups of them are. Since the main variables of interest are related to bonus and performance effects, the subgroupings are made along these lines. The first two subgroups: Bonus (B) and No Bonus (NB) are formed by simply identifying individuals according to compensation treatment. The next are formed as a result of performance. Since each group is assumed to make equity comparisons among group members, High Performance (HP) and Low Performance (LP) Ss were identified through determining whether or not they were above or below the median performance level of their groups during the first hour prior to the experimental manipulation. By combining performance and compensation treatment measures, a determination of the appropriateness of pay can be made. Those individuals whose performance was below the median and did not receive the bonus were paid appropriate to their performance (AP). Inappropriately compensated Ss were low performers receiving the bonus and high performers not receiving the bonus (IN). Finally, four groups can be identified on the basis of combinations of bonus treatment and performance. These are: Bonus-High Performance (BHP), Bonus-Low Performance (BLP), No Bonus-High Performance (NBHP), and No Bonus-Low Performance (NBLP). A glossary of all abbreviated terms is included as Table 3.1.

3.9 Satisfaction Questionnaire Factors

It is apparent that the satisfaction questions could be interpreted in a number of ways and that there obviously were not eight distinguishable factors contained in the questionnaire. Therefore, items

Table 3.1. Glossary of Abbreviated Terms.

Term	Definition
A	Ability factor in MANOVA design.
AP	Appropriately paid Ss. Those subjects whose pay (high or low) was appropriate to their performance (high or low, respectively).
B	Bonus factor in MANOVA design and bonus recipient group.
BHP	High performers receiving the bonus.
BLP	Low performers receiving the bonus.
CWS	Satisfaction with co-workers.
EXP	Expectations of bonus receipt.
HP	High performance subgroup.
IN	Inappropriately paid Ss. Those subjects whose pay (high or low) was inappropriate to their performance (low or high, respectively).
IO	Input orientation factor in MANOVA design.
LP	Low performance subgroup.

1

Table 3.1. (Continued)

Term	Definition
MCT	Minnesota Clerical Test.
NB	No Bonus subgroup.
NBHP	No Bonus-High Performance subgroup.
NBLP	No Bonus-Low Performance subgroup.
OVP	Perceptions of overall performance.
P	Performance factor in MANOVA design.
PC	Perceptions of Competence.
PD	Deviation of performance from session median.
PS	Pay satisfaction.
S	Sessions factor in MANOVA design.
TIOC	Tornow Input/Outcome Checklist.
TS	Task Satisfaction

were logically assigned to what seemed to be four relatively independent factors within the scales: (1) Pay Satisfaction, (2) Task Satisfaction, (3) Co-Worker Satisfaction, and (4) Perceptions of Competence. While there are no a priori predictions related to different facets of satisfaction, the relative effect on each type, if shown to be unique, would help clarify what direction inequity resolution follows. Table 3.2 gives item assignment to scales.

After items had been assigned, coefficient alpha (Cronbach, 1951) was computed for every scale for each of the three experimental periods. Then scales were examined to determine whether or not there was discriminant validity (Campbell and Fiske, 1959) between them. If the scale reliabilities as given by the alpha coefficients were higher than scale intercorrelations, evidence of discriminant validity existed. Internal consistency reliabilities for the four scales over the three hours ranged from .57 to .91 with a mean of .77. Intercorrelations among scales ranged from -.00 to .37 for hour one, .29 to .61 for hour two, and .30 to .52 for hour three. Thus, there is some degree of collinearity but of a degree below scale reliabilities for each hour. Table 3.3 contains the scale intercorrelation matrix for the three experimental periods for all non-performance variables.

Table 3.3 shows satisfactory discriminant validity for all scales except Own and Comparison Equity (OE and CE). These two are subscales of the Pay Satisfaction scales and thus would be expected to be highly collinear with it. There is also a degree of collinearity between Task Satisfaction and Perceptions of Competence, but this does not become substantial until the third session. The input perception

Table 3.2. Concept and Adjective Assignment to Scales.

Factor	Concept	Polar Adjectives	
Pay Satisfaction	Me at this task	Rewarded	Penalized
		Pleasing	Annoying
	My pay	Reasonable	Unreasonable
		Superior	Inferior
	My pay in comparison with what others in my group received.	Rewarding	Penalizing
		Fair	Unfair
	My pay in comparison to what others get for similar work on the campus.	High	Low
		Reasonable	Unreasonable
	My pay in comparison with the effort I expended.	Superior	Inferior
		High	Low
Task Satisfaction	Me at this task	Reasonable	Unreasonable
		Fair	Unfair
		Adequate	Inadequate
		High	Low
		Interested	Bored
		Spirited	Lifeless
		Appreciated	Unappreciated
		Satisfied	Dissatisfied
		Encouraged	Discouraged

1

Table 3.2. (Continued)

Factor	Concept	Polar Adjectives	
Co-Worker Satisfaction	The task	Attractive Exciting Good Interesting Superior Wholesome	Repulsive Dull Bad Boring Inferior Unwholesome
	My satisfaction with this work.	Satisfying Challenging Enabling	Dissatisfying Dull Frustrating
	My fellow workers	Sociable Helpful Pleasant Unselfish Cooperative	Unsociable Obstructive Unpleasant Selfish Uncooperative
	Me at this task	Alert Efficient Productive Reliable Effective	Listless Inefficient Unproductive Unreliable Ineffective
	My satisfaction with this work	Easy	Hard

1

Table 3.3. Multitrait Matrix for Non-Performance Variables^{1,2}.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1. TI0C	70	21	22	10	-13	-20	-26	14	17	22	-02	03	09	03	13	28	-20	-30	-36	00	-06	-06	06
2. IN ₁		64	100	65	01	-01	-01	-11	-00	-05	-26	-10	-07	50	53	25	-24	-14	-16	09	12	-02	33
3. IN ₂			65	88	27	24	25	08	21	18	-14	01	15	66	67	54	16	14	22	34	35	30	13
4. IN ₃				69	23	26	21	08	21	24	-17	17	20	65	61	59	16	15	06	18	31	25	15
5. PS ₁					86	99	94	40	61	48	-00	46	49	53	57	54	100	99	96	100	100	100	07
6. PS ₂						89	100	44	69	58	-07	37	35	49	65	54	93	100	100	100	100	100	11
7. PS ₃							91	43	65	58	-09	36	37	50	63	55	85	100	100	100	100	100	11
8. TS ₁								87	94	89	30	45	38	53	48	57	43	54	46	58	59	51	-32
9. TS ₂									88	100	15	46	42	58	67	76	61	74	79	71	83	73	-20
10. TS ₃										89	22	46	44	56	65	83	47	59	59	53	71	72	-09
11. CMS ₁											61	98	90	19	-02	14	10	10	05	16	05	-03	-10
12. CMS ₂												70	100	44	46	61	37	41	42	40	57	49	-09
13. CMS ₃													71	44	46	66	37	39	40	39	54	54	-06
14. PC ₁														57	100	90	32	45	40	55	57	46	07
15. PC ₂															69	100	40	60	58	62	92	71	09
16. PC ₃																71	51	53	51	59	76	69	00
17. OE ₁																	60	100	100	100	100	93	01
18. OE ₂																		62	100	100	100	100	11
19. OE ₃																			63	100	100	100	11
20. CE ₁																				52	100	100	-01
21. CE ₂																					56	100	17
22. CE ₃																						60	21
23. MC ₁																							88

¹Decimals omitted and correlations corrected for unreliability (internal consistency) in both variables.²Reliabilities on the diagonal.



(IN) measures taken prior to each hour's manipulation are also correlated with Perceptions of Competence. This is not unusual since both were designed to measure the same feelings--one prior to and one after the manipulation. Since the manipulation intervenes, no adequate test of convergent validity can be made using the two distinct measurement methods. Since it is not logical to distinguish between variables which are collinear, the equity variables will not be included in the analysis. All hypotheses related to tests of equity will use the Pay Satisfaction measure as their dependent variable.

3.10 The Model and Hypothesis Testing

The model has five main effects: (1) ability level (high or low MCT scores), (2) degree of input orientation (high or low TIOC scores), (3) bonus condition, (4) performance level, and (5) sessions. Factors 1, 2, 3, and 4 contain two levels with Ss assigned to levels on the basis of whether or not their scores on these factors were above or below the median (except for Bonus which is a dichotomous variable). Factor 5 has three levels; one for each of the sessions. With 76 Ss, there are a total of 227 degrees of freedom since each S is measured three times. Due to treatment assignment on individual differences for factors 1 and 2, cell frequencies are disproportionate. Since unequal frequencies occur, the design is not orthogonal and some confounding of effects occurs. Table 3.4 presents the sources of variation and degrees of freedom for the analysis of variance to be computed and indicates the order in which effects are to be tested. This order provides the most information for factors of greatest interest.

Table 3.4. Analysis of Variance Effects.

Source of Variation	Degrees of Freedom
Ability	1
Input Orientation	1
Bonus	1
Performance	1
Sessions	2
Ability x Input Orientation	1
Ability x Performance	1
Input Orientation x Performance	1
Input Orientation x Bonus	1
Ability x Bonus	1
Ability x Sessions	2
Input Orientation x Sessions	2
Bonus x Performance	1
Bonus x Sessions	2
Performance x Sessions	2
Ability x Input Orientation x Sessions	2
Ability x Bonus x Sessions	2
Ability x Input Orientation x Performance	1
Ability x Performance x Sessions	2
Input Orientation x Bonus x Sessions	2
Ability x Bonus x Sessions	2
Ability x Bonus x Performance	1
Input Orientation x Performance x Sessions	2
Input Orientation x Bonus x Performance	1
Bonus x Performance x Sessions	2

There are five dependent variables; the three non-collinear satisfaction scales (PS, TS, and CWS), Perceptions of Competence, and the Performance Deviation measure. Performance, as a dependent variable, is measured by comparing individual performance against group medians since Ss' comparisons are assumed to be made within their own group. Further, the change in performance over time as a behavioral adaptation to inequity requires that measures of this be included as a dependent variable as well as an original assignment factor.

As stated in Chapter 2, and as modified by the fact that three of the proposed dependent variables are collinear, following are the final set of hypotheses to be tested and the methods to be used to test them.

3.10.1 Input Hypotheses

H_{11} : Ability level will be related to Performance Deviations.

Test: Significance of the Ability main effect.

H_{12} : Bonus treatment will be more strongly related than Ability to input perceptions and Perceptions of Competence.

Test: Test of significance of the difference in correlations between Bonus and input perception measures and Ability and input perception measures, and comparisons of F-levels for Bonus and Ability against Perceptions of Competence.

H_{13} : Persons who are high performers, or who are high on Input Orientation or Ability will have higher input perceptions and Perceptions of Competence.

Test: Significance of the Performance, Ability, or Input Orientation main effects for Perceptions of Competence and correlations with input perceptions.

H_{14} : Bonus recipients will be higher performers across sessions.

Test: Significance of Bonus main effect for Performance Deviation.

H_{15} : Ss will behaviorally establish equity, i.e., high performers not receiving the bonus will decrease production relative to others while low performers receiving the bonus will increase their performance relative to others.

Test: Significance of the Bonus x Performance x Sessions interaction against Performance Deviation.

3.10.2 Outcome Hypotheses

H_{01} : Person will be more satisfied with the task if he has received the bonus.

Test: Significance of the Bonus main effect for Task Satisfaction.

H_{02} : If Person was overrewarded he will have lower Task Satisfaction than if he were appropriately rewarded; while if Person did not receive the bonus, Task Satisfaction will be higher for high performers (enhancement of outcomes) than for low performers.

Test: Significance of the Bonus x Performance interaction for Task Satisfaction.

3.10.3 Equity Hypotheses

Due to the collinearity between Pay Satisfaction, Own Equity, and Comparison Equity measures, and the fact that both equity measures are subscales of Pay Satisfaction, the equity hypotheses were collapsed into one set and use Pay Satisfaction as the dependent variable.

H_{E1} : Expectations of getting the bonus in the first hour will be unrelated to satisfaction with pay.

Test: Correlation between bonus expectations and Pay Satisfaction.

H_{E2} : Appropriateness of pay given performance will be related to satisfaction with pay.

Test: Significance of Bonus x Performance interaction for Pay Satisfaction.

H_{E3} : Appropriateness of pay given Ability level will be related to satisfaction with pay.

Test: Significance of Bonus x Ability interaction for Pay Satisfaction.

H_{E4} : Input Orientation will be negatively related to satisfaction with pay.

Test: Significance of Input Orientation main effect for Pay Satisfaction.

H_{E5} : Bonus awards will be positively related to satisfaction with pay.

Test: Significance of Bonus main effect for Pay Satisfaction.

3.10.4 Temporal Effects

H_{T1} : Second hour performance will be positively related to first hour satisfaction.

Test: Correlation between satisfaction and Performance Deviation.

H_{T2} : Input Orientation and Ability level will become negatively related to satisfaction, but will not change their relationships to Performance Deviation.

Test: First, significance of Ability x Sessions and Input Orientation x Sessions interactions for satisfaction measures but not Performance Deviation. Second, a demonstration that third hour effects show significant differences in favor of higher satisfaction for low Ability and low Input Orientation Ss while Performance Deviation differences are unchanged.

3.10.5 Summary of Hypotheses

Table 3.5 lists hypotheses by section and number, gives independent and dependent variables and the manner in which the two are assumed to be related.

3.11 Statistical Techniques

Since cell sizes are unequal and there are multiple, correlated dependent variables, multivariate analysis of variance (MANOVA, Bock and Haggard, 1968) is the appropriate statistical technique to use. For this study, MANOVA is preferred to regression approaches since MANOVA allows one to specify the order in which confounding is eliminated in a

Table 3.5. Hypothesis Summary.¹

Hypothesis	Independent Variable	Relationship	Dependent Variable
H _{I1}	A	↑ ↑	PD
H _{I2}	B,A	B>A↑	PC
		B>A↑	OVP
		B>A↑	EXP
H _{I3}	IO	↑ ↑	PC
		↑ ↑	OVP
		↑ ↑	EXP
	A	↑ ↑	PC
		↑ ↑	OVP
		↑ ↑	EXP
H _{I4}	B	↑ ↑	PD
H _{I5}	B,P	$L_B \neq L_P^\dagger$	PD
		$L_B = L_P^\dagger$	
H _{O1}	B	↑ ↑	TS
H _{O2}	B,P	$B_L^{P_H} > B_H^{P_H}$	TS
		$= B_L^{P_L} > B_H^{P_L}$	
H _{E1}	EXP	0	PS
H _{E2}	B,P	$L_B \neq L_P^\dagger$	PS
		$L_B = L_P^\dagger$	

Table 3.5. (Continued)

Hypothesis	Independent Variable	Relationship	Dependent Variable
H_{E3}	A,B	$L_B \neq L_A^\dagger$ $L_B = L_A^\dagger$	PS
H_{E4}	IO	$\uparrow \downarrow$	PS
H_{E5}	B	$\uparrow \uparrow$	PS
H_{T1}	PS ₁	$\uparrow \uparrow$	PD ₂
	TS ₁	$\uparrow \uparrow$	PD ₂
	CWS ₁	$\uparrow \uparrow$	PD ₂
H_{T2}	IO,S	$S_{1,2,3}^{\uparrow \downarrow}$ $S_{1,2,3}^{\uparrow \downarrow}$ 0	PS TS PD
	A,S	$S_{1,2,3}^{\uparrow \downarrow}$ $S_{1,2,3}^{\uparrow \downarrow}$ 0	PS TS PD

¹Subscript L = lower factor level, subscript H = higher factor level; capital L = factor level for that main effect, e.g., $L_B = L_P$ means B_1P_1 and B_2P_2 .

non-orthogonal design. Regression, on the other hand, determines its own weights given the raw data.

Along with the MANOVA tables, univariate F-tables, Friedman η^2 , simple correlations, means, and standard deviations are appropriate for describing experimental effects.

3.12 Summary

The preceding three chapters lead logically to the presentation of the results. Essentially, the interesting comparisons will be between the strengths of the various experimental effects in successive trials, and the power of individual difference, equity, or expectancy models in explaining the results.

CHAPTER 4

RESULTS

4.1 Introduction

The main subsections in this chapter relate to the analysis and interpretation of data bearing on the study's hypotheses, other significant MANOVA effects, and the magnitude of bivariate correlations for hypotheses relating dependent variables. First, the overall MANOVA will be presented; followed by hypotheses results by dependent variables for effects that were significant given the overall MANOVA, and hypotheses which were tested by correlating dependent variables or non-design variables with dependent variables.

Before presenting the results, two design features must be stressed. First, appropriateness of pay in this study was not determined by how a S perceived her pay, but whether or not pay was consistent with performance. If the S received pay consistent with the policy announced; i.e., high pay for above median performance, low pay for below median performance, she was considered to be appropriately paid. Any S may have felt appropriately paid when, in fact, she wasn't. The determination made here is on a compensation administration basis rather than on a perceptual basis. Second, since this study tests the robustness of equity theory, it must be remembered that there is no inequity induction outside of the compensation given. In fact, one could presume

that Ss took the job for expected pay outcomes rather than concerns for fairness. Thus, any data supporting an equity interpretation occur without experimenter suggestion and would strongly support a conclusion that equity is generally important as a valent outcome to individuals.

4.2 The MANOVA

For the MANOVA, five main effects were tested: (1) Ability (A; two levels), (2) Input Orientation (IO; two levels), (3) Bonus (B; two levels), (4) Performance (P; two levels), and (5) sessions (S; three levels). Of the five dependent variables, four were taken from the satisfaction questionnaire while the fifth was measured by performance deviations from the group median (PD). Performance Deviation is an appropriate measure of the behavioral response to the experimental manipulation since behavioral adaptations are one method for resolving inequity. The satisfaction questionnaire criteria included: (1) Pay Satisfaction (PS), (2) Task Satisfaction (TS), (3) Satisfaction with Co-Workers (CWS), and Perceptions of Competence (PC). Analysis was performed using a program written by Clyde, Cramer, and Sherin (1966).

Table 3.4 gave the analysis of variance design for the main effects, two- and three-way interactions. The effects are not orthogonal, due to unequal frequencies in some design cells. Therefore, the order of elimination of confounding is important in the interpretation of the data. All main effects and interactions were tested with the order of elimination of confounding shown in Table 3.4. Four- and five-way interactions were included in the error term. Table 4.1 gives the cell frequencies by factor level for the MANOVA design. Higher

Table 4.1. Cell Frequencies by Factor Level.

Factor and Level					Frequency
Bonus	Performance	Ability	Sessions	Input Or.	
2	2	2	1	1	7
2	1	1	1	1	5
1	1	1	1	2	5
1	2	2	1	2	9
2	1	1	1	2	5
1	1	2	1	1	2
1	1	2	1	2	4
2	2	1	1	2	7
2	2	2	1	2	4
2	1	2	1	1	5
1	2	1	1	1	5
1	1	1	1	1	9
1	2	2	1	1	3
2	1	2	1	2	4
2	2	1	1	1	2
2	2	2	2	1	7
2	1	1	2	1	5
1	1	1	2	2	5
1	2	2	2	2	9
2	1	1	2	2	5
1	2	1	2	1	5
1	1	2	2	1	2

Table 4.1. (Continued)

Factor and Level					Frequency
Bonus	Performance	Ability	Sessions	Input Or.	
1	1	2	2	2	4
2	2	1	2	2	7
2	2	2	2	2	4
2	1	2	2	1	5
1	1	1	2	1	9
1	2	2	2	1	3
2	1	2	2	2	4
2	2	1	2	1	2
2	2	2	3	1	7
2	1	1	3	1	5
1	1	1	3	2	5
1	2	2	3	2	9
2	1	1	3	2	5
1	2	1	3	1	5
1	1	2	3	1	2
1	1	2	3	2	4
2	2	1	3	2	7
2	2	2	3	2	4
2	1	2	3	1	5
1	1	1	3	1	9
1	2	2	3	1	3
2	1	2	3	2	4
2	2	1	3	1	2

factor levels relate to later times, higher scores, or possession of an attribute. For each dependent variable mean differences for levels of each factor against the highest factor level are given by level in Table 4.2.

The overall test for the MANOVA shown in Table 4.3 indicated that all main effects except Input Orientation were significantly related to the dependent variables. Three of the two-way interactions; Ability x Input Orientation, Bonus x Ability, and Performance x Ability, and the three-way interaction for Bonus x Ability x Input Orientation were also significantly related.

Due to the fact that four of the dependent variables were satisfaction scales, it is not unusual to find the degree of interrelatedness among them seen in Table 4.4. Only Performance Deviation is uncorrelated with the other dependent variables. The satisfaction scale correlations range from .20 to .46. These correlations are not corrected for attenuation and result from 228 observations (each of the 76 Ss measured three times).

4.3 Dependent Variables from the MANOVA

This section presents univariate F-tables and appropriate hypotheses results for each dependent variable. Since many of the effects in the overall MANOVA were not significant, if an effect was significant in a univariate F-table but not in the overall MANOVA results, it was disregarded in hypotheses testing.

Table 4.2. Mean Differences in Criteria Compared to Highest Level for Each Factor.

Factor and Level	Criteria				
	PS	TS	CWS	PC	PD
A ₁	-.73	-.96	.74	.53	-.51
IO ₁	2.79	1.79	-.60	-.11	-1.02
B ₁	-8.20	-4.97	-.13	-2.39	-.72
P ₁	.13	1.79	.19	-.60	-11.31
S ₁	1.91	4.58	.08	2.38	-.17
S ₂	-1.27	-.66	-.12	-.34	1.25
AxIO ₁	-1.19	2.88	-.08	.25	-2.31
AxP ₁	3.42	1.69	.24	-.26	-2.04
IOxP ₁	-.16	-.60	.88	.17	.82
IOxB ₁	-.31	.91	-.57	-.03	-.42
AxB ₁	-.55	-1.79	.79	-.27	4.07
AxS ₁	1.51	1.46	-.25	-.52	-2.47

Table 4.2. (Continued)

Factor and Level	Criteria				
	PS	TS	CWS	PC	PD
AxS ₂	-.80	.09	.25	.27	1.67
I0xS ₁	-.61	.31	.22	.21	.68
I0xS ₂	.39	.54	-.05	.24	.19
BxP ₁	2.31	4.46	-.31	.72	-1.76
BxS ₁	1.99	1.17	.33	.52	.05
BxS ₂	-.94	-1.07	-.08	-.42	1.55
PxS ₁	1.01	-.32	-.07	.03	-1.20
PxS ₂	.16	-.08	-.10	-.36	-1.45
AxI0xS ₁	-.27	.60	.67	.83	-.12
AxI0xS ₂	.43	-.18	-.45	-.29	-.41
AxI0xB ₁	-2.53	-.10	-.87	-.55	-2.63
AxI0xP ₁	-1.49	-3.92	.38	-.68	-.53

Table 4.2. (Continued)

Factor and Level	Criteria				
	PS	TS	CWS	PC	PD
AxPxS ₁	-.56	.82	-.31	.19	-1.84
AxPxS ₂	-.03	-.91	.20	-.07	-1.13
IOxBxS ₁	-.54	-.58	-.04	-.02	-1.95
IOxBxS ₂	.41	.57	-.01	.06	.06
AxBxS ₁	.17	-.20	-.27	.04	-.77
AxBxS ₂	-.54	-.05	.30	-.16	.70
AxBxP ₁	2.13	3.38	-.38	-.37	.36
IOxPxS ₁	.27	-.03	-.37	-.02	1.47
IOxPxS ₂	-.35	-.18	.24	-.26	-1.36
IOxBxP ₁	-.70	-2.44	.15	.90	1.18
BxPxS ₁	-.60	1.20	.49	.12	.84
BxPxS ₂	.25	-.32	-.29	.24	-1.57

Table 4.3. Overall F-Ratios for MANOVA Design.

	Roots	F	P
Ability (A)	1-1	4.11	.001
Input Orientation (IO)	1-1	1.48	.20
Bonus (B)	1-1	20.11	.001
Performance (P)	1-1	20.21	.001
Sessions (S)	1-2	2.58	.005
	2-2	.26	.90
Ability x Input Orientation	1-1	2.13	.064
Ability x Performance	1-1	4.18	.001
Input Orientation x Performance	1-1	.88	.50
Input Orientation x Bonus	1-1	.29	.92
Ability x Bonus	1-1	3.17	.009
Ability x Sessions	1-2	.85	.59
	2-2	.15	.96
Input Orientation x Sessions	1-2	.14	.999
	2-2	.02	.999
Bonus x Performance	1-1	1.20	.31
Bonus x Sessions	1-2	.44	.93
	2-2	.23	.92
Performance x Sessions	1-2	.40	.95
	2-2	.15	.96
A x IO x S	1-2	.28	.99
	2-2	.05	.995
A x IO x B	1-1	3.98	.002
A x IO x P	1-1	1.22	.30
A x P x S	1-2	.57	.84
	2-2	.40	.81
IO x B x S	1-2	.28	.99
	2-2	.03	.995
A x B x S	1-2	.07	.999
	2-2	.07	.99
A x B x P	1-1	.96	.45
IO x P x S	1-2	.23	.994
	2-2	.05	.996
IO x B x P	1-1	1.70	.14
B x P x S	1-2	.43	.93
	2-2	.26	.91

Table 4.4. MANOVA Criteria Intercorrelations.¹

	PS	TS	CWS	PC	PD
Pay Satisfaction	.89	.55	.20	.37	-.03
Task Satisfaction		.88	.30	.56	-.11
Co-Worker Satisfaction			.67	.35	-.05
Perceptions of Competence				.66	.09
Performance Deviation					

¹Mean coefficient alphas on the diagonal for satisfaction measures.

4.3.1 Pay Satisfaction

Table 4.5 shows four effects were significant for Pay Satisfaction, accounting for 42% of the variance (Friedman, 1968). By itself, the Bonus effect accounted for 28%. No other main effect significant in the overall MANOVA was significant for Pay Satisfaction. Three higher order effects were significant: Ability x Input Orientation, Ability x Performance, and Ability x Input Orientation x Bonus.

4.3.1.1 Hypotheses Tests Using Univariate F-Tests

Four of the five equity hypotheses using Pay Satisfaction as a dependent variable were tested with MANOVA results.

H_{E2} : Appropriateness of pay given performance will be related to satisfaction with pay.

This hypothesis is the central equity theory hypothesis if pay is seen as the main outcome and inputs are reflected in actual behavior. Satisfaction is assumed to result from input/outcome congruency. The hypothesis was not supported since no Bonus x Performance interaction was found in the overall MANOVA. Further, there was no independent univariate effect found for Pay Satisfaction.

H_{E3} : Appropriateness of pay given Ability level will be related to satisfaction with pay.

This hypothesis is based on the assumption that Ability level reflects inputs. Pay outcomes matching these input levels should result in greater satisfaction. While the overall MANOVA test was significant, no relationship was found for Pay Satisfaction.

H_{E4} : Input Orientation will be negatively related to satisfaction with pay.

Table 4.5. ANOVA for Pay Satisfaction.

Source of Variation	df	MS	F	P>	η^2
Ability (A)	1	11.86	.06	.80	
Input Orientation (IO)	1	625.26	3.29	.07*	
Bonus (B)	1	13013.35	68.56	.001	.28
Performance (P)	1	5.42	.03	.87	
Sessions (S)	2	166.86	.88	.42	
A x IO	1	722.87	3.81	.05	.02
A x P	1	2179.26	11.48	.001	.06
IO x P	1	75.79	.40	.53	
IO x B	1	92.56	.49	.49	
A x B	1	117.22	.62	.43	
A x S	2	53.54	.28	.76	
IO x S	2	16.15	.08	.92	
B x P	1	371.33	1.96	.16	
B x S	2	173.63	.92	.40	
P x S	2	54.43	.29	.75	
A x IO x S	2	4.31	.02	.98	
A x IO x B	1	2035.89	10.73	.001	.06
A x IO x P	1	46.22	.24	.62	
A x P x S	2	19.42	.10	.90	
IO x B x S	2	12.62	.07	.94	
A x B x S	2	11.48	.06	.94	
A x B x P	1	379.48	2.00	.16	
IO x P x S	2	5.00	.03	.97	
IO x B x P	1	45.50	.24	.62	
B x P x S	2	17.26	.09	.91	

*Not significant in overall test.

This hypothesis assumes that higher Input Orientation is associated with lower reward satisfaction given reward magnitude. Persons with high Input Orientation are assumed to feel as if they bring higher inputs to the job. No support is found since the overall MANOVA for the Input Orientation effect was not significant. Further, the univariate F was only significant past .10.

H_{E5} : Bonus awards will be positively related to satisfaction with pay.

This hypothesis follows expectancy theory by assuming that satisfaction results from the attainment of valent outcomes. The hypothesis is strongly supported, with the Bonus effect accounting for 28% of the variance in Pay Satisfaction.

One temporal effect hypothesis is concerned with Ability x Sessions and Input Orientation x Sessions interactions for Pay Satisfaction.

H_{T2} : Input Orientation and Ability level will become negatively related to satisfaction [with pay], but will not change their relationship to Performance Deviation.

The assumption here is that higher levels of either or both of these individual differences would lead to a more rapid devaluation of outcomes since perceptual and/or relevant inputs would be higher given actual outcome levels. There were no significant interactions involving sessions; thus, the hypothesis is not supported for Pay Satisfaction.

4.3.1.2 Hypotheses Tests Using Non-Design Independent Variables

At the end of each hour each S was asked to give her subjective estimate of the probability of bonus receipt. First hour expectancies

were taken prior to any experimental manipulation. Given equity theory, satisfaction should be highest when outcomes match expectations. Under an equity interpretation, there should be no relationship because dissatisfaction with unexpected results would match satisfaction with expected results. However, there should be a positive correlation between bonus expectations and Pay Satisfaction for bonus recipients and a negative correlation for bonus non-recipients given equity theory. Under expectancy theory, with bonuses randomly awarded, there also should be no significant relationship between expectations and Pay Satisfaction since Pay Satisfaction would be a direct function of pay level.

H_{E1} : Expectations of getting the bonus in the first hour will be unrelated to satisfaction with pay.

The correlations in Table 4.6 support the directionality of the equity theory interpretation but are not significant. The overall correlation is .00, supporting the hypothesis as stated.

4.3.1.3 Hypothesis Test Correlating Dependent Variables

A Porter and Lawler (1968) expectancy theory interpretation would suggest that later performance is influenced by earlier satisfaction.

H_{T1} : Second hour performance will be positively related to first hour (Pay) satisfaction.

The correlations presented in Table 4.7 support this hypothesis. The correlation for the total group was .26 ($P < .05$) with indications that the effect was strongest for Low Performance (.41, $P < .01$) and No Bonus (.32, $P < .05$) groups. These findings indicate that

Table 4.6. Means, Standard Deviations, and Correlations for First Hour Bonus Expectations and Pay Satisfaction for Total Group and Six Subgroups.

Measure	Group						
	Total N=76	HP N=38	LP N=38	NB N=38	B N=38	IN N=36	AP N=40
$\bar{X}_{EXP_1}$	4.36	5.05 ¹	3.66 ²	4.21	4.50	4.25	4.45
SD_{EXP_1}	1.62	1.25	1.66	1.70	1.56	1.65	1.62
$\bar{X}_{PS_1}$	70.71	71.37	70.05	64.11 ³	77.32	69.78	71.55
SD_{PS_1}	13.88	12.56	15.22	14.67	9.25	12.29	15.27
$r_{EXP_1PS_1}$	.00	-.03	-.02	-.14	.11	-.19	.14

¹HP > Total; P < .05.

²LP < Total, LP < HP; P < .05, P < .01.

³NB < B; P < .01.

Table 4.7. Means, Standard Deviations, and Correlations for First Hour Pay Satisfaction and Second Hour Performance Deviation for Total Sample and Six Subgroups.

Measure	Group						
	Total N=76	HP N=38	LP N=38	NB N=38	B M=38	IN N=36	AP N=40
$\bar{X}_{PS_1}$	70.71	71.37	70.05	64.11 ¹	77.32	69.78	71.55
SD_{PS_1}	13.88	12.56	15.22	14.67	9.25	12.29	15.27
$\bar{X}_{PD_2}$	-2.09	9.47 ²	-13.66 ³	-4.58	.39	-1.14	-2.95
SD_{PD_2}	17.23	8.73	15.85	17.42	16.90	16.68	17.89
$r_{PS_1 PD_2}$	.26**	.15	.41***	.32**	.04	-.43***	.66***

¹ NB < B; P < .01.

² HP > Total; P < .05.

³ LP < HP; P < .01.

**P < .05.

***P < .01.

overpaid Ss' performance was higher in the second hour than equitably paid low performers since Pay Satisfaction was highly related to bonus receipt. Further, the first hour satisfaction level of Ss not receiving the bonus was significantly related to second hour performance, indicating that low Pay Satisfaction detracted from subsequent performance.

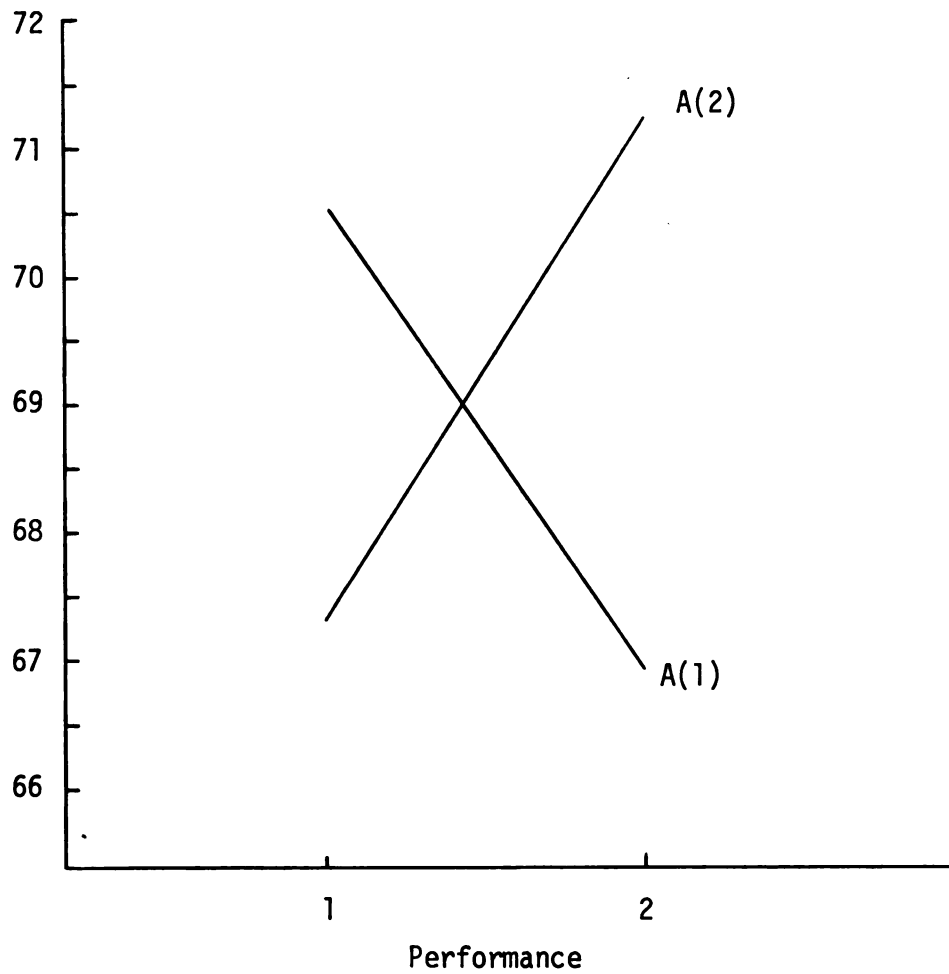
4.3.1.4 Other ANOVA Effects

Figure 4.1, showing the Performance x Ability interaction, indicates that Pay Satisfaction was higher for low Ability-low Performance and high Ability-high Performance Ss. If ability were the relevant variable representing inputs in an equity model, this would mean that congruence between inputs, performance, and pay outcomes was a preferred state.

The Ability x Input Orientation interaction graphed in Figure 4.2 suggests that Ss whose Ability and Input Orientation levels were congruent were significantly less satisfied with pay than those whose profiles were incongruent. This is difficult to explain since equity theory might predict that low Ability-low Input Orientation Ss would have the lowest actual and perceived inputs and might then be most satisfied with pay outcomes from both an expectancy and equity approach. This finding was not anticipated and should be examined in greater detail in succeeding experiments.

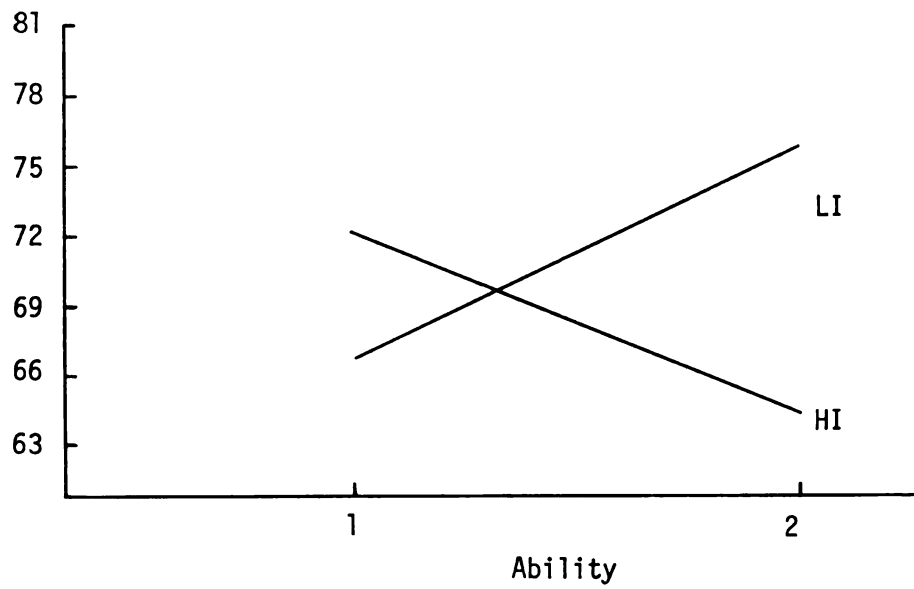
Figure 4.3 shows that Pay Satisfaction was higher for bonus recipients across all combinations of Ability and Input Orientation for the interaction between Ability, Bonus, and Input Orientation. However, the increase was smallest where Ss were of lower ability and had higher Input Orientation scores. This type of individual would be most likely

Figure 4.1. Pay Satisfaction--Performance-Ability Interaction.



Cell Means: $P_1A_1 = 70.54$ $P_2A_1 = 66.97$
 $P_1A_2 = 67.31$ $P_2A_2 = 71.23$

Figure 4.2. Pay Satisfaction--Ability x Input Orientation



Cell Means

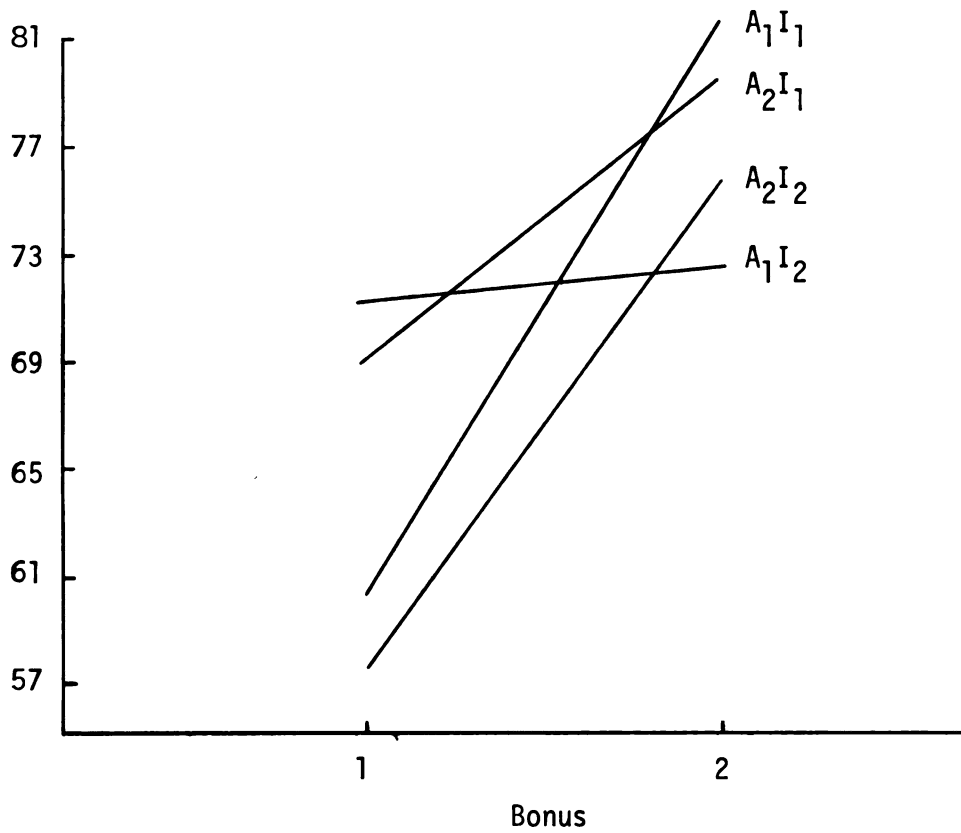
$$A_1 I O_1 = 66.86$$

$$A_1 I O_2 = 72.16$$

$$A_2 I O_1 = 76.29$$

$$A_2 I O_2 = 64.33$$

Figure 4.3. Pay Satisfaction--Ability x Input Orientation x Bonus



Cell Means

$$B_1A_1I_1 = 59.93$$

$$B_1A_1I_2 = 71.13$$

$$B_1A_2I_1 = 68.80$$

$$B_1A_2I_2 = 57.36$$

$$B_2A_1I_1 = 81.76$$

$$B_2A_1I_2 = 72.58$$

$$B_2A_2I_1 = 79.42$$

$$B_2A_2I_2 = 75.63$$

to bring high perceived effort (high Input Orientation) and require high actual effort (low task Ability) for performance. Thus satisfaction with bonus receipt, if earned, would be less; and recognition of overpay inequity would be unlikely to occur for this group.

4.3.1.5 Pay Satisfaction Summary

Bonus receipt was by far the most important effect for Pay Satisfaction, supporting an expectancy interpretation. None of the hypotheses related to equity theory was supported. Figure 4.4 graphs Pay Satisfaction by Bonus-Performance groups. Equity theory would be supported weakly within bonus conditions but the interaction was not significant. Other interactions generally supported equity hypotheses since Performance x Ability and Ability x Input Orientation x Bonus effects indicated that congruence between inputs and outcomes was generally more satisfying.

4.3.2 Task Satisfaction

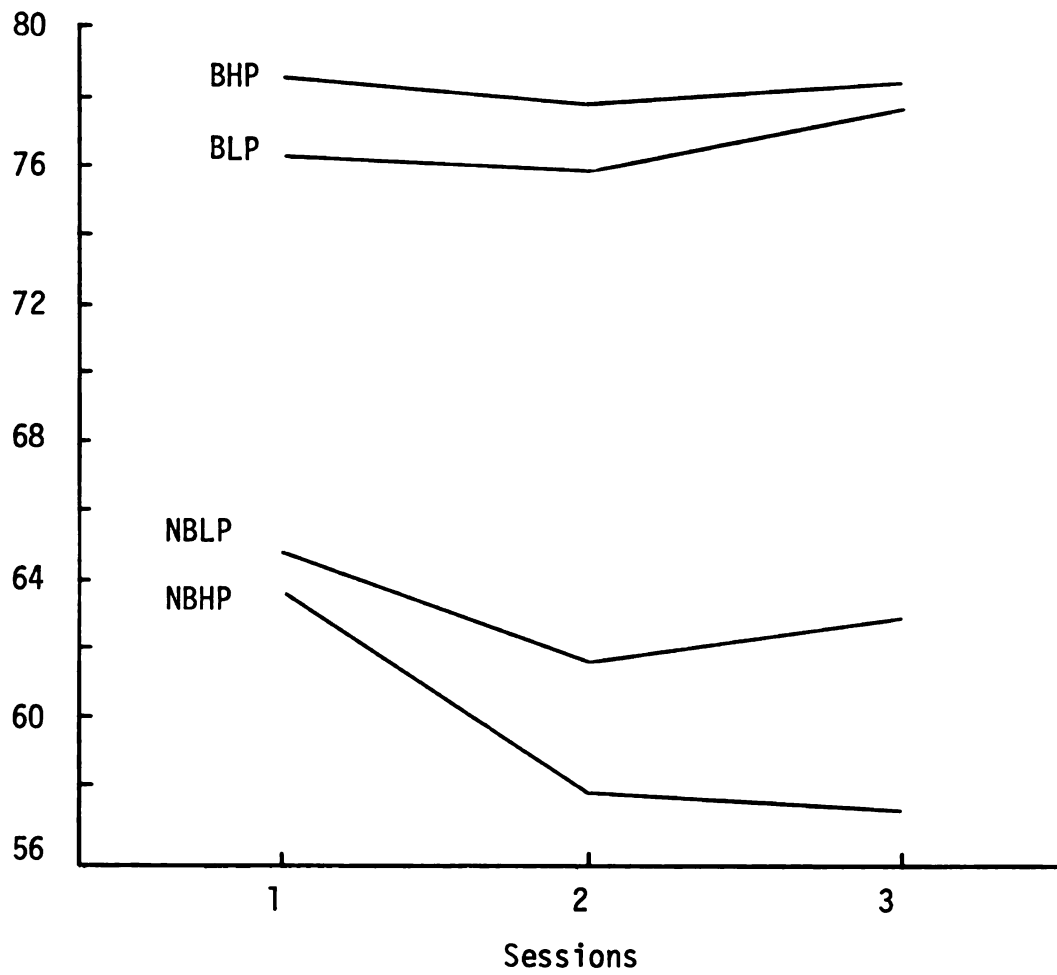
Table 4.8 shows three of the significant MANOVA effects also were significant past .10 for Task Satisfaction. These are Bonus, Sessions, and Ability x Input Orientation x Bonus. The three account for only 9% of the total variance in Task Satisfaction with the greatest proportion (5%) related to a decline in satisfaction over sessions.

4.3.2.1 Hypotheses Tests Using Univariate F-Tests

The two outcome hypotheses suggest reasons for differences in Task Satisfaction.

H_{01} : Person will be more satisfied with the task if he has received the bonus.

Figure 4.4. Pay Satisfaction By Session



Groups	<u>1</u>	<u>2</u>	<u>3</u>
BHP	78.45	77.75	78.30
BLP	76.06	75.94	77.39
NBLP	64.65	61.40	62.80
NBHP	63.50	57.56	56.83

Table 4.8. ANOVA for Task Satisfaction.

Source of Variation	df	MS	F	P<	η^2
Ability (A)	1	170.22	.57	.45	
Input Orientation (I)	1	81.72	.27	.60	
Bonus (B)	1	1146.46	3.83	.052	.02
Performance (P)	1	98.31	.33	.57	
Sessions (S)	2	1516.54	5.07	.007	.05
A x IO	1	101.07	.34	.56	
A x P	1	1.62	.01	.94	
IO x P	1	669.03	2.24	.14	
IO x B	1	81.08	.27	.60	
A x B	1	317.58	1.06	.30	
A x S	2	190.53	.64	.53	
IO x S	2	29.75	.10	.91	
B x P	1	665.30	2.19	.14	
B x S	2	154.53	.52	.60	
P x S	2	14.58	.05	.95	
A x IO x S	2	5.53	.02	.98	
A x IO x B	1	956.58	3.20	.075	.02
A x IO x P	1	688.72	2.30	.13	
A x P x S	2	67.38	.23	.80	
IO x B x S	2	20.07	.07	.94	
A x B x S	2	1.60	.01	.995	
A x B x P	1	491.83	1.64	.20	
IO x P x S	2	2.48	.01	.99	
IO x B x P	1	561.86	1.88	.17	
B x P x S	2	73.51	.25	.78	

This hypothesis follows an expectancy theory framework in that Task Satisfaction follows from the receipt of valent outcomes. The Bonus main effect for Task Satisfaction was significant ($P < .052$), indicating that bonus receipt enhanced Task Satisfaction. Figure 4.5 shows that while Task Satisfaction declined significantly over the three sessions ($P < .01$), bonus recipients were consistently more satisfied from the second hour.

H_{02} : If Person was overrewarded he will have lower Task Satisfaction than if he were appropriately rewarded; while if Person did not receive the bonus, Task Satisfaction will be higher for high performers (enhancement of outcomes) than for low performers.

The Bonus x Performance interaction was not significant, indicating a lack of support for this hypothesis. The evidence for H_{01} suggests that H_{02} would have little support since bonus receipt, regardless of appropriateness, was related to Task Satisfaction.

One of the temporal hypotheses uses MANOVA results as a test for the Task Satisfaction dependent variable.

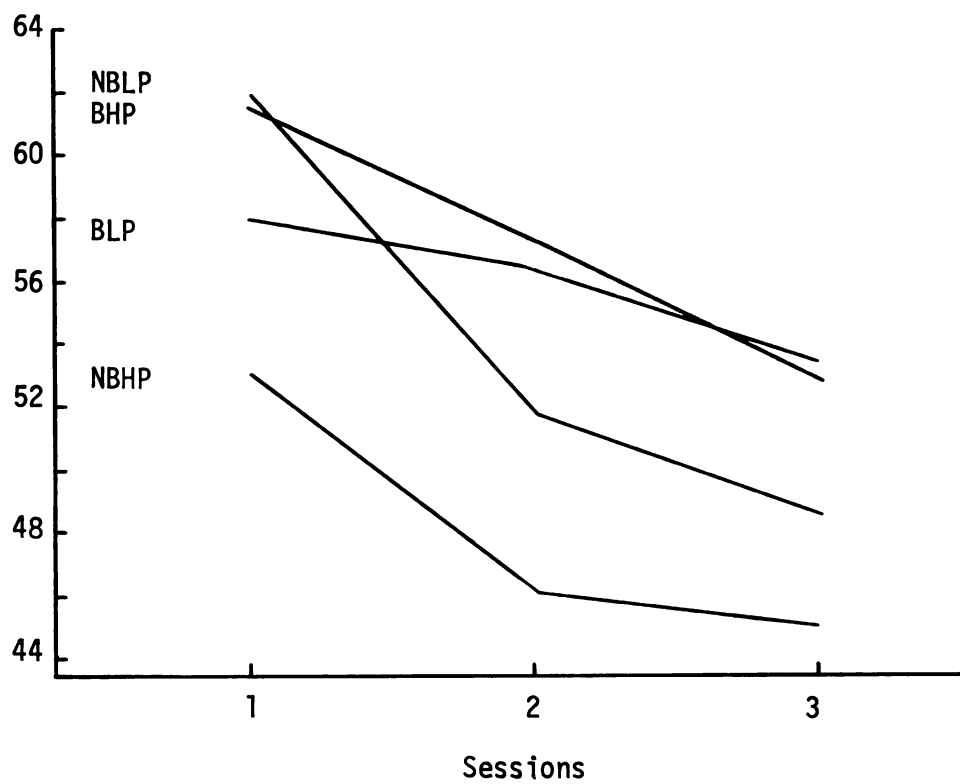
H_{T2} : Input Orientation and Ability level will become negatively related to [Task] satisfaction, (but will not change their relationships to Performance Deviation).

This hypothesis was not supported since there were no significant Ability x Sessions or Input Orientation x Sessions interactions.

4.3.2.2 Hypothesis Test Using Correlated Dependent Variables

The effect of satisfaction on later performance can also be tested using Task Satisfaction as the dependent variable.

Figure 4.5. Task Satisfaction By Session



Group	<u>1</u>	<u>2</u>	<u>3</u>
NBLP	61.70	51.65	48.55
BHP	61.50	57.10	52.35
BLP	57.78	56.17	52.67
NBHP	52.50	46.00	44.83

H_{T1} : Second hour performance will be positively related to first hour (Task) satisfaction.

The data in Table 4.9 do not support this hypothesis. Of seven correlations between first hour Task Satisfaction and second hour Performance Deviations, none were significant.

4.3.2.3 Other ANOVA Effects

Two effects in the Task Satisfaction ANOVA for which there are no hypotheses were significant. These were Sessions and Ability x Input Orientation x Bonus. The Sessions effect manifested itself in a definite decline in satisfaction from hours one to two and a leveling from there. This is reasonable since the task was extremely repetitive and Ss would be subject to boredom and strain from the competition for rewards.

The three-way interaction shown in Figure 4.6 indicates that within bonus conditions, persons with incongruent Ability-Input Orientation profiles were somewhat more satisfied without the bonus and were not as satisfied as congruent profile Ss if they received the bonus. This finding is hard to explain for low Input Orientation Ss who might be expected to see outcomes as occurring from task involvement. The nature of the task may negate this effect for low Input Orientation Ss.

4.3.2.4 Task Satisfaction Summary

The data indicate that differences in Task Satisfaction resulted from salary treatment since bonus recipients were more satisfied with the task in later sessions. No evidence of task enhancement effects for underpaid Ss was found. Satisfaction declined over time for all groups; probably as a function of the task.

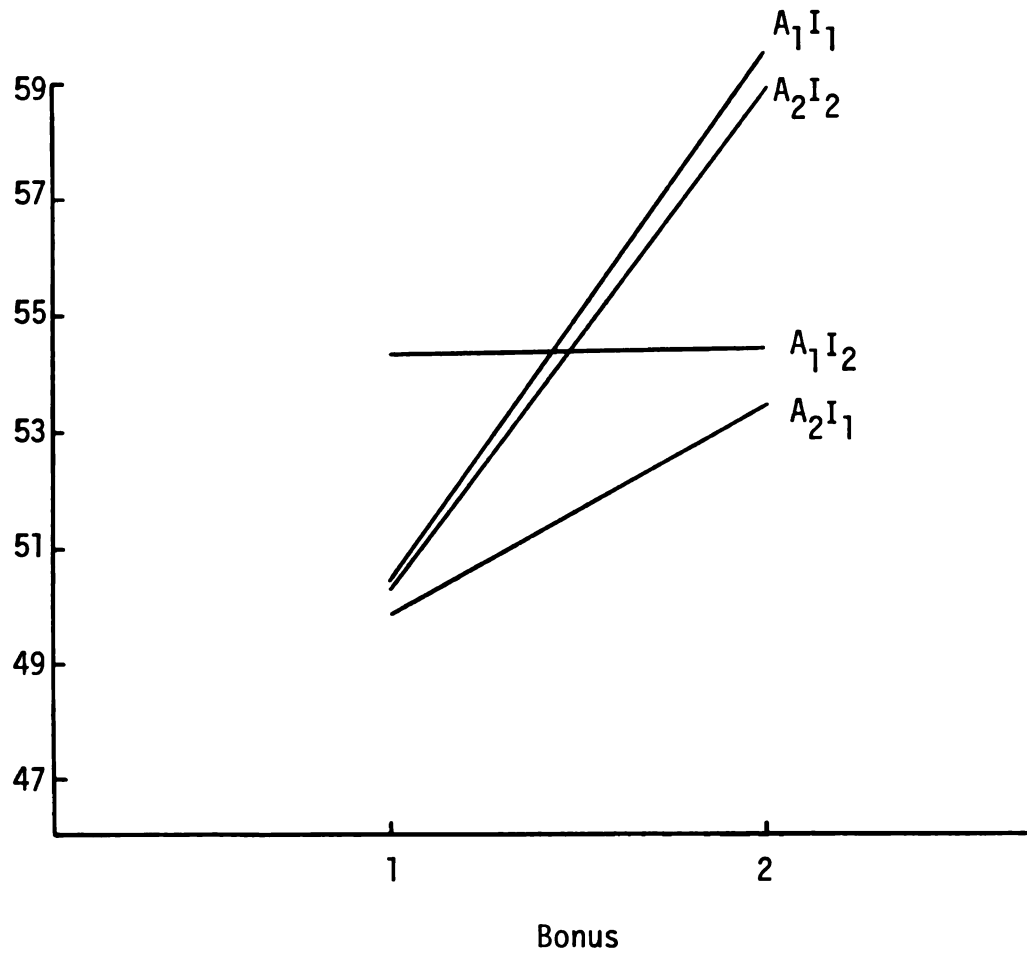
Table 4.9. Means, Standard Deviations, and Correlations for First Hour Task Satisfaction and Second Hour Performance Deviation for Total Sample and Six Subgroups.

Measure	Group						
	Total N=76	HP N=38	LP N=38	NB N=38	B N=38	IN N=36	AP N=40
$\bar{X}_{TS_1}$	58.54	57.24	59.84	57.34	59.74	65.14	61.60
SD_{TS_1}	15.69	15.31	16.17	16.38	15.10	13.88	16.75
$\bar{X}_{PD_2}$	-2.09	9.47 ¹	-13.66 ²	-4.58	.39	-1.14	-2.95
SD_{PD_2}	17.23	8.73	15.85	17.42	16.90	16.68	17.89
$r_{TS_1PD_2}$	.05	.27	.01	.00	.08	-.11	.14

¹HP > Total, P < .05.

²LP < HP, P < .01.

Figure 4.6. Task Satisfaction--Ability x Input Orientation x Bonus



Cell Means

$$B_1 A_1 I_1 = 50.07$$

$$B_2 A_1 I_1 = 59.14$$

$$B_1 A_1 I_2 = 54.00$$

$$B_2 A_1 I_2 = 54.58$$

$$B_1 A_2 I_1 = 49.53$$

$$B_2 A_2 I_1 = 53.50$$

$$B_1 A_2 I_2 = 50.00$$

$$B_2 A_2 I_2 = 58.50$$

4.3.3 Co-Worker Satisfaction

Three ANOVA effects were significant past .10 for Co-Worker Satisfaction, but only accounted for 6% of the variance. These were Performance (low performers more satisfied), Ability x Performance, and Ability x Input Orientation x Bonus. Table 4.10 gives the ANOVA for Co-Worker Satisfaction. The Performance x Ability interaction shown in Figure 4.7 indicates that Ss of high Ability were equally satisfied across Performance levels while low Ability Ss were substantially less satisfied if they were simultaneously high performers. This interaction may occur since low Ability Ss had to produce substantially more effort for high output relative to others in the group.

The Ability x Input Orientation x Bonus interaction shown in Figure 4.8 indicates that Co-Worker Satisfaction was generally lower for higher Ability Ss. Satisfaction was also higher for bonus recipients in most cases. The high Ability, high Input Orientation, Bonus recipient group did not follow the overall pattern. This group had congruence in levels among the interacting variables. The most satisfied group was the one with low Ability, low Input Orientation, and Bonus recipients. Incongruence between input variables and outcomes may have increased positive feelings about other situational aspects.

4.3.3.1 Hypothesis Test Using Correlated Dependent Variables

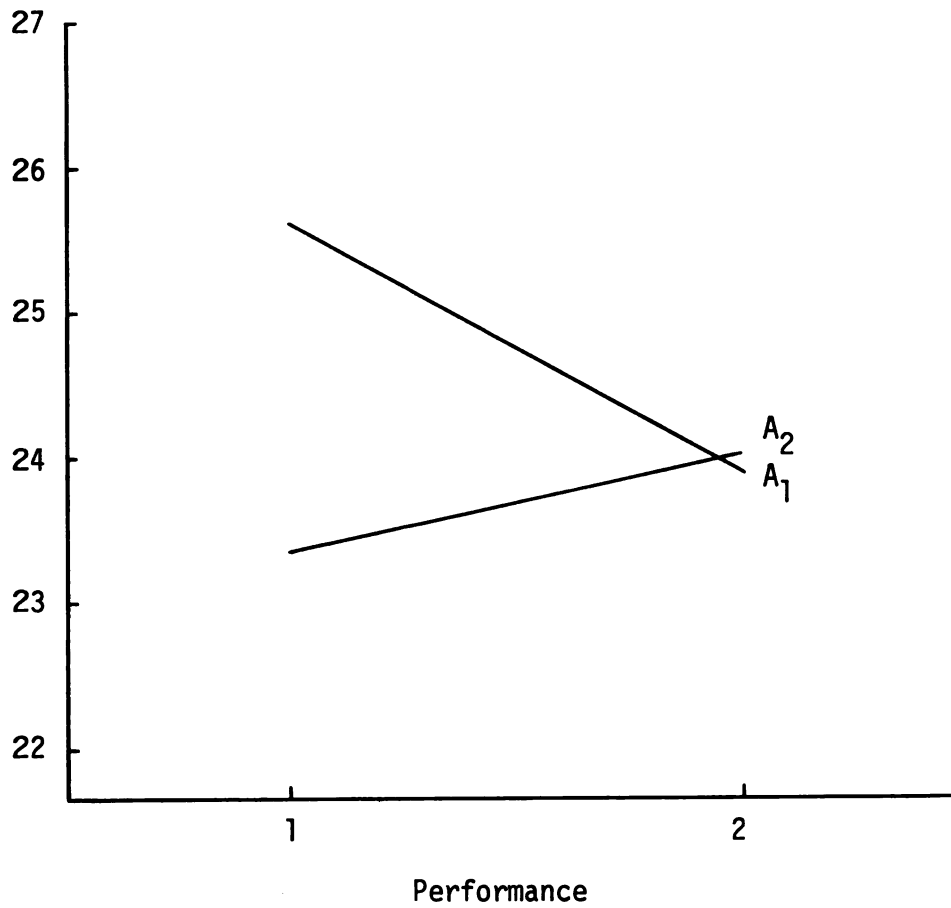
The temporal hypothesis predicting that earlier satisfaction is related to later performance is applicable for Co-Worker Satisfaction.

H_{T1} : Second hour performance will be positively related to first hour (Co-Worker) satisfaction.

Table 4.10. ANOVA for Co-Worker Satisfaction.

Source of Variation	df	MS	F	P	η^2
Ability (A)	1	44.74	2.17	.14	
Input Orientation (IO)	1	2.91	.14	.71	
Bonus (B)	1	28.96	1.40	.24	
Performance (P)	1	69.97	3.39	.067	.02
Sessions (S)	2	.74	.04	.97	
A x IO	1	34.38	1.67	.20	
A x P	1	91.69	4.44	.036	.02
IO x P	1	24.64	1.19	.28	
IO x B	1	12.05	.58	.45	
A x B	1	37.09	1.80	.18	
A x S	2	2.40	.12	.89	
IO x S	2	1.75	.09	.92	
B x P	1	.01	.00	.98	
B x S	2	15.37	.74	.48	
P x S	2	1.60	.08	.93	
A x IO x S	2	11.44	.55	.58	
A x IO x B	1	81.75	3.96	.075	.02
A x IO x P	1	6.46	.31	.58	
A x P x S	2	6.65	.32	.73	
IO x B x S	2	.41	.02	.98	
A x B x S	2	1.30	.06	.94	
A x B x P	1	10.67	.52	.47	
IO x P x S	2	4.67	.23	.80	
IO x B x P	1	2.09	.10	.75	

Figure 4.7. Co-Worker Satisfaction--Ability x Performance



Cell Means

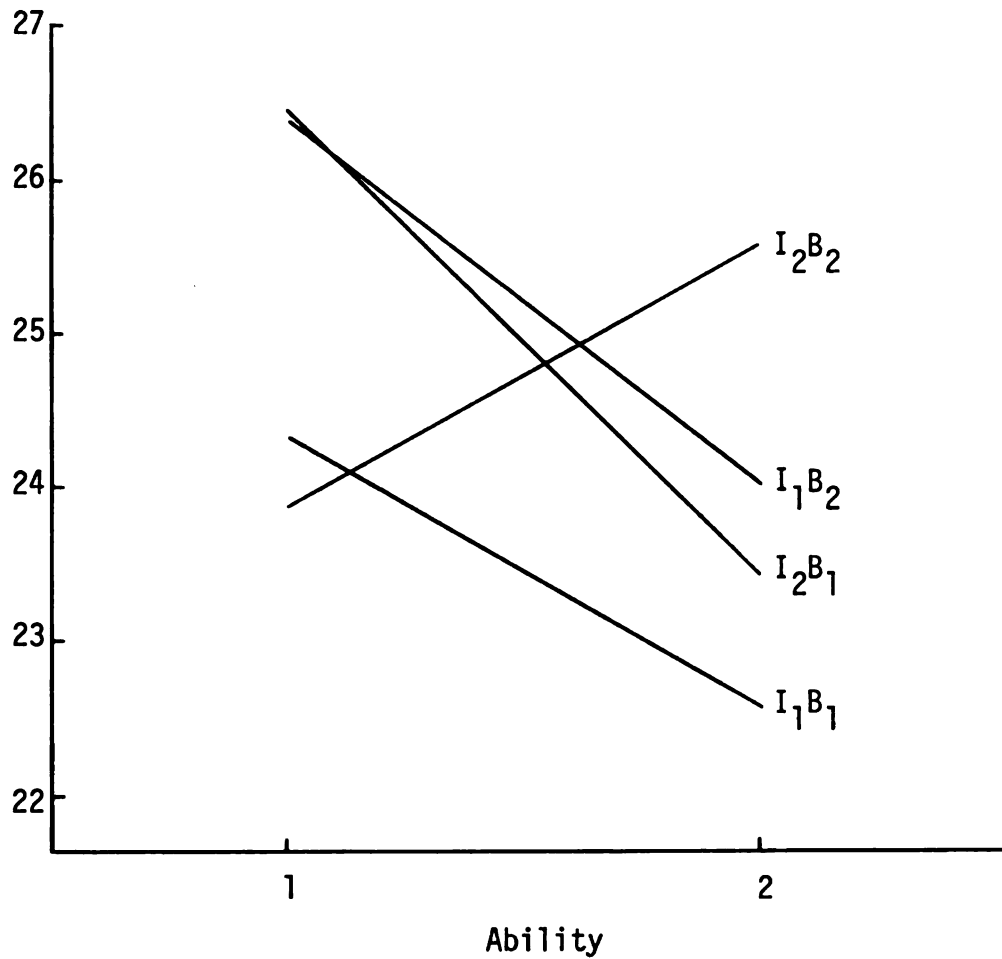
$$A_1P_1 = 25.59$$

$$A_1P_2 = 23.33$$

$$A_2P_1 = 23.84$$

$$A_2P_2 = 23.89$$

Figure 4.8. Co-Worker Satisfaction--Ability x
Input Orientation x Bonus



Cell Means:

$$A_1I_1B_1 = 24.29$$

$$A_1I_1B_2 = 26.33$$

$$A_1I_2B_1 = 26.40$$

$$A_1I_2B_2 = 23.86$$

$$A_2I_1B_1 = 22.53$$

$$A_2I_1B_2 = 23.86$$

$$A_2I_2B_1 = 23.36$$

$$A_2I_2B_2 = 25.54$$

The data in Table 4.11 do not support this hypothesis. Not only were six of seven correlations negative, but the Performance main effect for the entire experiment was significantly negative.

4.3.3.2 Co-Worker Satisfaction Summary

Where workers are involved in a job with no task interdependency among workers and co-workers may be unknown to the S, it is unlikely that experimental manipulations would explain or predict any real satisfaction differences for feelings about co-workers. This was essentially what occurred here. Some evidence exists to suggest that outcomes and input patterns moderate Co-Worker Satisfaction, but the effects were not large.

4.3.4 Perceptions of Competence

This variable measures Ss' feelings about the quality of their performance. Table 4.12 shows that two significant main effects for this dependent variable, Bonus and Sessions, accounted for 25% of the variance. Ability x Input Orientation x Performance, significant past .10 here, is not significant in the overall MANOVA test.

4.3.4.1 Hypotheses Tests Using Univariate F-Tests

Two of the input hypotheses are related to Perceptions of Competence.

H_{12} : Bonus treatment will be more strongly related than Ability to (input perceptions and) Perceptions of Competence.

This hypothesis is supported since Ability is unrelated while the Bonus effect is significant at the .001 level and accounts for 15% of the variance in the dependent variable.

Table 4.11. Means, Standard Deviations, and Correlations for First Hour Co-Worker Satisfaction and Second Hour Performance Deviations for Total Group and Six Subgroups.

Measure	Group						
	Total N=76	HP N=38	LP N=38	NB N=38	B N=38	IN N=36	AP N=40
$\bar{X}_{CWS_1}$	24.37	23.82	24.93	24.47	24.26	23.97	24.73
SD_{CWS_1}	3.84	3.50	4.12	3.86	3.86	3.53	4.10
$\bar{X}_{PD_2}$	-2.09	9.47 ¹	-13.66 ²	-4.58	.39	-1.14	-2.95
SD_{PD_2}	17.23	8.73	15.85	17.53	16.90	16.68	17.89
$r_{CWS_1PD_2}$	-.09	.03	-.01	-.14	-.02	-.20	-.02

¹HP > Total, P < .05.

²LP < HP, P < .01.

Table 4.12. ANOVA for Perceptions of Competence.

Source of Variation	df	MS	F	P<	η^2
Ability (A)	1	8.49	.21	.65	
Input Orientation (IO)	1	27.42	.69	.41	
Bonus (B)	1	1228.16	30.83	.001	.15
Performance (P)	1	72.46	1.82	.18	
Sessions (S)	2	411.84	10.34	.001	.10
A x IO	1	20.13	.51	.48	
A x P	1	6.43	.16	.69	
IO x P	1	.48	.01	.91	
IO x B	1	.25	.01	.94	
A x B	1	2.52	.06	.80	
A x S	2	11.91	.30	.74	
IO x S	2	8.56	.22	.81	
B x P	1	63.98	1.61	.21	
B x S	2	41.71	1.05	.35	
P x S	2	10.96	.28	.76	
A x IO x S	2	32.06	.81	.45	
A x IO x B	1	9.26	.23	.63	
A x IO x P	1	143.29	3.60	.06*	
A x P x S	2	1.89	.05	.95	
IO x B x S	2	.03	.00	.999	
A x B x S	2	.31	.01	.99	
A x B x P	1	2.75	.07	.79	
IO x P x S	2	3.67	.09	.91	
IO x B x P	1	76.80	1.92	.17	
B x P x S	2	6.12	.15	.86	

*Not significant for overall MANOVA.

H_{13} : Persons who are high performers, or who are high on Input Orientation or Ability will have higher (input perceptions and) Perceptions of Competence.

This hypothesis was not supported since there were no significant Input Orientation, Ability, or Performance effects.

4.3.4.2 Perceptions of Competence Summary

The data indicate that Ss were not accurate in their assessment of competence. Neither Ability nor Performance was significantly related while Bonus receipt was. Ss who received positive feedback (through bonuses) saw themselves as comparatively better workers.

4.3.5 Performance Deviation

This section presents the results of the Performance Deviation ANOVA and hypotheses involving this measure. Performance is measured by noting the deviation of each S's performance from the median level in her group. Since first hour performance (above or below the median) forms the basis for the Performance factor in the design, Performance Deviation is largely collinear with that factor. Measurement of changes over time are necessary to determine if Ss were behaving in a manner which would have led to the restoration of equity if they were inequitably treated.

Table 4.13 shows three significant main effects and three significant interactions resulting from this analysis. However, the Ability x Sessions and Bonus x Performance interactions were not significant in the overall MANOVA. As expected, performance level assignment was the largest effect. However, bonus treatment was also related to Performance Deviation since those who received the bonus were higher

Table 4.13. ANOVA for Performance Deviation.

Source of Variation	df	MS	F	p<	η^2
Ability (A)	1	3933.37	18.52	.001	.09
Input Orientation (IO)	1	30.79	.15	.70	
Bonus (B)	1	1378.72	6.49	.012	.03
Performance (P)	1	21298.57	100.26	.001	.36
Sessions (S)	2	30.61	.14	.87	
A x IO	1	314.66	1.48	.23	
A x P	1	218.04	1.03	.31	
IO x P	1	55.31	.26	.61	
IO x B	1	73.01	.34	.56	
A x B	1	1968.70	9.27	.003	.05
A x S	2	605.37	2.85	.060*	
IO x S	2	36.12	.17	.84	
B x P	1	592.34	2.79	.097*	
B x S	2	75.11	.35	.70	
P x S	2	305.41	1.44	.24	
A x IO x S	2	11.38	.05	.95	
A x IO x B	1	905.27	4.26	.04	.02
A x IO x P	1	58.25	.27	.60	
A x P x S	2	356.26	1.68	.19	
IO x B x S	2	241.35	1.14	.32	
A x B x S	2	33.48	.16	.85	
A x B x P	1	138.14	.65	.42	
IO x P x S	2	166.09	.78	.46	
IO x B x P	1	130.02	.61	.44	
B x P x S	2	118.26	.56	.57	

*Not significant in overall MANOVA.

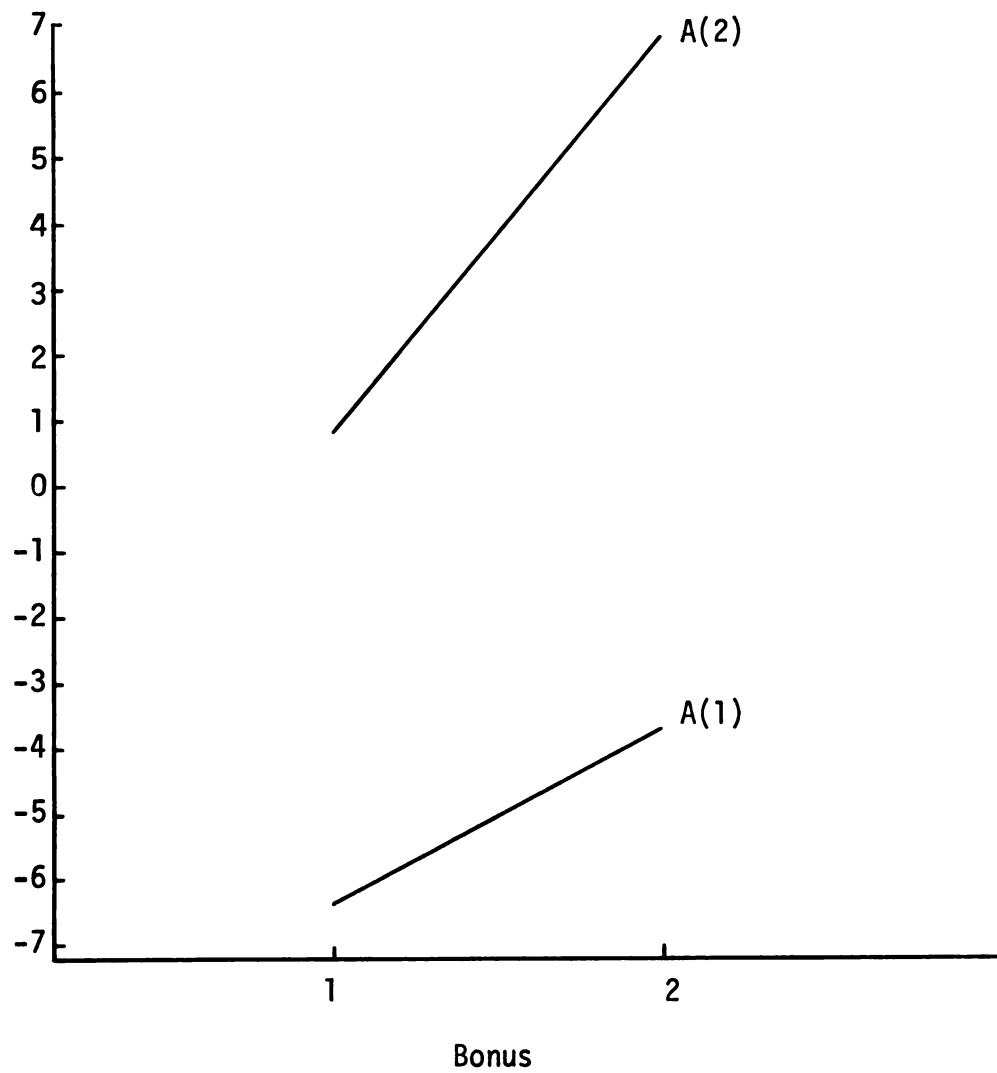
performers over the three hour period. Ability was also highly related to performance. Figure 4.9 shows the Bonus x Ability interaction was significant indicating that higher ability Ss perform better than those of lower ability, regardless of bonus treatment, but bonus receipt results in greater performance divergences for high Ability Ss. High Ability Ss not receiving the bonus showed Performance Deviation levels closest to the mean (.68), indicating the possibility of behavioral resolution of inequity through decreased performance. Figure 4.10 shows a two-way interaction between Ability and Sessions demonstrating a pronounced regression effect for both high and low Ability groups. This phenomenon did not occur for other dependent variables, and therefore was not reflected in the overall results.

The Bonus x Ability x Input Orientation interaction was also significant ($P < .04$). Obviously, the interaction, shown in Figure 4.9, demonstrates a strong Ability effect on Performance Deviation scores, but at the same time two other interesting results obtained. First, it is clear that most types of Ss performed better if they received the bonus. Second, those whose Input Orientation scores were higher were better performers in the bonus condition, particularly if they were also low ability Ss. This may mean that the TI0C not only measures susceptibility to lower reward satisfaction but may also be a measure of self-esteem manifesting itself here as a resistance to lowering performance in the face of contrary communications by superiors.

4.3.5.1 Hypotheses Using Univariate F-Tests

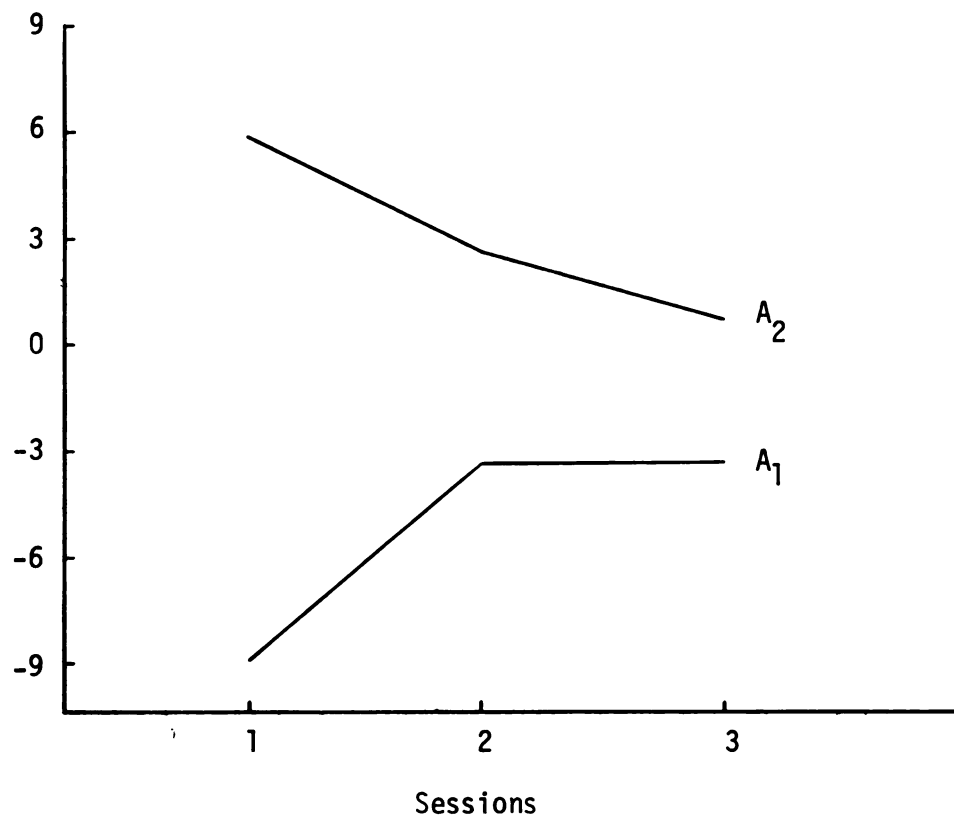
Equity theory proposes that one response to inequity would be a behavioral adaptation restoring congruence between inputs and outcomes.

Figure 4.9. Performance Deviation--Bonus-Ability Interaction



Cell Means: $B_1A_1 = -6.45$ $B_2A_1 = -3.85$
 $B_1A_2 = .68$ $B_2A_2 = 6.60$

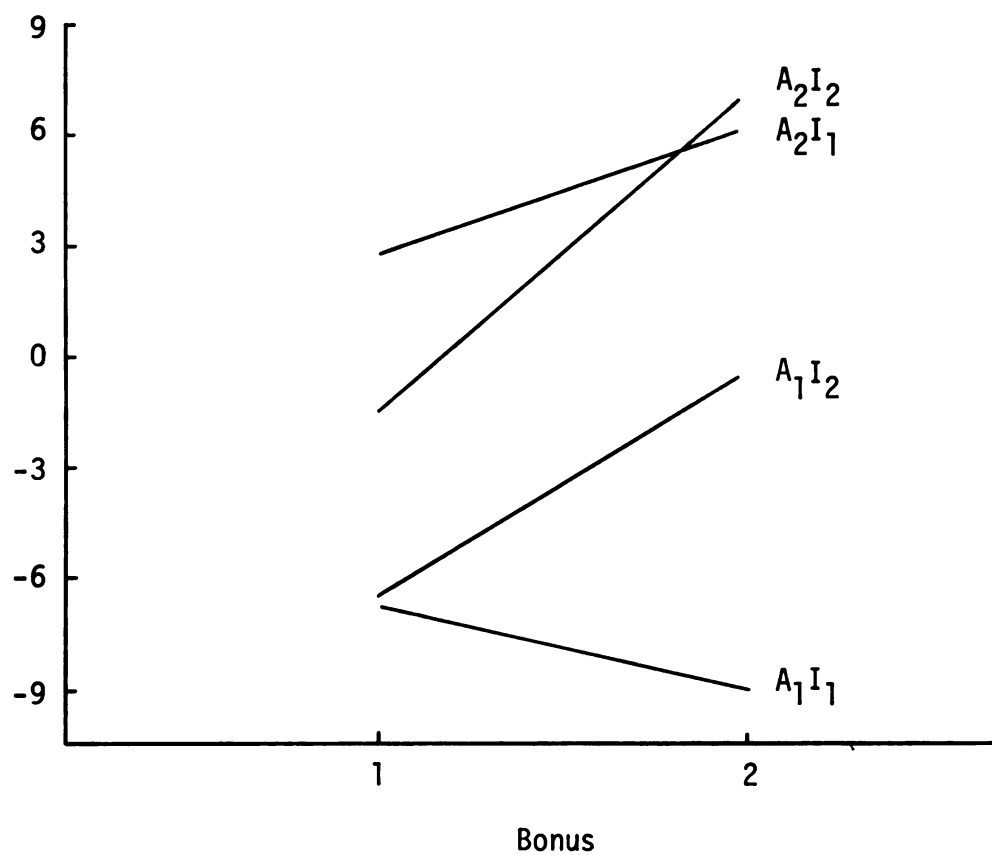
Figure 4.10. Performance Deviation--Ability x Sessions.



Cell Means:

$A_1S_1 = -8.92$	$A_1S_2 = -3.39$	$A_1S_3 = -3.16$
$A_2S_1 = 5.79$	$A_2S_2 = 2.76$	$A_2S_3 = .89$

Figure 4.11. Performance Deviation--Ability x
Input Orientation x Bonus



Cell Means:

$$B_1A_1I_1 = -6.55$$

$$B_2A_1I_1 = -8.86$$

$$B_1A_1I_2 = -6.20$$

$$B_2A_1I_2 = -.94$$

$$B_1A_2I_1 = 2.60$$

$$B_2A_2I_1 = 6.33$$

$$B_1A_2I_2 = -1.64$$

$$B_2A_2I_2 = 7.00$$

Relative changes in performance against a group median could serve as a measure of behavioral adaptation. On the other hand, the Porter and Lawler (1968) version of expectancy theory would predict that bonus recipients would be higher performers since they would see a higher effort-reward probability evolving. This leads to two competing hypotheses relating to behavioral adaptations.

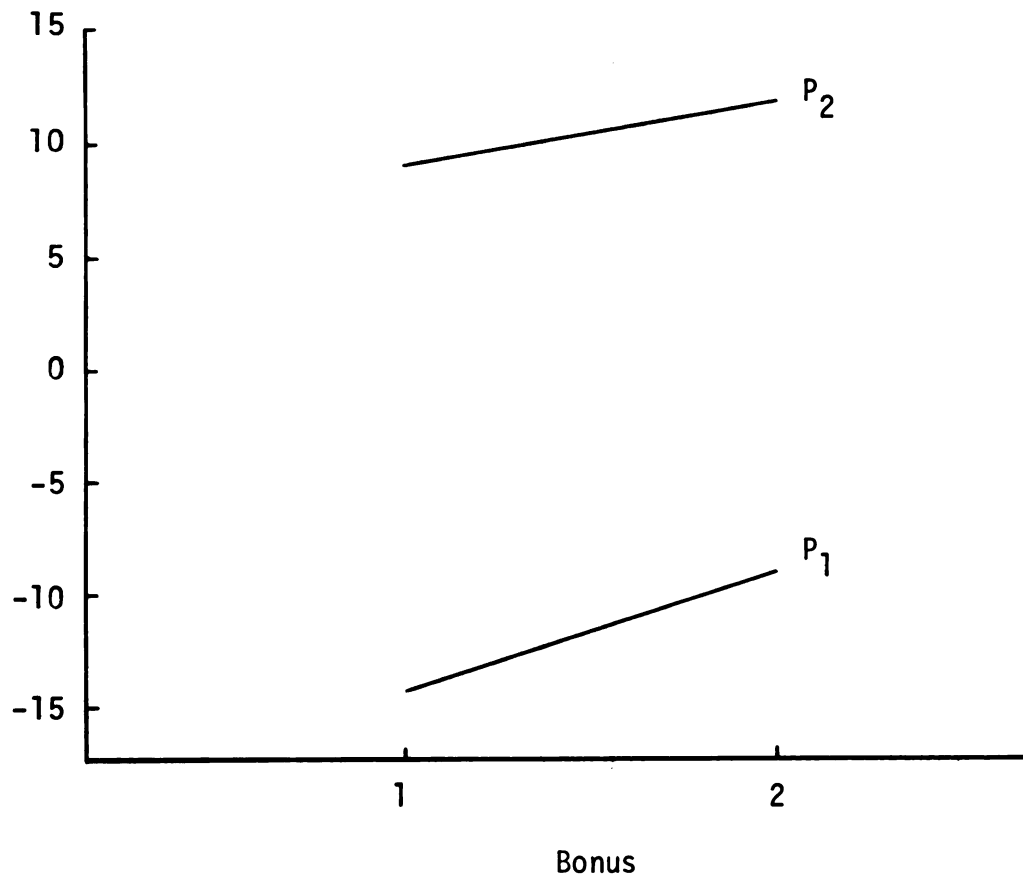
H_{I4}: Bonus recipients will be higher performers across sessions.

H_{I5}: Ss will behaviorally establish equity; i.e., initial high performers not receiving the bonus will decrease production relative to others while low performers receiving the bonus will increase their production relative to others.

H_{I4} is supported since the Bonus main effect was significant and accounted for about 3% of the variance in Performance Deviation supporting an expectancy explanation. H_{I5} assumes that the Bonus x Performance interaction will be significant. The overall MANOVA test for this effect was not and the level of support in the univariate case barely exceeded the .10 level of significance. What little support for an equity interpretation there was, occurred only within Bonus conditions. At no time did performance levels intersect across Bonus treatments in an interaction framework. Graphing Performance Deviations across Bonus conditions in Figure 4.12, the slopes of both lines rose, only the rise was somewhat greater in the case of low performers. Thus, an expectancy explanation appears to better explain Ss' behavioral responses.

Aptitudes or abilities logically seen as most highly related to the job could be predictive of performance. For this task perceptual

Figure 4.12. Performance Deviation--Bonus x Performance.



Cell Means:

$$B_1P_1 = -13.83$$

$$B_2P_1 = -9.09$$

$$B_1P_2 = 8.31$$

$$B_2P_2 = 10.97$$

speed and accuracy would be logically related. Assumed ability relationships lead to the following hypothesis.

H_{11} : Ability levels will be related to Performance Deviations.

This hypothesis was strongly supported ($P < .001$) with Ability level accounting for 9% of the variance in Performance Deviation.

Finally, it is hypothesized that cognitive adaptations, in the form of lowered satisfaction for high input (Ability and Input Orientation) Ss will take place while behavioral adaptations will not.

H_{T2} : Input Orientation and Ability level (will become negatively related to satisfaction, but) will not change their relationships to Performance Deviation.

This hypothesis is stated in a "null" framework for aspects relating to Performance Deviation. Thus, the likelihood of its acceptance is quite high if a .10 significance level is used. Given the overall MANOVA, neither the Ability x Sessions, nor Input Orientation x Sessions interaction was significant. In the univariate F table, Ability x Sessions was significant past .10, but the pattern of interactions does not support the hypothesis. Figure 4.10 showed a pattern of Performance Deviations by Ability level over Sessions which could best be described as an example of statistical regression. To meet the hypothesized relationship, if high Ability were likely to relate to reductions in relative performance, the high Ability level line on the graph would have to slope downward while the low Ability level line would be horizontal across Sessions.

4.3.5.2 Performance Deviation Summary

The data show that Performance and Ability account for 45% of the variance in Performance Deviation. There was no significant behavioral adaptation to inequity from an initial Performance level standpoint while expectancy explanations were supported by the significant Bonus effect. However, some evidence for an underpay effect was found in that the divergence in performance between bonus conditions with ability levels was greater for the high Ability group. An alternative explanation would hold that an overpay effect failed to occur. Overall, equity theory cannot receive more than tenuous, within Ability level, support.

4.3.6 Hypotheses Results from Non-Design Dependent Variables

At the end of each hour, Ss were asked to estimate their performance for the preceding hour. These measures can reflect the degree to which individuals perceived themselves as possessing appropriate inputs. One might assume that actual input possession (Ability) would be related to input perceptions. One might also expect that experimenter communications of performance (Bonus treatment) would affect the degree to which one sees his inputs as appropriate.

H_{12} : Bonus treatment will be more strongly related than ability measures to input perceptions (and Perceptions of Competence).

Two measures will be examined here as dependent variables: Overall Performance Perceptions (OVP) and Expectancies of Bonus Receipt (EXP). Prior to the manipulation, Table 4.14 shows Ability scores were significantly related to OVP, but not to EXP (although the differences

Table 4.14. Correlations for MCT, Overall Performance Perceptions, Bonus Receipt Expectancies, and Bonus Receipt for Total Group and Six Subgroups.

Measure	Group						
	Total	HP	LP	NB	B	IN	AP
OVP ₁ MCT	.26**	.15	.16	.28*	.21	.02	.43***
EXP ₁ MCT	.17	-.09	.13	.24	.07	-.05	.35**
OVP ₁ B	.11	.22	-.02	---	---	-.27	.44***
EXP ₁ B	.09	.17	.01	---	---	-.34**	.50***
OVP ₂ MCT	.09	-.04	.11	.08	.09	-.04	.25
EXP ₂ MCT	.11	-.03	.16	.15	-.01	-.04	.25
OVP ₂ B	.06	.16	-.04	---	---	.08	.25
EXP ₂ B	.31***	.34**	.29*	---	---	.17	.46***
OVP ₃ MCT	.06	.05	.01	.07	-.04	.01	.11
EXP ₃ MCT	.12	.18	-.03	.04	.05	.06	.19
OVP ₃ B	.30***	.33**	.27	---	---	.21	.39**
EXP ₃ B	.50***	.59***	.39**	---	---	.41**	.59***

*p < .10

**p < .05

***p < .01

was not significant). Following the manipulation, Ability scores were unrelated to either OVP or EXP for subsequent periods (although the differences in correlations across periods were not significant). Before the first hour bonuses were announced, bonus treatment was unrelated to OVP or EXP. However, following the manipulation, evidence indicates that bonus receipt became consistently more strongly related, especially for EXP. If OVP are a measure of inputs, this change shows the high susceptibility of Ss in reacting to outside evaluations of their inputs.

H₁₃: Persons who are high performers or who are high on Input Orientation of Ability will have higher input perceptions (and Perceptions of Competence).

The assumption here is that Ss know their relative output levels and are aware of their relevant abilities and degree of Input Orientation. It follows that individuals who obtain higher output levels or possess higher input levels will be more resistant to input devaluation. This should be reflected in higher correlations between input perception measures and perceived and actual inputs.

The results indicate that neither Ability nor Input Orientation was related to either OVP or EXP (with the exception of the first hour MCT-OVP correlations, .26, $P < .05$). Correlations in Table 4.15 show higher performers had higher input perceptions (four of six correlations significant), but there was no increasing trend over time.

4.4 Summary of Hypotheses Results

Table 4.16 gives the hypotheses by number, the relevant independent and dependent variables, the hypothesized relationships,

Table 4.15. Correlations Between MCT, TIOC, Performance Deviations and Overall Performance Perceptions (OVP) and Bonus Receipt Expectancies (EXP) Across All Sessions for Total Sample.

Input Perception	Measure				
	MCT	TIOC	PD ₁	PD ₂	PD ₃
OVP ₁	.26**	.15	.42***	---	---
OVP ₂	.09	.18	---	.14	---
OVP ₃	.06	.16	---	---	.23**
EXP ₁	.17	.14	.39***	---	---
EXP ₂	.11	.16	---	.19	---
EXP ₃	.12	.04	---	---	.31***

**p < .05

***p < .01

Table 4.16. Hypotheses Results Summary.¹

Hypothesis	Independent Variable	Hypothesized Relationship	Dependent Variable	Results and Support
H _{I1}	A	↑ ↑	PD	$P < .001, \eta^2 = .09.$
H _{I2}	B,A	B > A↑	PC	$P_B < .001,$ $\eta_B^2 = .15;$ $P_A < .65.$
		B > A→	OVP	$r_{OVP_3B} = .30,$ $P < .01; r_{OVP_3B}$ $- r_{OVP_3MCT}$ NS
		B > A→	EXP	$r_{EXP_3B} = .50,$ $P < .01; r_{EXP_3B}$ $- r_{EXP_3MCT}$ $P < .01$
H _{I3}	IO	↑ ↑	PC	NS
		↑ ↑	OVP	NS
		↑ ↑	EXP	NS
	A	↑ ↑	PC	NS
		↑ ↑	OVP	$r = .26, P < .05$

Table 4.16. (Continued)

Hypothesis	Independent Variable	Hypothesized Relationship	Dependent Variable	Results and Support
	P	$\uparrow \uparrow$	PC	NS
		$\uparrow \uparrow$	OVP	$r = .42, P < .01$
		$\uparrow \uparrow$	EXP	$r = .39, P < .01$
H_{I4}	B	$\uparrow \uparrow$	PD	$P < .012, \eta^2 = .03$
H_{I5}	B,P	$L_B \neq L_{P\uparrow}$	PD	NS
		$L_B = L_{P\uparrow}$	PD	NS
H_{O1}	B	$\uparrow \uparrow$	TS	$P < .052, \eta^2 = .02$
H_{O2}	B,P	$B_L P_H > B_H P_H =$ $B_L P_L > B_H P_L$	TS	NS
H_{E1}	EXP	0	PS	NS (supports expectancy, but not equity within subgroups)
H_{E2}	B,P	$L_B \neq L_{P\uparrow}$ $L_B = L_{P\uparrow}$	PS	NS
H_{E4}	IO	$\uparrow \downarrow$	PS	NS
H_{E5}	B	$\uparrow \uparrow$	PS	$P < .001, \eta^2 = .28$

Table 4.16. (Continued)

Hypothesis	Independent Variable	Hypothesized Relationship	Dependent Variable	Results and Support
H_{T1}	PS_1	$\uparrow \uparrow$	PD_2	$r = .26, P < .05$
	TS_1	$\uparrow \uparrow$	PD_2	NS
	CWS_1	$\uparrow \uparrow$	PD_2	NS
H_{T2}	IO,S	$IO_H S_{1,2,3}^{++}$	PS,TS	NS,NS
		$IO_L S_{1,2,3}^0$	PS,TS	NS,NS
		$IO \times S^0$	PD	NS (Supported)
	A,S	$A_H S_{1,2,3}^{++}$	PS,TS	NS,NS
		$A_L S_{1,2,3}^0$	PS,TS	NS,NS
		$A \times S^0$	PD	NS (Supported)

¹Subscript L = lower factor level, subscript H = higher factor level; capital L = factor level for that main effect, e.g., $L_B = L_P$ means B_1P_1 and B_2P_2 .

and the type and level of support for each independent-dependent variable combination.

Expectancy theory hypotheses are supported in every instance. Bonus treatment was significantly related to satisfaction with all types of outcomes, stimulated performance, and was indirectly related through the Pay Satisfaction-Performance Deviation relationship. Equity hypotheses were not supported where behavioral combinations or behavioral changes were anticipated. There was some support for equity theory interpretations (within bonus conditions) where Ability served as the input measure. Hypotheses results relating to input perceptions and the influence of salary treatment on them generally support the contention that input perceptions may be susceptible to external control.

4.5 Socialization Differences

Recently, it has been suggested that urban-rural differences in worker socialization might relate to differences in work values and levels of worker satisfaction, given the degree of task specialization in jobs (Hulin and Blood, 1968; Turner and Lawrence, 1965). Hulin and Blood suggested that rural workers would be more likely to hold values typical of the Protestant work ethic and should be more receptive to job enlargement requiring a greater exercise of responsibility, while urban workers would view their jobs as instrumental for the attainment of rewarding off-the-job outcomes. Shepard (1970), on the other hand, claimed that both urban and rural workers demonstrated increased satisfaction as job complexity and variety increased. In a test of the urban-rural socialization hypothesis, Schuler (1973) found that workers

whose areas of socialization were opposite of their present work environment (i.e., urban socialization, rural work environment; rural socialization, urban work environment) were more satisfied than workers whose socialization environment matched their work environment.

Many job enlargement studies and reviews have been concerned with the degree to which increased satisfaction is related to decreased specialization. Most of the cited studies have been concerned with the role of individual differences as moderators of the enlargement-satisfaction relationship. Conversely, this study holds task complexity constant and hired Ss from distinctly different socialization areas. The question then is whether or not urban or rural socialization is related to productivity, satisfaction, or resistance to dissatisfaction in the highly repetitive task involved in this study. Given the Hulin and Blood (1968) conclusions, rural workers might be expected to be more productive and/or satisfied when faced with repetitive work which management indicates is important. This would be due to the belief that monotonous, unchallenging work is necessary to meet the goals of the organization; a norm that might be more strongly held by rural workers if they have been socialized in the Protestant ethic. The question, then, is whether or not differences in satisfaction and productivity will be found in a situation where employees of both rural and urban socializations perform the same task.

Of the seventy-six Ss in the study, thirty-seven were hired at Michigan State University (MSU), and thirty-nine were hired at the University of Wyoming (UW). Two MSU Ss were dropped from this phase of the analysis since they were foreign nationals and urban-rural

socialization would have been a meaningless classification for them. The remaining Ss were then assigned to urban-rural groups on the basis of whether or not their home addresses were within or outside Standard Metropolitan Statistical Areas (SMSA). Four UW Ss were found to live within SMSA's while two MSU Ss were classified as having a rural socialization. Urban-rural differences were analyzed prior to logical assignment of satisfaction items to scales, so eight scales and performance were compared across groups for each of the three hours.

Table 4.17 compares the means for productivity and satisfaction measures by hour for both groups. Performance was not significantly different between groups. Comparing satisfaction scores, during the first hour, two of the pay scales demonstrated significantly higher rural satisfaction while urban workers were more satisfied with co-workers. In the second hour, only the campus pay comparison was significantly higher for the rural group. But, by the third hour, three of the four pay scales were significantly higher for the rural group as well as satisfaction with the task. Of twenty-four possible comparisons over the three hours, twenty-one were in favor of the rural group, eight significant past the .05 level. Further, when the groups were examined separately over the three-hour period, endorsement of all eight scales was lower in the third hour for the urban group and on five of eight scales for the rural group. When ω^2 is calculated, variance accounted for by socialization differences never exceeded .09, and ranged between .04 and .09 for the eight significant differences.

While the differences and variances accounted for are small, the trends in the pay and task satisfaction data support an interpretation

Table 4.17. Differences Between Socialization Groups by Hour.^a

Variable	Rural		Urban		t	ω^2
	$\bar{X}$	SD	$\bar{X}$	SD		
MCT (Names section)	134.30	23.82	130.41	22.05	.73	
First Hour						
Performance	97.24	20.91	95.60	15.30	.39	
Me at this task	4.83	.85	4.67	.92	.78	
My pay	5.20	.93	4.66	1.10	2.28*	.05
Other pay comparison	4.84	1.19	4.73	1.01	.43	
Campus pay comparison	4.70	.75	4.13	1.21	2.44*	.06
My co-workers	4.66	.61	5.02	.83	-2.07*	.04
The task	3.60	.90	3.27	1.25	1.30	
Effort pay comparison	5.06	1.26	4.50	1.30	1.88	
Task satisfaction	4.14	.95	3.87	1.03	1.17	
Second Hour						
Performance	109.78	17.42	109.68	17.32	.02	
Me at this task	4.42	1.06	4.14	1.08	1.27	
My pay	4.92	1.39	4.46	1.14	1.69	
Other pay comparison	4.88	1.20	4.47	1.17	1.64	
Campus pay comparison	4.69	.89	3.98	1.25	2.66*	.08
My co-workers	4.76	.66	4.84	1.17	-.44	
The task	3.49	.93	3.14	1.23	1.77	
Effort pay comparison	4.69	1.55	4.26	1.51	1.20	
Task satisfaction	3.89	.97	3.72	1.25	.72	

Table 4.17. (Continued)

Variable	Rural		Urban		t	ω^2
	$\bar{X}$	SD	$\bar{X}$	SD		
Third Hour						
Performance	113.65	19.49	111.92	19.26	.38	
Me at this task	4.16	1.14	3.74	1.34	1.45	
My pay	5.06	1.47	4.29	1.51	2.22*	.05
Other pay comparison	4.91	1.25	4.38	1.50	1.65	
Campus pay comparison	4.78	.85	4.05	1.26	2.92**	.09
My co-workers	4.81	.67	4.89	1.29	-.33	
The task	3.36	1.00	2.77	1.26	2.23*	.05
Effort pay comparison	4.87	1.45	4.14	1.63	2.03*	.04
Task satisfaction	3.88	1.23	3.58	1.31	1.02	

^aSatisfaction scale values are means over all items for that scale.

that workers with a rural socialization are more likely to resist dissatisfaction with routine work. (See Fossum, 1974 for an expanded treatment of this subject.)

4.6 Brief Conclusions

While greater attention to conclusions found from the data will be presented in Chapter 5, a summation of the major findings is appropriate here.

The strength of the bonus effect for most of the dependent variables indicates its importance in the determination of satisfaction. This finding supports an expectancy interpretation of individual motivation in this experiment since Ss were told that above average performance would increase their salaries. Further, since the experimenter communicated "performance accomplishment" to Ss and rewarded them, satisfaction with accomplishment through the rewards may be inferred. This supports Graen's (1969) conclusion that employers determine and communicate instrumentalities to employees.

In terms of equity theory, this finding would indicate that maximum gain is more satisfying to Ss than equity, at least where the inference is made that Person is paid according to his level of performance. But even where inequity is not raised or referred to by E, the interaction effects show that Ss are more satisfied when there is congruence between Bonus, Performance, and Ability in varying combinations. Balance or equity appears to be a valent outcome of general but moderate of low preference.

1

CHAPTER 5

DISCUSSION AND CONCLUSIONS

5.1 Introduction

This chapter will discuss method differences in this study, the relative strength of equity and expectancy explanations as they relate to satisfaction found here, the role of individual differences for performance and satisfaction, and implications for theory and practice. First, it is necessary to discuss some problems with equity theory and research and the theory's assumption that the motivation to achieve fairness is a central characteristic in human behavior.

Equity theory experiments, their results, and the interpretation of those results have been frequently criticized. Perhaps the earliest criticisms were related to the fact that inequity was induced by an experimenter through an attack on Person's inputs. This induction led critics to propose an alternative explanation for Person's behavior: namely, that Person's self-esteem had been lowered rather than his inputs. A second criticism refers to two problems in equity theory experiments: (1) methods for resolving inequity were not clearly specified or examined; and, (2) the task performed by Person could not be measured without confounding quality and quantity results.

A less commonly voiced criticism (Lawler, 1968b) relates to the idea that most equity theory predictions can be subsumed under an

expectancy theory framework and that more specification of the exact instrumentalities in inequity reduction is necessary. Under this framework, equity is one of a number of outcomes that may be positively valent at any one time. If Person sees equity or another valent outcome as unattainable in a work situation, and if inequity has a directly opposite valence as equity, it is expected that Person will take action leading to the attainment of equity only if the expectancy-valence product for this action is higher than the expectancy-valence product for other outcomes.¹

Even if equity were to be chosen more often than other outcomes, expectancy theory would still explain Person's behavior as long as some external Other had dictated or suggested the behavior which was to be instrumental for inequity reduction and Person adopted that behavior for the attainment of equity. If, on the other hand,

¹Consider, for example, the following situation. Person is involved in a task which he believes will yield five utiles of pay satisfaction with a subjective expected probability of .5. Person also perceives that the task may yield only three utiles of pay satisfaction with a probability of .5. Simultaneously the task may yield equity or inequity with valences of plus and minus two utiles, respectively, both with probabilities of .5. Person also perceives that the outcomes are concurrent and that some combination of equity-inequity and high-low pay satisfaction must occur as the result of his actions toward task accomplishment.

Given the fact that there are four possible outcomes, each with a joint probability of .25, the expected value of participating is 2.0 and it is expected that Person will engage in the task if no other expected participation value exceeds 2.0. If he receives high pay and the pay is perceived as being equitable, Person will derive the greatest utility from this outcome. If Person can only choose pay or equity conditions, and leaves the other uncertain, he would choose equity since it has a higher expected value (3.0) than high pay (2.5).

restoration occurs without external intervention, or in the face of conflicting instructions, then it would be presumed that equity motives are a stronger explanation of behavior than the subjective weighing of many motives suggested by expectancy theory.

Adams' (1965) theory of inequity assumes that Person cognitively values both his inputs and his outcomes. Thus Person, rather than the organization, determines the relevance of inputs and the appropriateness of outcomes. However, little has been done to determine the degree to which Person feels his inputs are likely to be high or low given the task. And, in terms of outcomes, with the exception of the study by Pritchard, et al. (1972), there has been little accomplished in the area of determining satisfaction with outcomes. A cognitive theory has been essentially tested through the analysis of behavioral results. About the only other areas dealt with have been questions of alternative outcome measures such as task enhancement (Weick, 1964), and task importance perceptions (Lawler and O'Gara, 1967).

The following section will show how this experiment dealt with some of the critical problems related to equity theory research and how changes in behavior, cognitions, and equity preference were measured.

5.2 Method Differences in This Study

This study has been concerned with the degree to which magnitude of pay and appropriateness of pay given initial performances have affected satisfaction with pay, task, and co-worker, and subsequent relative performance. The equity model assumes that inequity results

from the effects of social comparison, and most studies have created a "straw man" as a social comparison through an attack induction or induced inequity through an organizational dictum (Pritchard, et al., 1972). In this study Person works alongside Other and has an opportunity to compare her input/outcome ratio with Other's from a gross subjective standpoint. She knows about how much coding she turned out and could converse with co-workers about productivity during the break periods. Thus Person may perceive that she is in an equitable or inequitable situation on the basis of her comparison. Two important study differences in comparison with other equity researches occur here. The first is that interpersonal comparisons can be made, and Person is the one who determines whether or not the comparison is equitable based on her previous performance before E has made the experimental manipulation rather than relying on E's communication, since Person has already applied her inputs without suggestion from E during the first hour. Secondly, Person chooses whether or not the more important comparison is against her perceptions of Other's relative pay-performance treatment or her treatment in comparison with her own internal equity norm. A major design difference also exists between this study and others in that in almost all other studies the experimental induction preceded the first work session so there was no base rate of performance for any Person. It is difficult to determine what, if any, effect the induction had on individual performance. In this study, the induction occurs after the first performance session. Ss then have an opportunity to reflect on outcomes given their cognitions of inputs and E's communication of his value of their inputs. In this situation, unrewarded high

performers should have dissonance as a result of E's incongruent communication of results while rewarded low performers should have a shorter-lived dissonance related to E's upward valuation of their talents if the maximum gain hypothesis holds. Finally, the possibility of alternative goals for Person also exists in this study such as the chance to participate in interesting and/or important work, to work with similar others, etc.

No equity manipulation was given prior to commencing work. Ss were told that high performance would be instrumental for bonus attainment. Since Ss were working for three hours only, knowing that no further employment would result (regardless of performance) the primary valent outcome related to job behavior, a priori, was probably pay. Job security is not an alternative explanation for any effects observed since all Ss were guaranteed three hours' work, no more and no less.

Ss' qualifications were not attacked. Prior to the first manipulation, Ss had worked one session. At the time the first bonus was announced, Ss could see E's bonus communication as his measure of their relative performance. However, no explicit qualifications' attack was made.

This study's strong pay expectancy design means that any inequity effects observed probably mean that a motive for fairness is a general and pervasive desired outcome.

5.3 Individual Difference Variables and Base Line Performance

A variety of measures and conditions in this experiment help to contribute to a greater understanding of the determinants of perceived

inequity, performance, and satisfaction. Few studies have examined the effects of relevant ability measures on perceived inputs or performance. Equity theory assumes that one places a perceptual value on what he sees as relevant, but little emphasis on measuring inputs has been done. Exceptions to the general rule might be Lawler, et al.'s (1968) use of need for money and Tornow's (1971) measure of relative input orientation in the case of Pritchard, et al.'s (1972) Ss.

One other criticism of equity studies that is not frequently raised is that the behavioral alterations often seen should be measured as relative changes from a group average or median. Equity theory assumes a comparison process, and to measure behavioral change in response to perceived inequity, performance must be measured during a base period prior to any manipulation to see what Person's response will be to pay treatment. This study deals with the base period problem by not introducing the pay manipulation until after the first performance session. The experimental Ss may then attempt to behaviorally alter outcomes and relative measures of performance changes can be examined.

This study also obtained two individual difference measures likely to be related to performance and satisfaction with equity prior to any manipulation. Since the task the Ss performed involved coding, it was logical to use a test likely to measure perceptual speed and accuracy. When applicants reported for their interview, they took the Minnesota Clerical Test (MCT). Validation data disclosed that MCT scores were related to relative performance measures ($r = .42$, $P < .01$). With this ability measure and its relationship to performance, one could assess the degree to which performance-ability relationships were

maintained over time. Further, changes in relationships between ability (which was the most relevant input) and perceptions of competence and overall performance perceptions could be assessed over time.

Inclusion of the input orientation measure (TIOC) was aimed at attempting to find a relationship between this individual difference and satisfaction with outcomes. To this point, no studies had been done relating TIOC scores to performance measures. This study not only is concerned with input orientation and equity (or susceptibility to feelings of over- or under-reward) but input orientation and perceptions of competence and/or performance measures.

From the standpoint of the task and the compensation structure, this experiment differs to some extent from others. The coding task done in the experiment does not specifically control for quality, but the relative simplicity and unambiguity of measurement (correct units) makes overzealousness unlikely to be seen as improving performance. In fact, quality and quantity were unrelated in the experiment. The short cycle time necessary to complete a unit allowed Ss to turn out a substantial number during a session so that one would be unlikely to be penalized for partially completed work. Also, Ss could learn the task rapidly because of its simple, repetitive nature.

The pay expectancy induction changed the atmosphere from that usually found in an equity experiment. Since Ss presumed that pay and performance were linked, those who felt overpaid should have been easily able to reduce performance to avoid a bonus. On the other hand, underpaid Ss might not have been able to increase productivity from a relative standpoint if Ss viewed pay as more valent than equity or did not

perceive inequity. The possible competitive nature of the situation might have interfered with attempts to behaviorally restore equity. An alternative explanation may be that equity is less desirable than the chance to compete for gains.

5.4 Major Hypotheses and Findings

This section will discuss major findings related to inputs, outcomes, satisfaction, effects over time, and cognitive vs. behavioral explanations accounting for changes. Before proceeding, the expectancy-equity implications of the study should be restressed.

Since Ss who applied for and were hired believed that bonuses would result from above average performance, the instrumentality of performance for pay was clearly defined. Equity motives were assumed to be universal and Ss who believed their inputs differed from relative outcomes would be presumed to attempt a restoration of equity. If the pay motive were stronger for Person, one would assume relatively little behavioral and/or cognitive change since Person would be working at the peak of her capacity. It was assumed that for Ss not receiving the bonus, satisfaction would be lower, regardless of equitability, if pay were the more important outcome.

5.4.1 Inputs

Adams' (1965) theory of inequity assumes that individuals expect outcomes to be appropriate given inputs (the factors which the individual perceives as relevant for task accomplishment). Since the sum total of inputs is a perceptual variable, in an organizational setting input perceptions might not be equally valued by the unit providing

organizational outcomes. Analogously, the input-outcome relationship may be seen as the effort x abilities and traits x role perceptions $\rightarrow$ performance $\rightarrow$ rewards subsystem of Porter and Lawler's (1968) expectancy model. The essential feature of this latter theory in relation to the individual's perceptions in an organizational environment is that the organization determines the magnitude of extrinsic outcomes given its perception of the individual's use of inputs. Thus, the equitability of a perceived input-outcome relationship depends on the congruency of the organizational and individual perceptions of relevant inputs and the value of outcomes associated with input application.

From an organizational standpoint, this study assumed that clerical ability (as measured by the MCT) would be the single most relevant input. This proved to be the case since first hour MCT-Performance Deviation was correlated at .42 ($P < .01$). From an individual's standpoint, it was assumed that Overall Performance Perceptions would constitute a measure of Person's perception of the relevance of her inputs for the attainment of extrinsic outcomes. The correlation between these perceptions and performance is also .42 ($P < .01$) for the first hour. The data here indicate that clerical ability continued to significantly predict performance over all three sessions, even after the manipulations. Ss could also reasonably relate perceptions of performance to actual performance with two of three correlations between them being significant.

Two explanations can be offered for the declining MCT-Performance Deviation relationships: (1) statistical regression, or (2) behavioral change to restore equity or to achieve pay outcomes.

The latter is preferred because of the explicit pay manipulation and the magnitude of the decline (.42, first hour; .20, third hour; $z = 2.09$, $P < .05$, two-tailed).

The evidence generally points to the fact that over the experiment, perceptions of inputs became more strongly related to bonus receipt than actual performance. This would appear to indicate that Person often either does not know relevant inputs and the degree to which he possesses them and/or that a communication from one authorized to confer outcomes will alter one's perception of the degree and relevance of inputs.

To examine individuals' actual performance in the face of congruent or incongruent performance communications and their perceptual input valuation response, changes in Performance Deviation and Perceptions of Competence measures will be examined. Following this the effects of Ability and Input Orientation on satisfaction will be shown. The behavioral aspects will be examined first.

Input hypotheses four and five suggested that: (4) Person would behave in a manner to achieve rewards, or (5) in a manner to behaviorally achieve equity. Evidence to support the equity hypothesis would be found in the Performance Deviation ANOVA for the Bonus x Performance interaction. A marginal effect was found for overpay inequity reduction through increased performance, but no overall MANOVA interaction was disclosed. No Bonus x Performance intersections occur to support equity over expectancy theory. To examine interaction effects separately over time, and without the effects of confounding, mean Performance Deviation scores by session are graphed for all three-way

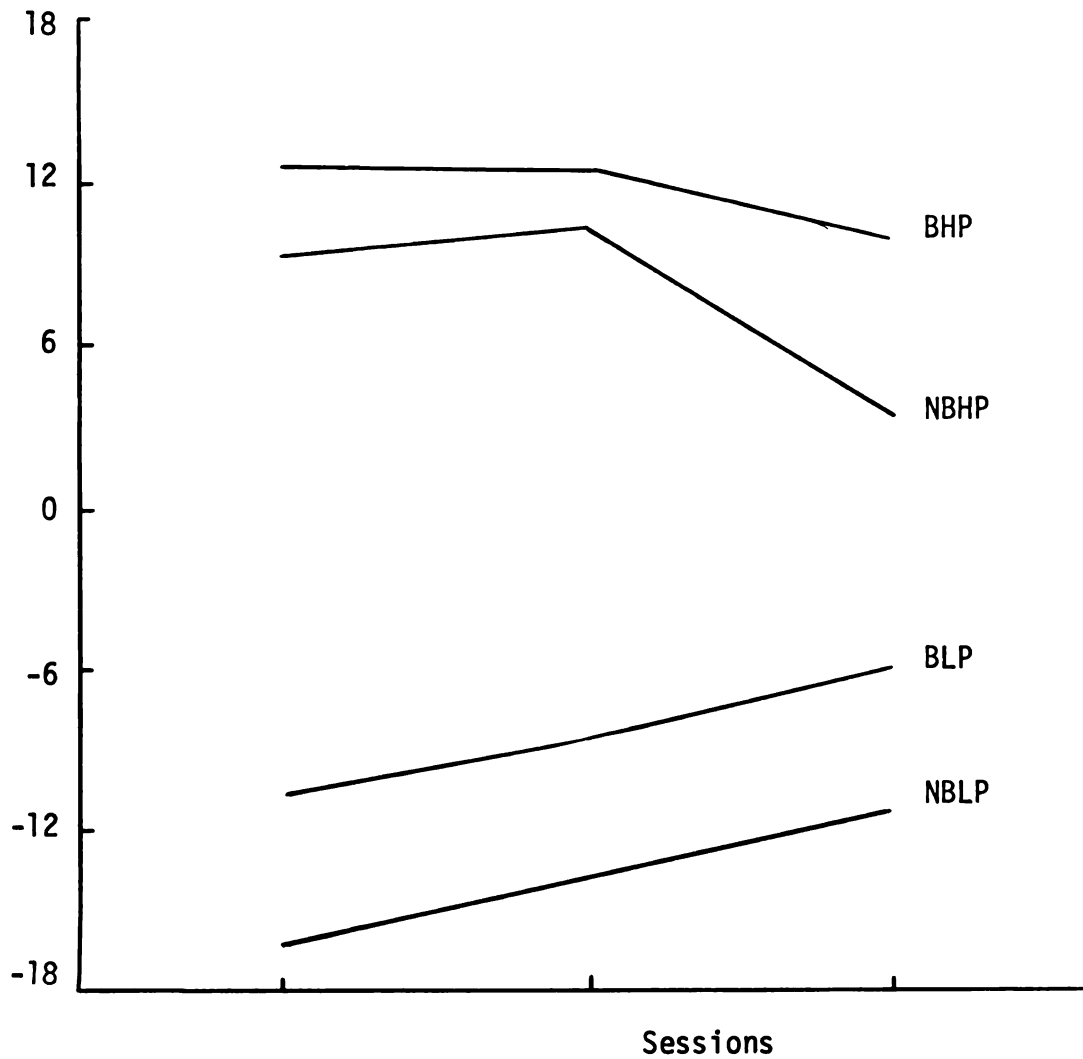
interactions which included Sessions as a factor. These figures help to clarify the direction of behavior given actual initial input level, individual differences, and pay outcomes.

Figure 5.1 shows Performance Deviation scores over the three sessions for Ss in the following groups: Bonus-High Performance, No Bonus-High Performance, Bonus-Low Performance, and No Bonus-Low Performance. Over the three hours there are no significant differences within performance groups. In other words, overpaid Ss were neither able to significantly reduce output to avoid bonuses nor were they able to increase relative performance to "earn" bonuses. Relative performance of Bonus-High Performance Ss was significantly greater than both Low Performance groups over all three hours, while No Bonus-High Performance group's performance was significantly higher for the first two hours. All groups demonstrated statistical regression effects, but the only group for which the pattern was not consistent was the No Bonus-High Performance group for the second hour. The results indicate that pay was the most valent outcome and Bonus-Low Performance Ss would not be expected to alter behavior which has been "instrumental" for rewards while No Bonus-High Performance Ss would.

Delving into the Performance Deviation three-way interactions to a greater extent, Figures 5.2 through 5.6 portray the two-way effects of Bonus, Performance, Ability, and Input Orientation on Performance Deviation scores over sessions.

The Bonus-Ability interaction is shown in Figure 5.2. The only significant differences here are for Bonus-High Ability against both Low-Ability groups for the first hour and No Bonus-High Ability vs.

Figure 5.1. Bonus-Performance Interaction.

Groups123

Bonus-High Perf.

12.70

10.35

9.85

Bonus-Low Perf.

-10.68

-8.68

-6.00

No Bonus-High Perf.

9.24

12.35

3.41

No Bonus-Low Perf.

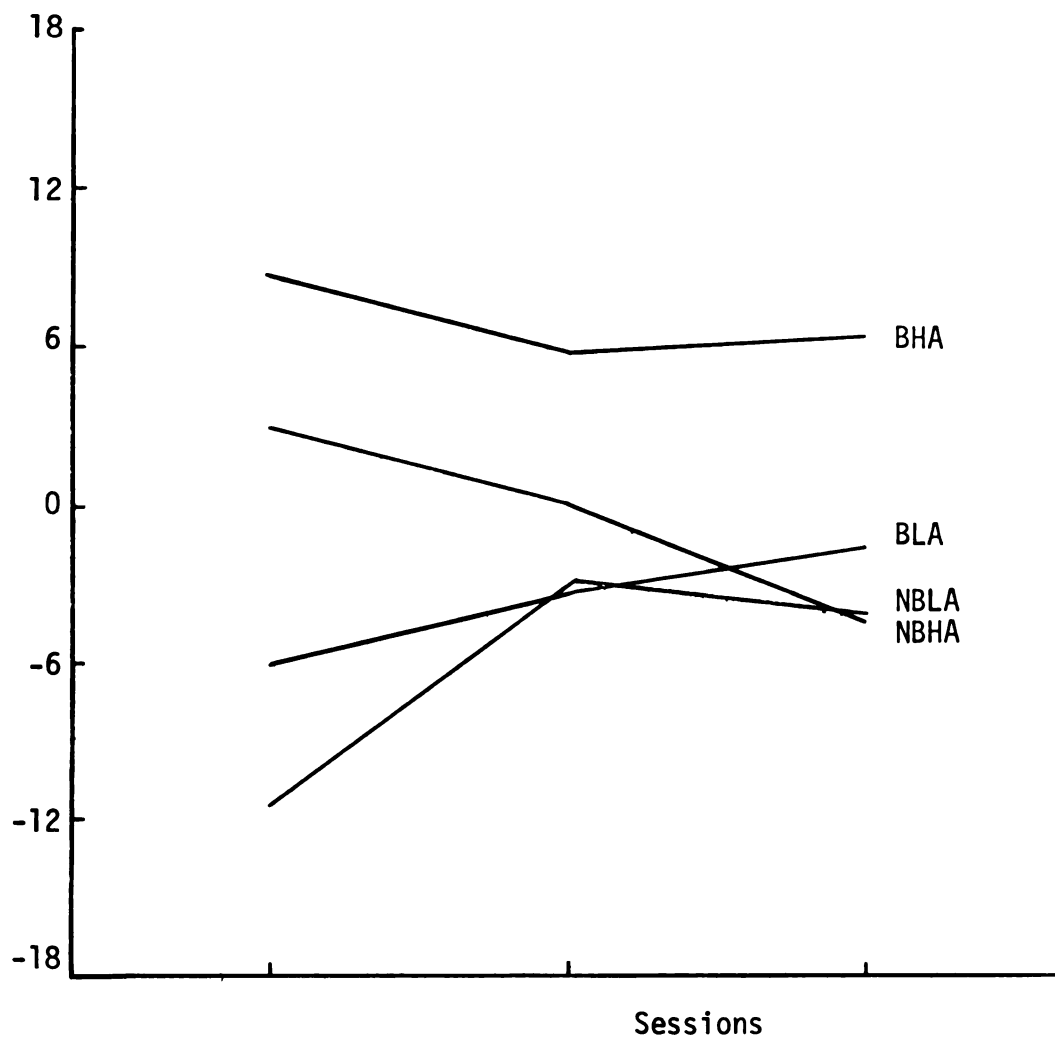
-16.35

-13.80

-11.35

1

Figure 5.2. Bonus-Ability Interaction.

Groups123

Bonus-High Ability

8.50

5.45

5.85

Bonus-Low Ability

-6.26

-3.53

-1.79

No Bonus-High Ability

2.78

-.22

-4.61

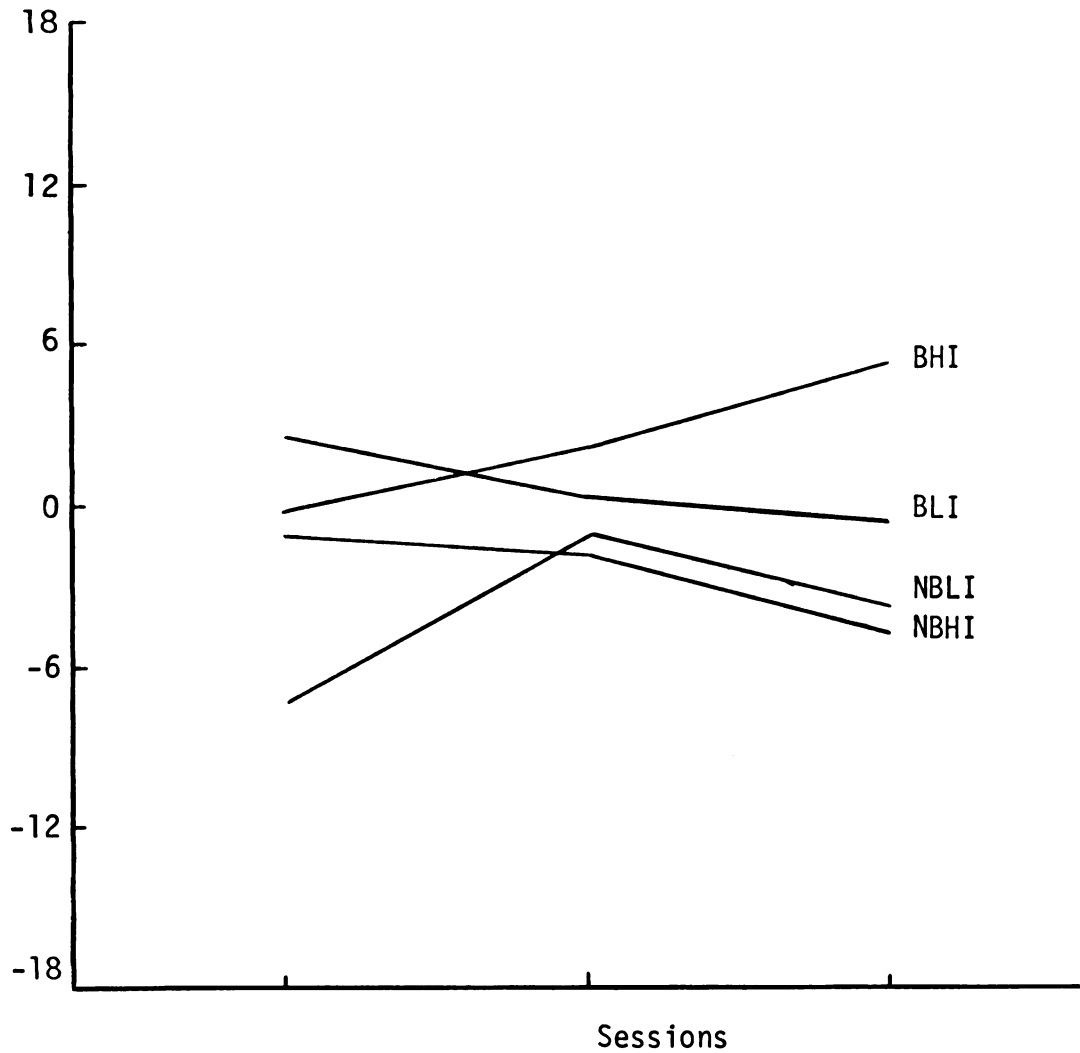
No Bonus-Low Ability

-11.58

-3.26

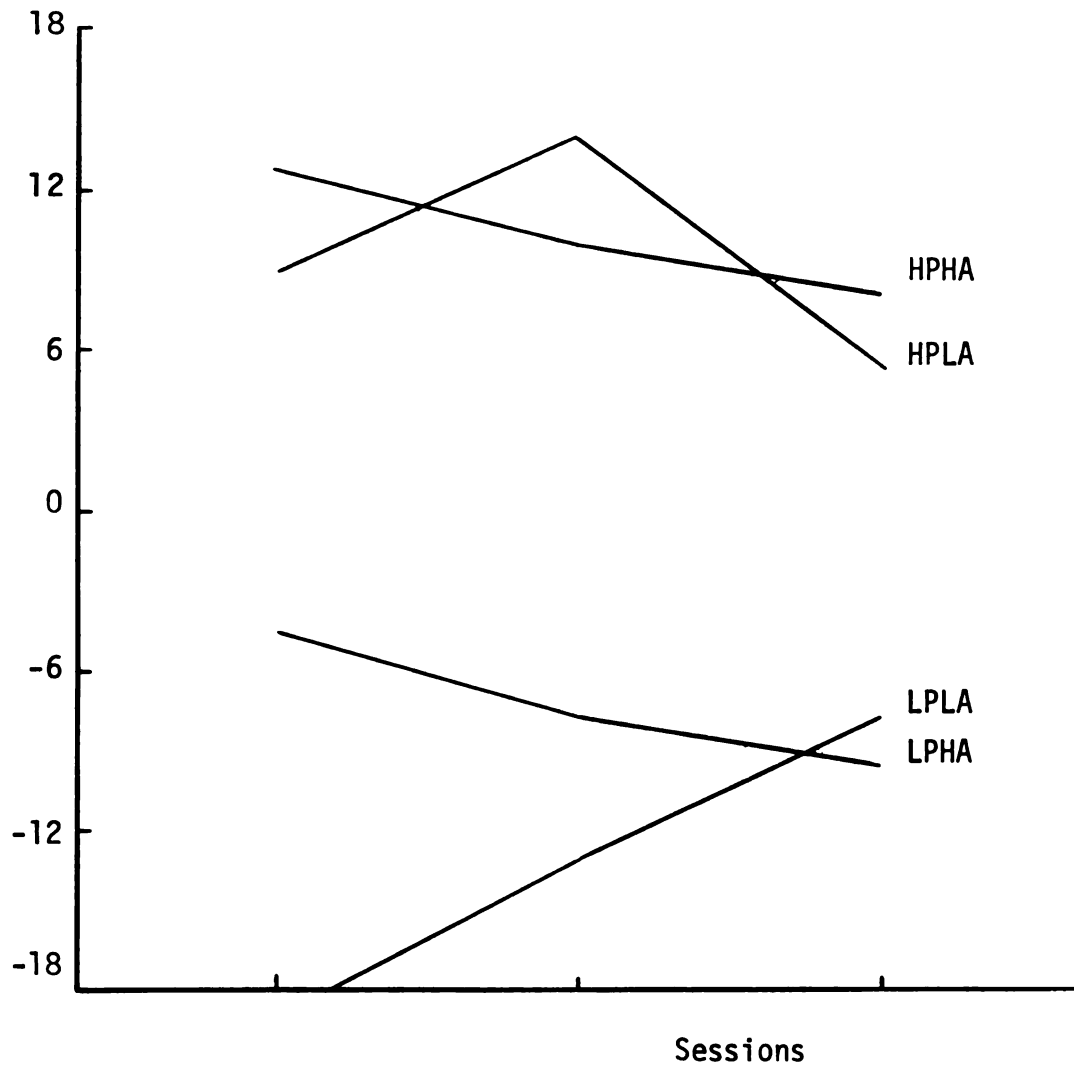
-4.53

Figure 5.3. Bonus-Input Orientation Interaction.



Groups	1	2	3
Bonus-High IO	-.40	2.05	5.05
Bonus-Low IO	3.11	.05	-.95
No Bonus-High IO	-1.39	-2.22	-5.11
No Bonus-Low IO	-7.63	-1.37	-4.05

Figure 5.4. Performance-Ability Interaction.

Groups123

High Perf.-High Abil.

12.57

9.78

7.83

High Perf.-Low Abil.

8.71

13.71

5.36

Low Perf.-High Abil.

-4.60

-8.00

-9.73

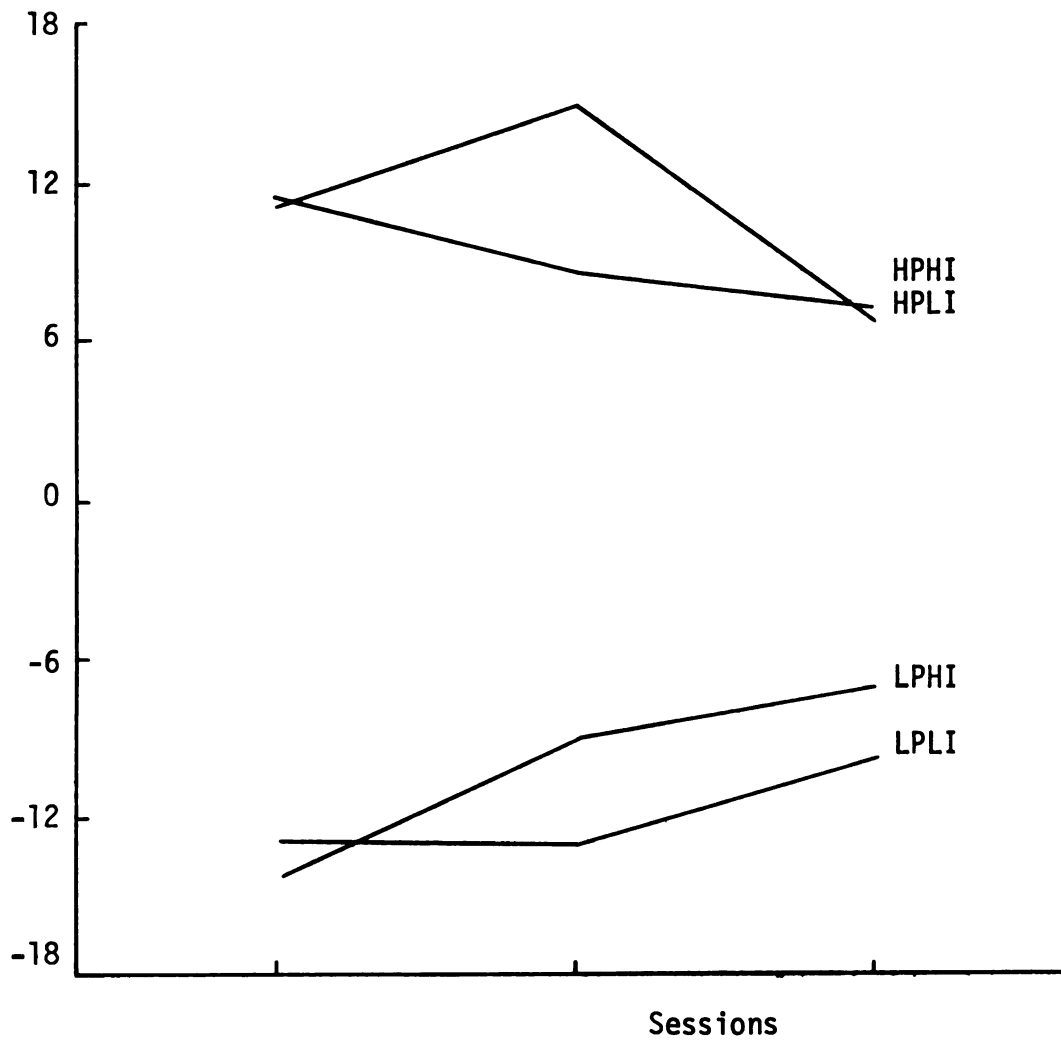
Low Perf.-Low Abil.

-19.21

-13.37

-8.12

Figure 5.5. Performance-Input Orientation Interaction.

Groups123

High Perf.-High IO

11.20

8.35

7.10

High Perf.-Low IO

11.00

14.71

6.65

Low Perf.-High IO

-14.28

-9.22

-7.39

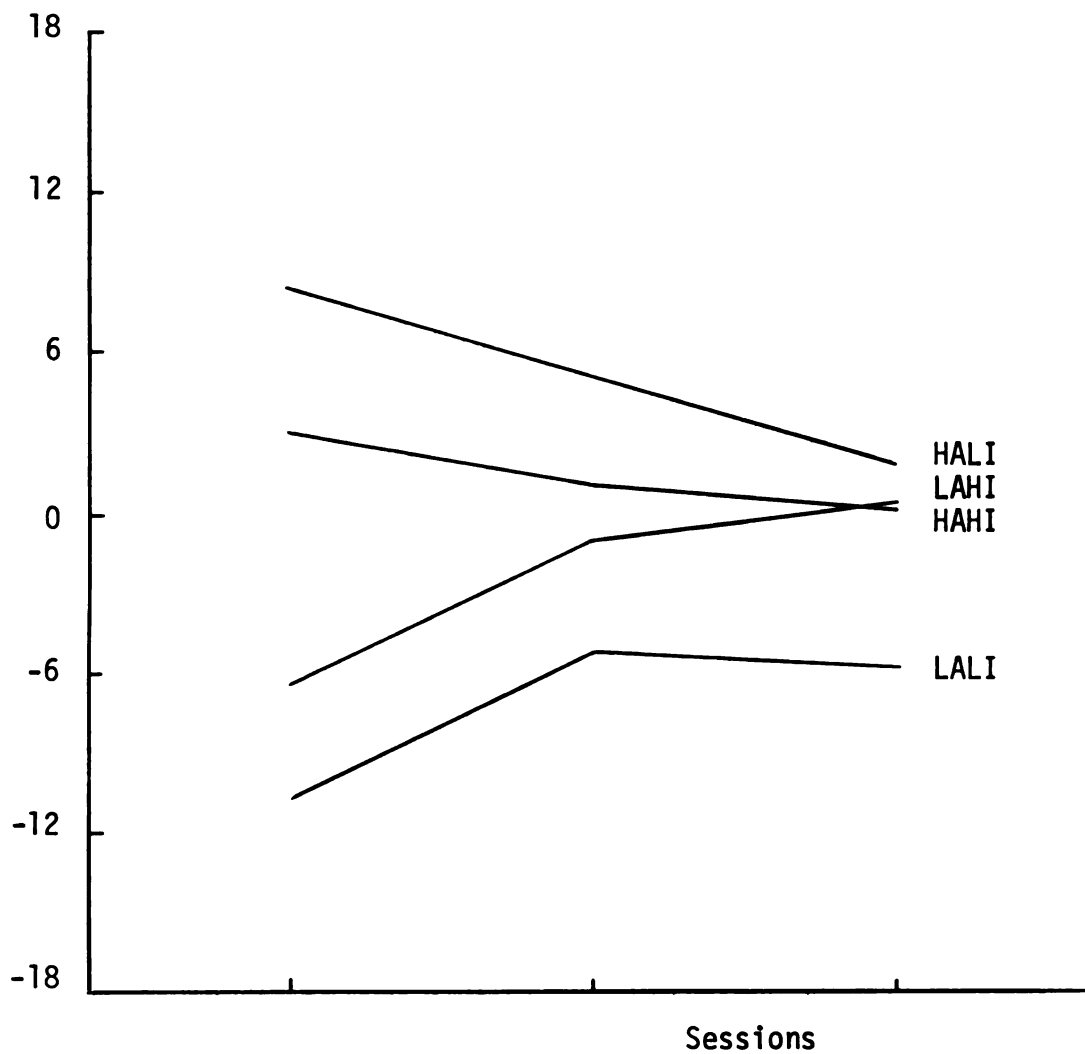
Low Perf.-Low IO

-13.00

-13.10

-9.90

Figure 5.6. Ability-Input Orientation Interaction.

Groups123

High Abil.-High IO

3.81

.95

.19

High Abil.-Low IO

8.24

5.00

1.76

Low Abil.-High IO

-6.65

-1.12

.29

Low Abil.-Low IO

-10.76

-5.24

-5.95

No Bonus-Low Ability in hour one. The graph here shows Bonus-Low Ability Ss (overrewarded in relation to relevant inputs) increasing relative performance while the No Bonus-High Ability Ss (underrewarded in relation to relevant inputs) reduced performance relatively. From the standpoint that abilities may be unconsciously known (Jaques, 1961), this would be the appropriate behavioral adaptation to inequity.

Figure 5.3 shows the effects of crossing Bonus and Input Orientation effects. Since Input Orientation has been presumed to be a perceptual measure of inputs, Ss whose bonus treatments don't match their performance might feel inequitably treated and adapt performance over time to restore equity given perceptual input levels. While the results are not significant, the directionality supports equity theory assuming Input Orientation reflects perceptions of input relevance or an individual difference related to susceptibility to lower satisfaction with rewards.

Figure 5.4 contains some puzzling results. This graph depicts the Performance-Ability interaction over time. Given ability, twenty-nine Ss' performance was incongruent with relevant inputs. Not only that, but Low Performance-Low Ability Ss' performance was insignificantly higher than Low Performance-High Ability Ss by the third hour while High Performance-Low Ability Ss insignificantly exceeded High Performance-High Ability Ss in the second hour. Equity theory would suggest either of two conclusions for Performance-Ability interactions: (1) high ability Ss whose performance is low should move to increase performance if inputs are known and seen as relevant while the opposite should obtain for Low Performance-High Ability Ss, or less likely, (2) Ss

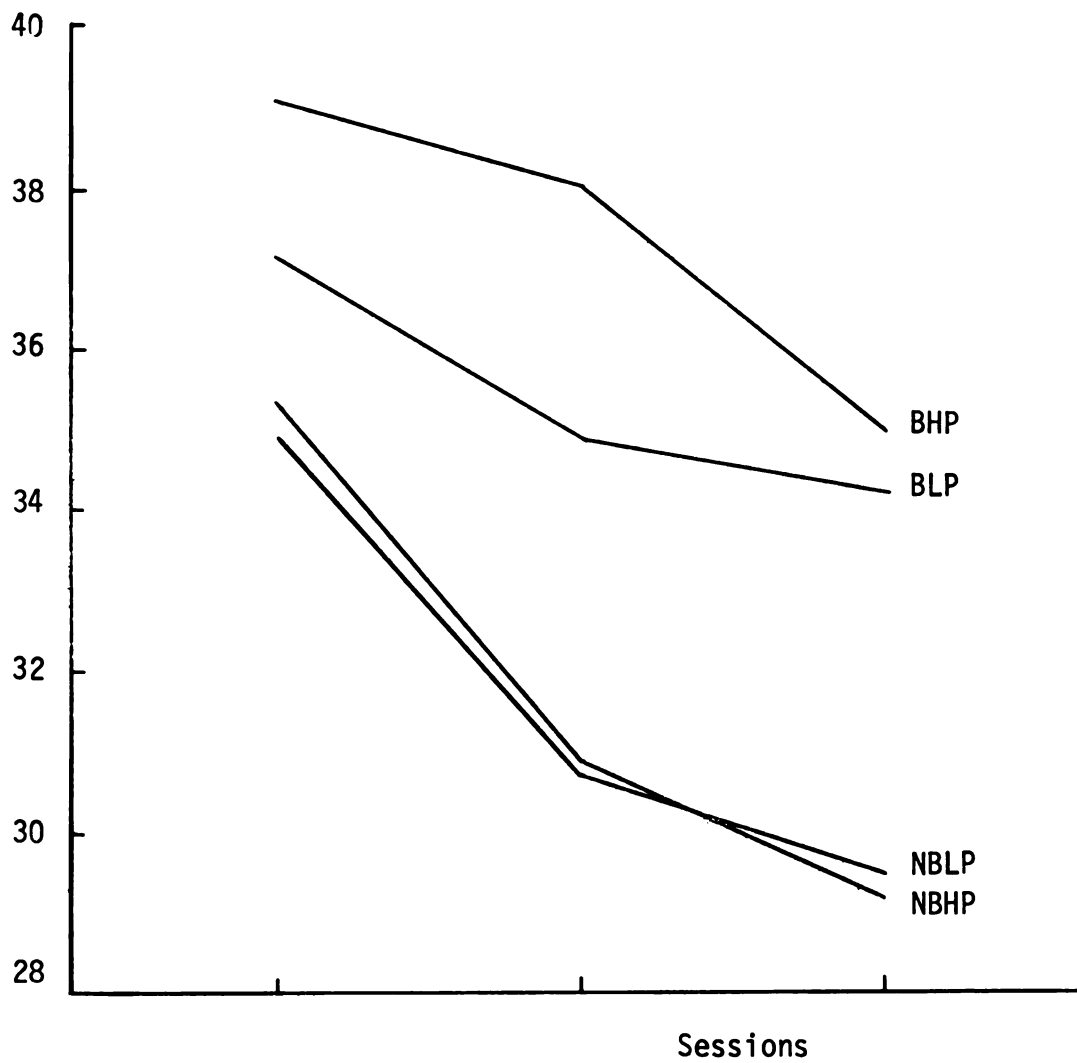
whose performance fails to match relevant inputs will revalue inputs toward the direction of performance and accordingly maintain performance.

Figure 5.5 shows no substantial or unexpected Performance-Input Orientation interactions. Within performance groups, Input Orientation had little effect on long-term performance. Interesting effects are seen, however, for the Ability-Input Orientation interaction. High Input Orientation was related to exactly opposite effects when paired with ability levels. Figure 5.6 shows that Performance Deviations were lowest for High Ability-Low Input Orientation and Low Ability-High Input Orientation Ss. Regression effects are noted in all groups, with no third hour Performance Deviation differences statistically significant. The only plausible explanation for this configuration following equity theory is that High Ability-High Input Orientation Ss see this combination as being excessively effortful and reduce performance accordingly while Low Ability-High Input Orientation Ss raise performance to equal heightened perceived inputs.

Within bonus treatments, an equity interpretation fits behavioral changes made by Ss for Performance Deviation scores. Ss whose performance, or individual differences were higher, were likely to make behavioral adaptations to restore equity.

Perceptions of Competence is another input measure; this one taken following each hourly manipulation. In equity theory, Persons who receive rewards and/or had high input levels and/or saw their inputs as being task relevant are expected to value their competence more or be more resistant to devaluation by the E. Figures 5.7 through 5.12

Figure 5.7. Bonus-Performance Interaction.

Groups123

Bonus-High Perf.

38.95

38.00

34.95

Bonus-Low Perf.

37.11

34.89

34.16

No Bonus-High Perf.

35.29

30.82

29.12

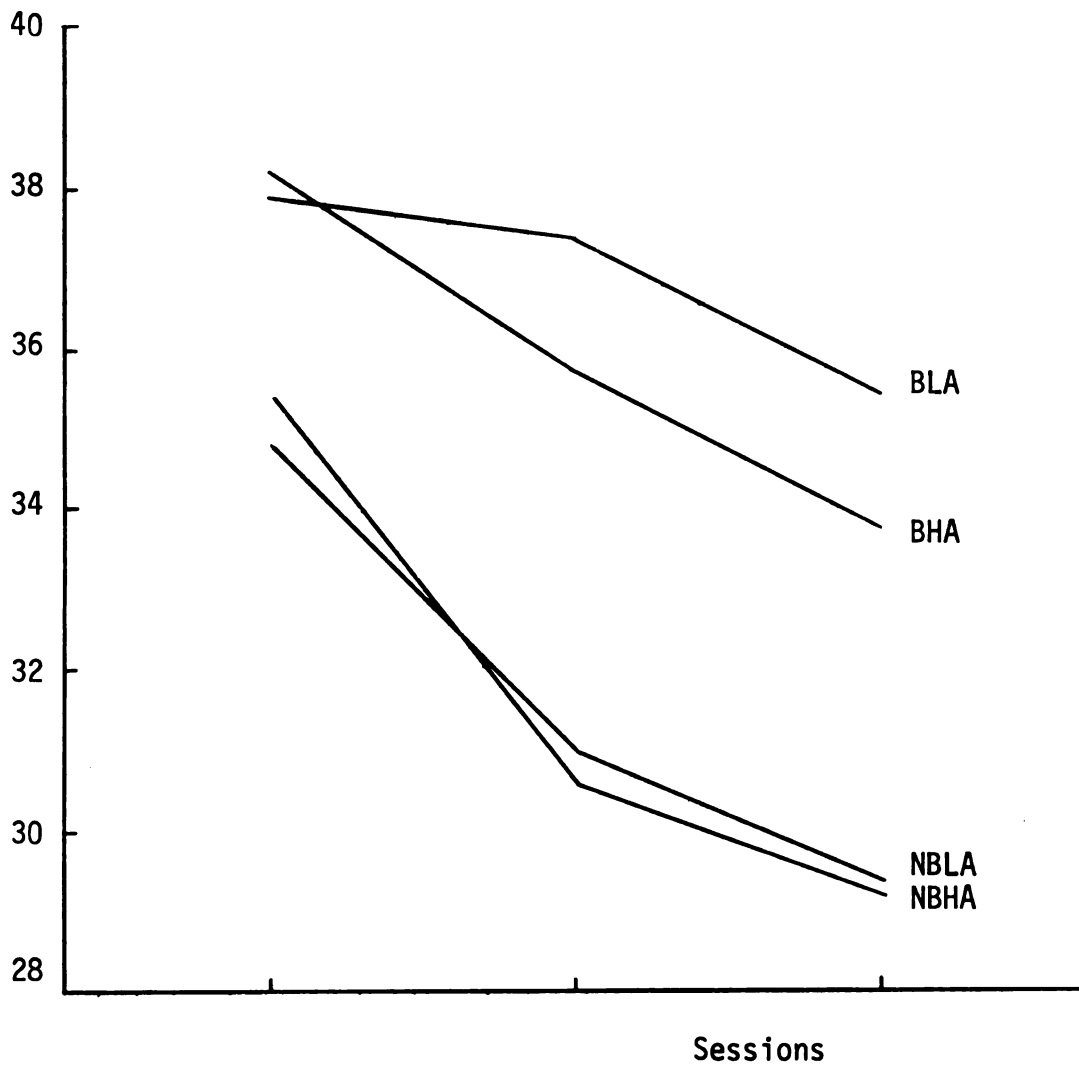
No Bonus-Low Perf.

34.90

30.75

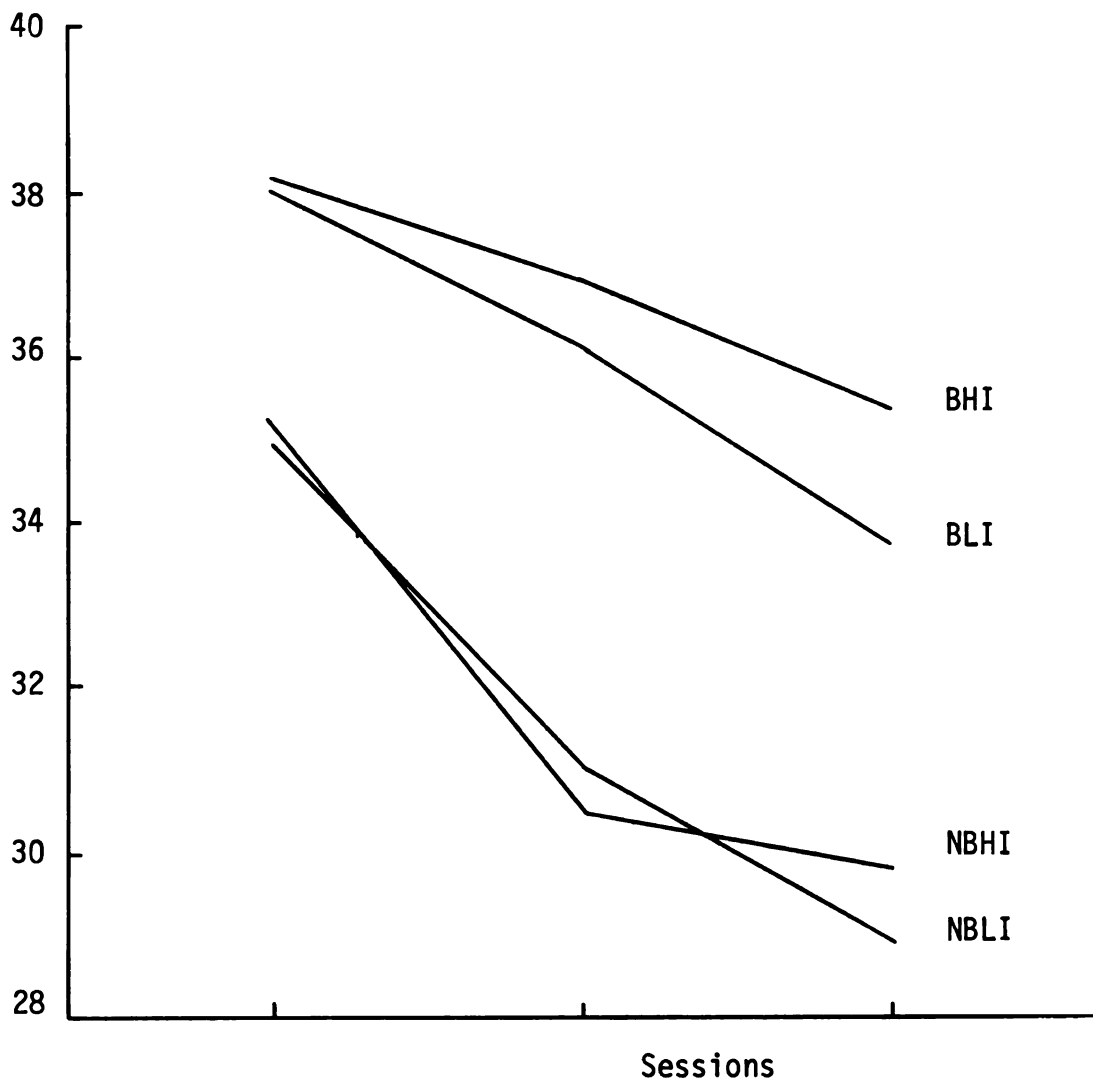
29.45

Figure 5.8. Bonus-Ability Interaction.



Groups	1	2	3
Bonus-High Ability	38.20	35.70	33.75
Bonus-Low Ability	37.89	37.32	35.42
No Bonus-High Ability	35.39	30.56	29.22
No Bonus-Low Ability	34.79	31.00	29.37

Figure 5.9. Bonus-Input Orientation Interaction.

Groups123

Bonus-High IO

38.10

36.85

35.35

Bonus-Low IO

38.00

36.11

33.74

No Bonus-High IO

35.22

30.56

29.72

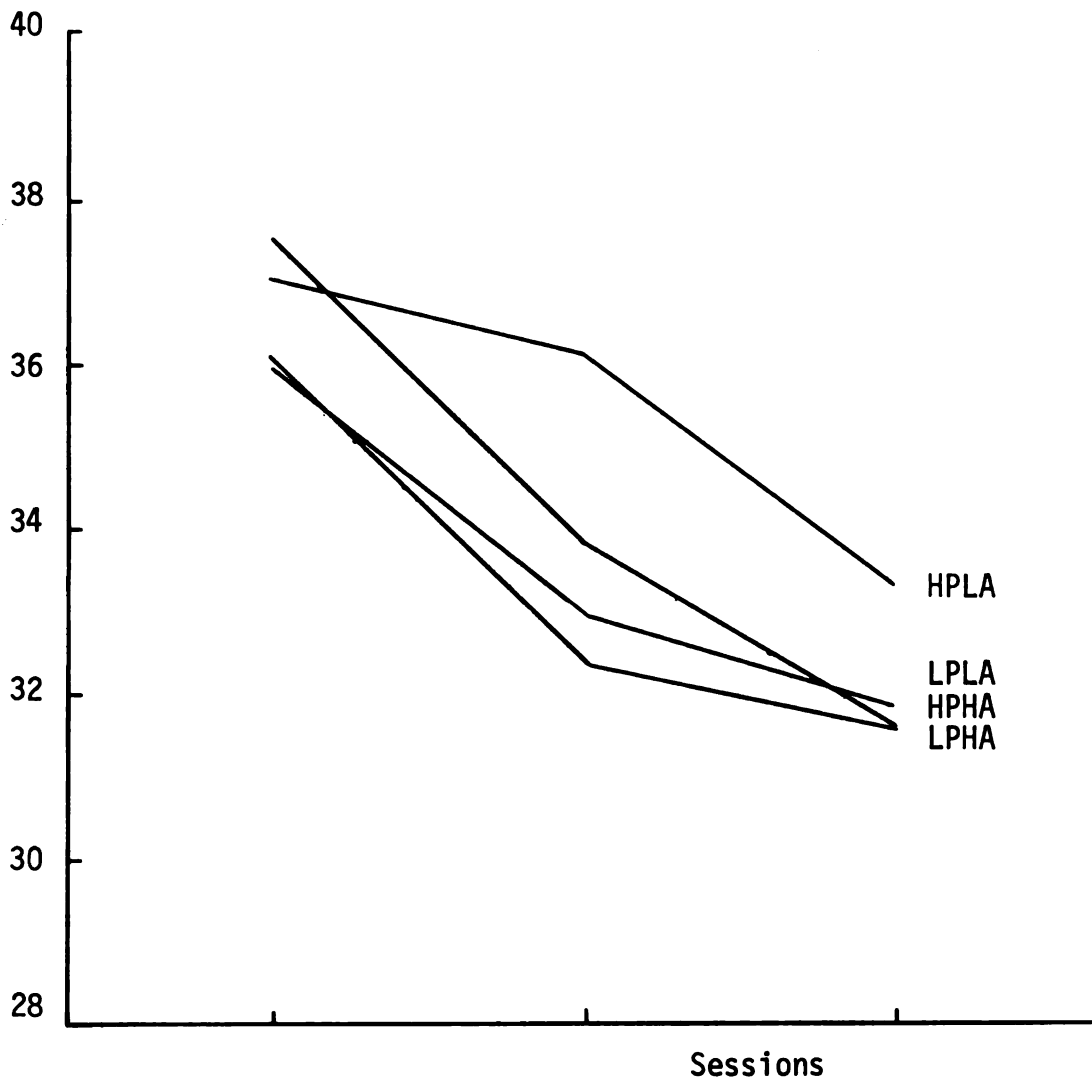
No Bonus-Low IO

34.95

31.00

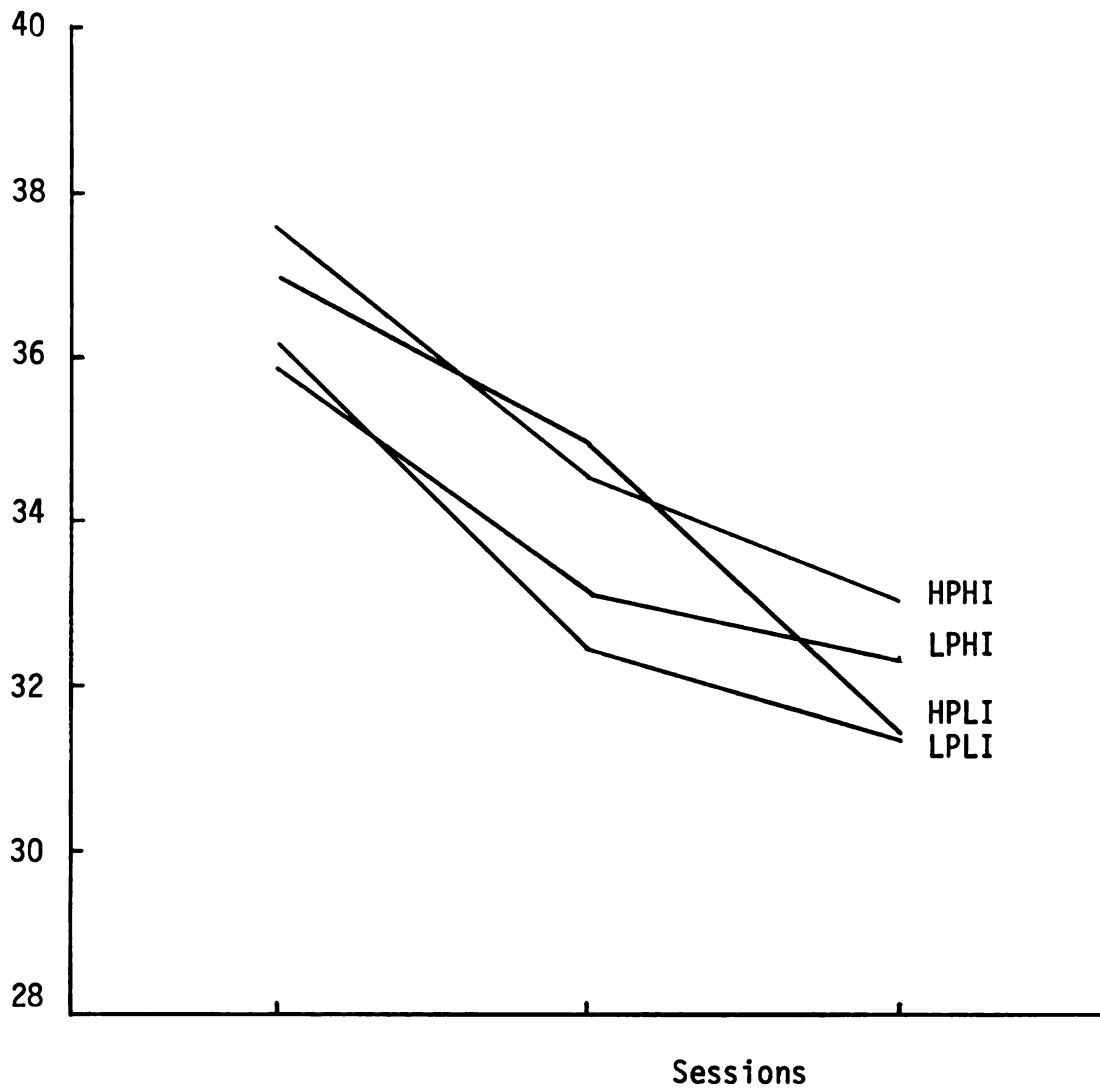
28.89

Figure 5.10. Performance-Ability Interaction.



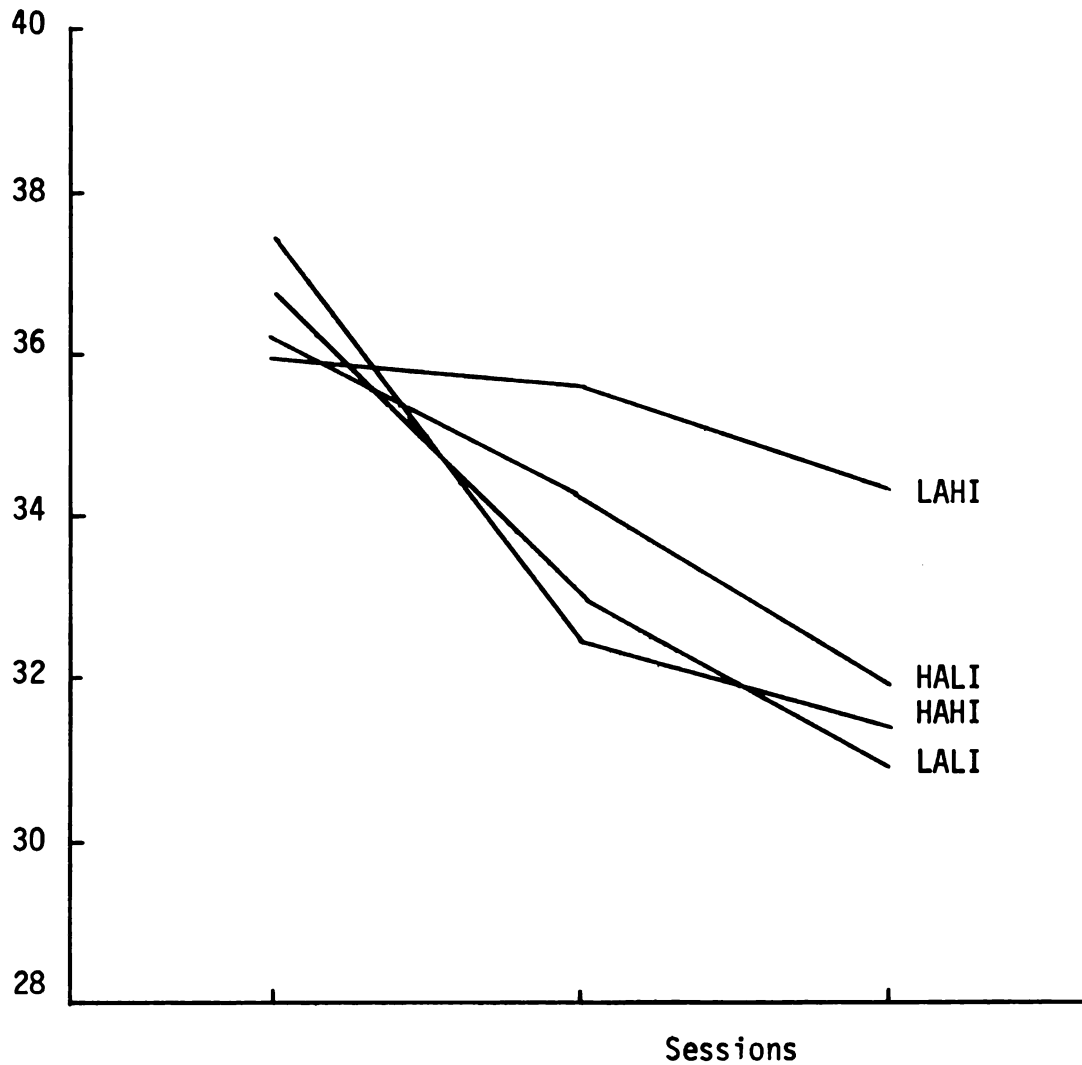
Groups	<u>1</u>	<u>2</u>	<u>3</u>
High Perf.-High Abil.	37.43	33.83	31.61
High Perf.-Low Abil.	37.00	36.14	33.36
Low Perf.-High Abil.	36.00	32.40	31.60
Low Perf.-Low Abil.	35.96	33.00	31.83

Figure 5.11. Performance-Input Orientation Interaction.



Groups	1	2	3
High Perf.-High IO	37.55	34.55	33.05
High Perf.-Low IO	36.94	34.88	31.35
Low Perf.-High IO	35.83	33.11	32.28
Low Perf.-Low IO	36.10	32.48	31.29

Figure 5.12. Ability-Input Orientation Interaction.



Groups	1	2	3
High Abil.-High IO	37.38	32.48	31.38
High Abil.-Low IO	36.24	34.24	31.88
Low Abil.-High IO	35.94	35.59	34.29
Low Abil.-Low IO	36.67	33.00	30.86



show the interactions of relevant factors over time for Perceptions of Competence.

Figures 5.7, 5.8, and 5.9 depicting Bonus-Performance, Bonus-Ability, and Bonus-Input Orientation interactions follow closely an expectancy interpretation with bonus earners seeing themselves as more competent regardless of group membership on the second factor. Figures 5.10, 5.11, and 5.12 reveal no significant differences on Perceptions of Competence across groups. Interestingly though, across performance groups, Low Ability-High Input Orientation Ss saw themselves as more competent. This may indicate that Input Orientation is an important determinant in perceptual input levels. On the other hand, the non-significant Ability-Input Orientation interactions show the incongruent relationships are related to higher Perceptions of Competence levels.

Perceptions of Competence was insensitive to inequity. This may be related to the fact that the scale was completed immediately after each bonus manipulation. On the other hand, the behavioral measure, Performance Deviation, did show some suggestions of equity effects within bonus treatments and within some performance and individual difference measures. In a situation where Ss were powerless to change pay outcomes, behavioral inputs may have changed to reflect a desire for equity while perceived inputs remained unchanged after the first hour bonus communication.

5.4.2 Equity Hypotheses and Findings

Equity theory suggests that Person will be most satisfied if outcomes are consistent with effort or perceived relevant inputs. This

would mean that if Ss were randomly rewarded, and if there were no differential effects for over- or underpay, correlations between input measures and Pay Satisfaction should not be significantly different than zero. If an expectancy interpretation were more appropriate, Pay Satisfaction should be most highly associated with bonus receipt and not necessarily related to fairness of outcomes in relation to performance. The data generally supported the expectancy interpretation.

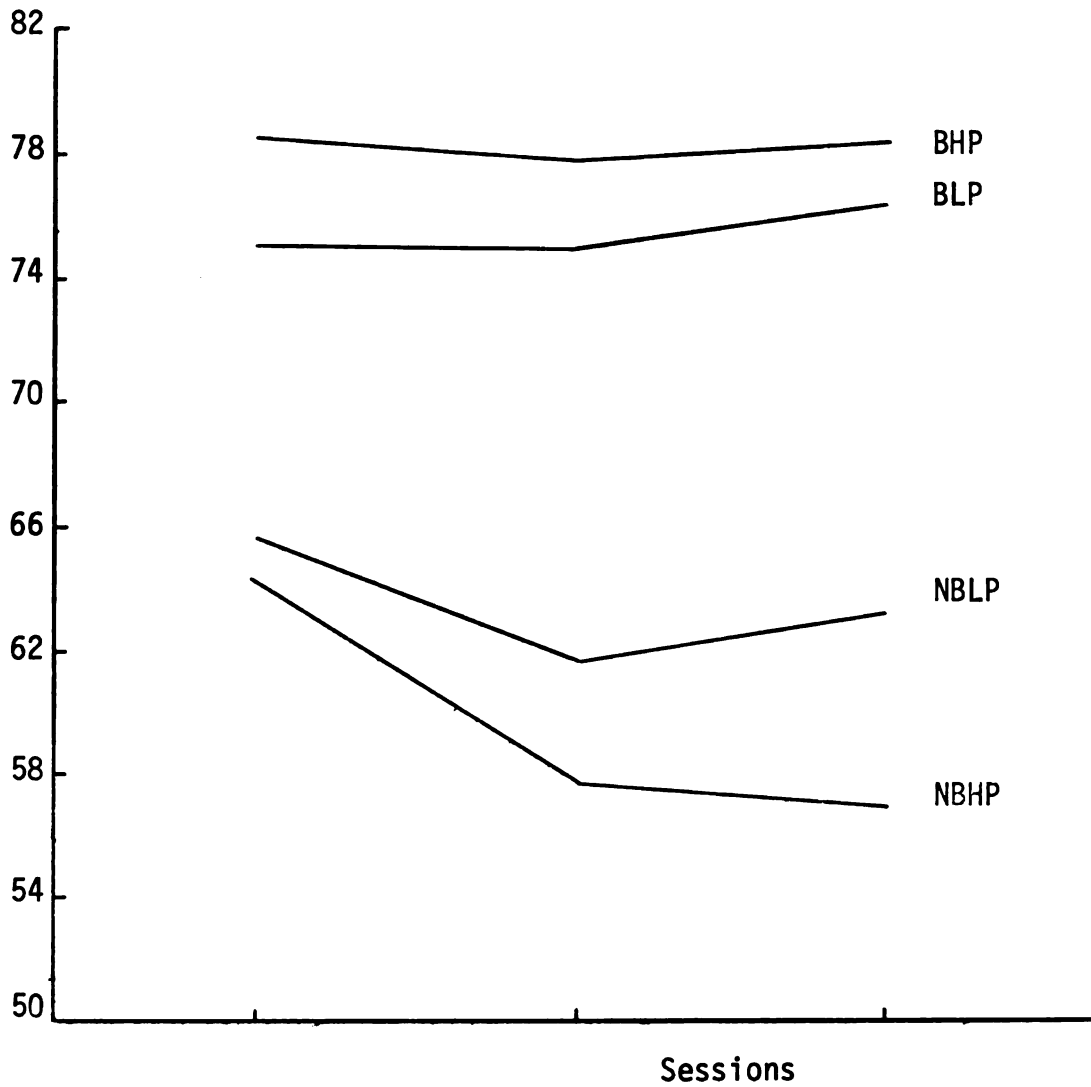
Other equity hypotheses suggest that individual differences in ability and Input Orientation would moderate Pay Satisfaction. Higher ability and/or Input Orientation are assumed to lead to lower Pay Satisfaction because they could be seen as perceived relevant inputs. Figures 5.13 through 5.18 depict interaction effects for Pay Satisfaction.

Figures 5.13 and 5.14 show that inequitable treatment for both Performance and Ability led to lower Pay Satisfaction. However, both of these figures show the effect occurs within bonus treatment conditions and generally increase over time.

Since Input Orientation is essentially unrelated to performance, the finding that high and low levels of Input Orientation are related the same way to Pay Satisfaction across bonus treatments would tend to support the idea that the TIOC measures an actual individual difference in the area of perceptions related to outcomes. The inverse relationship between Input Orientation and Pay Satisfaction within bonus treatments is shown in Figure 5.15.

Another interesting interaction involves the question of whether performance or ability has the higher relation with satisfaction. The question here would be whether actual inputs (Performance) or

Figure 5.13. Bonus-Performance Interaction.

Groups123

Bonus-High Perf.

78.45

77.75

78.30

Bonus-Low Perf.

74.89

74.84

76.21

No Bonus-High Perf.

64.06

57.71

56.94

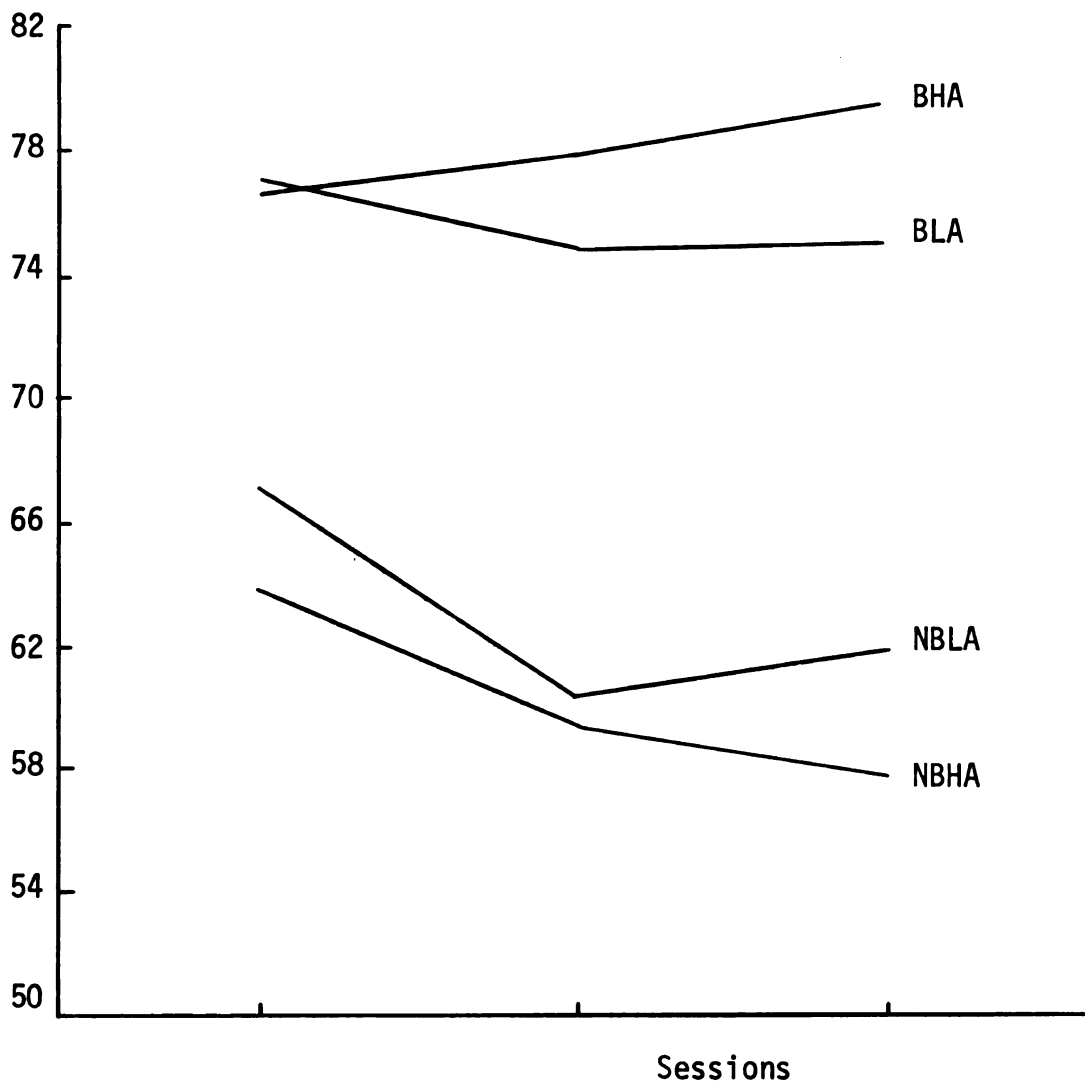
No Bonus-Low Perf.

66.15

61.40

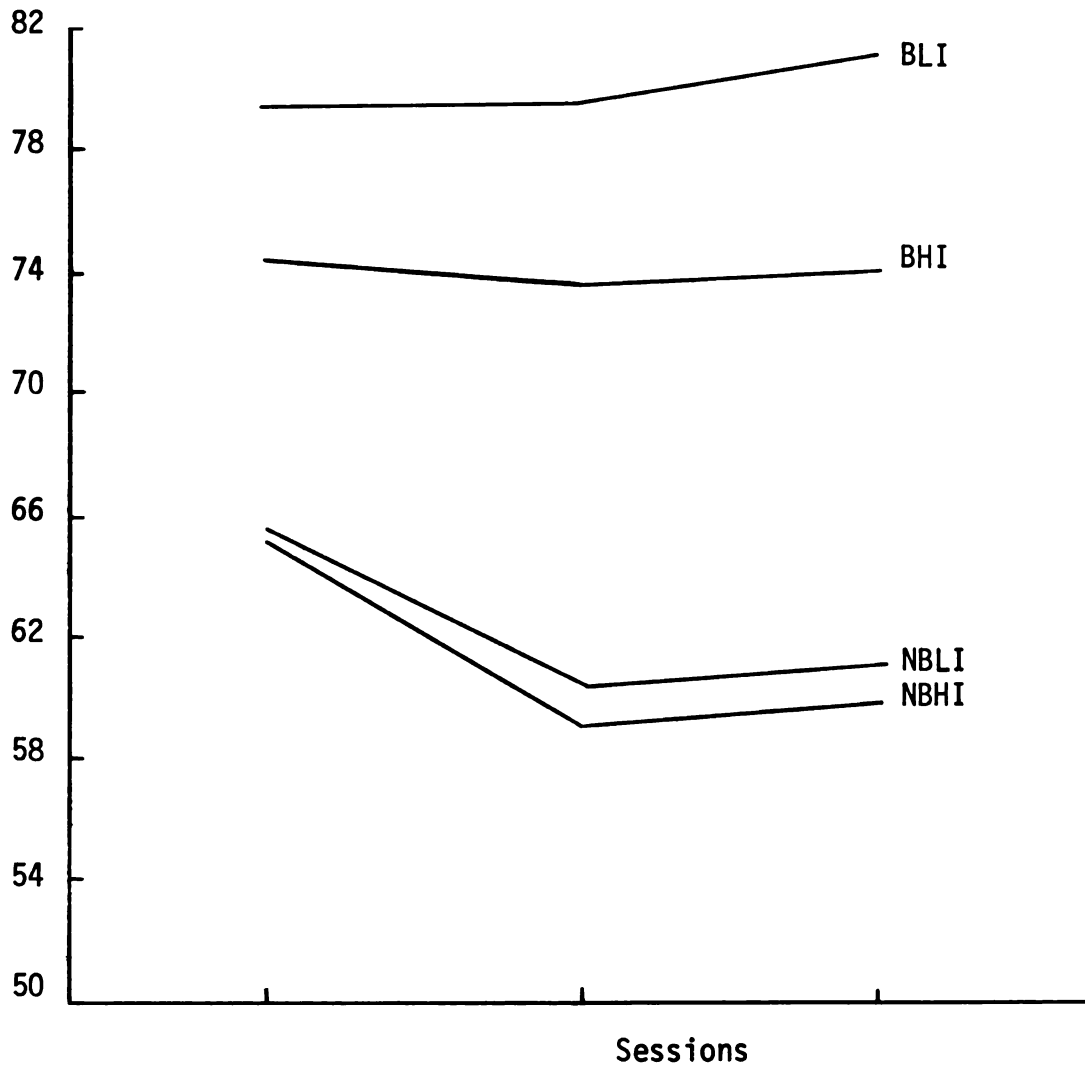
63.20

Figure 5.14. Bonus-Ability Interaction.



Groups	<u>1</u>	<u>2</u>	<u>3</u>
Bonus-High Abil.	76.50	77.80	79.45
Bonus-Low Abil.	76.95	74.79	75.00
No Bonus-High Abil.	63.56	59.28	58.78
No Bonus-Low Abil.	66.74	60.11	61.79

Figure 5.15. Bonus-Input Orientation Interaction.

Groups123

Bonus-High IO

74.25

73.35

73.85

Bonus-Low IO

79.32

79.47

80.89

No Bonus-High IO

65.06

58.94

59.56

No Bonus-Low IO

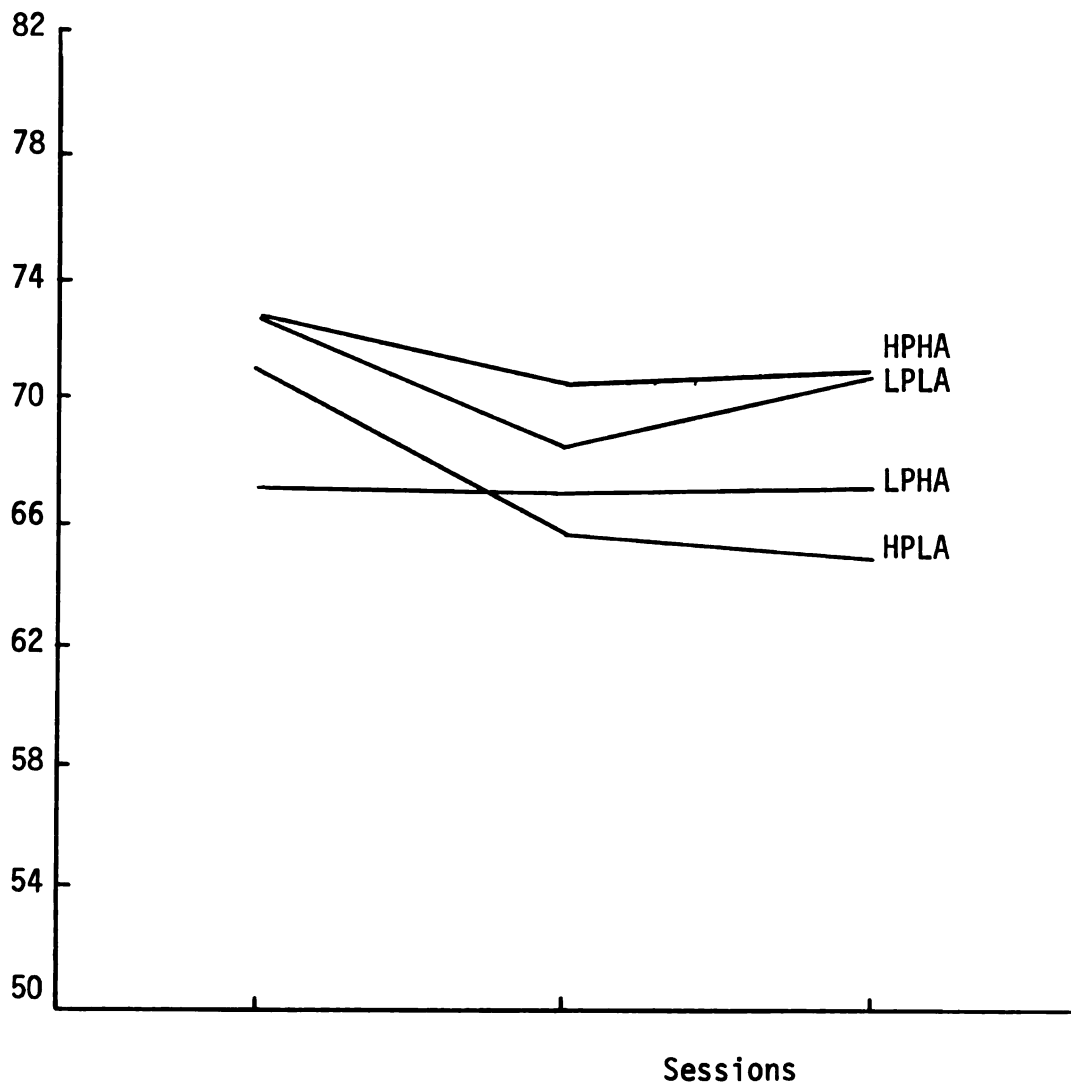
65.32

60.42

61.05

1

Figure 5.16. Performance-Ability Interaction,

Groups123

High Perf.-High Abil.

72.48

70.35

70.87

High Perf.-Low Abil.

70.79

65.57

64.57

Low Perf.-High Abil.

67.13

67.00

67.80

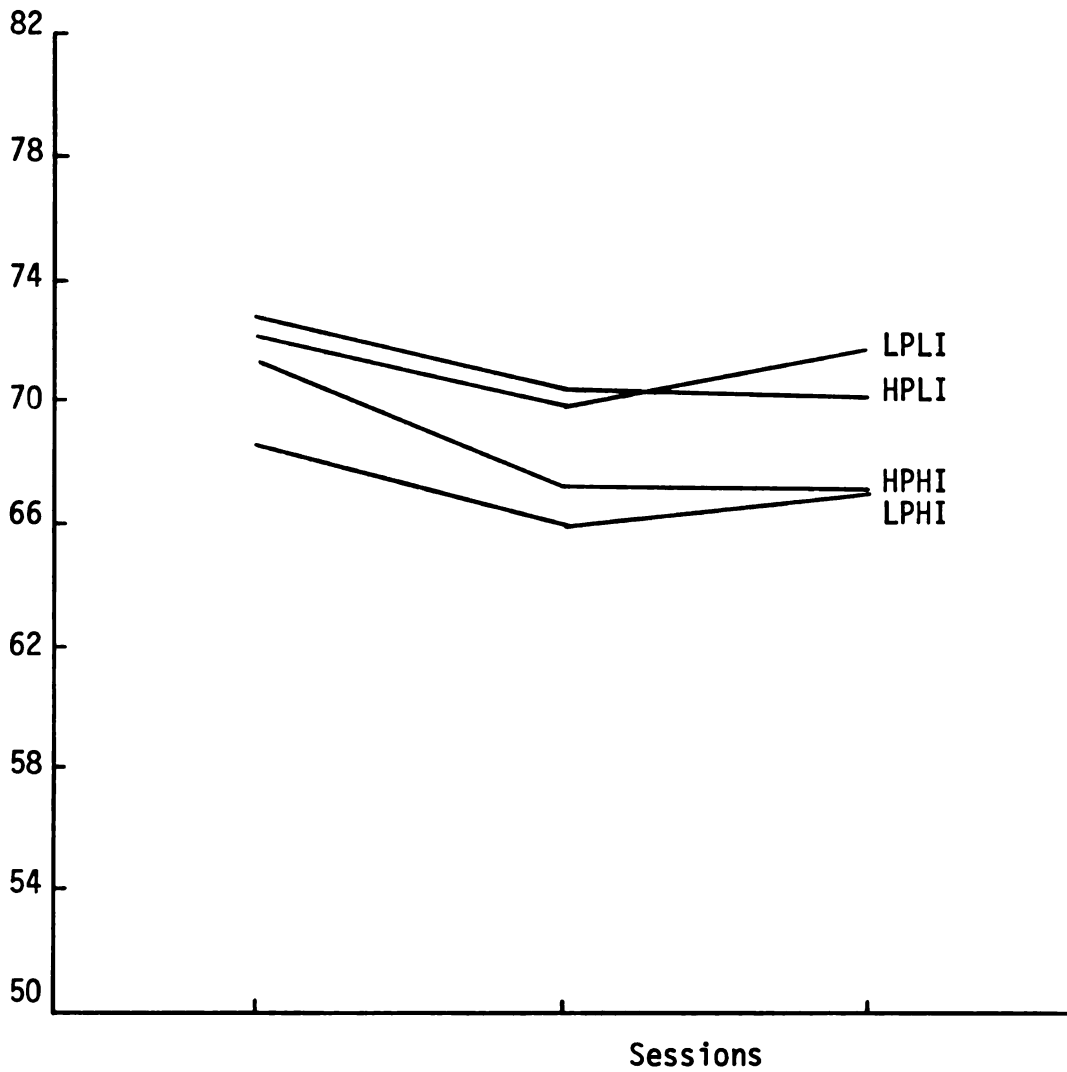
Low Perf.-Low Abil.

72.46

68.54

70.63

Figure 5.17. Performance-Input Orientation Interaction.

Groups123

High Perf.-High IO

71.15

67.15

67.10

High Perf.-Low IO

72.65

70.18

70.12

Low Perf.-High IO

68.50

65.83

67.06

Low Perf.-Low IO

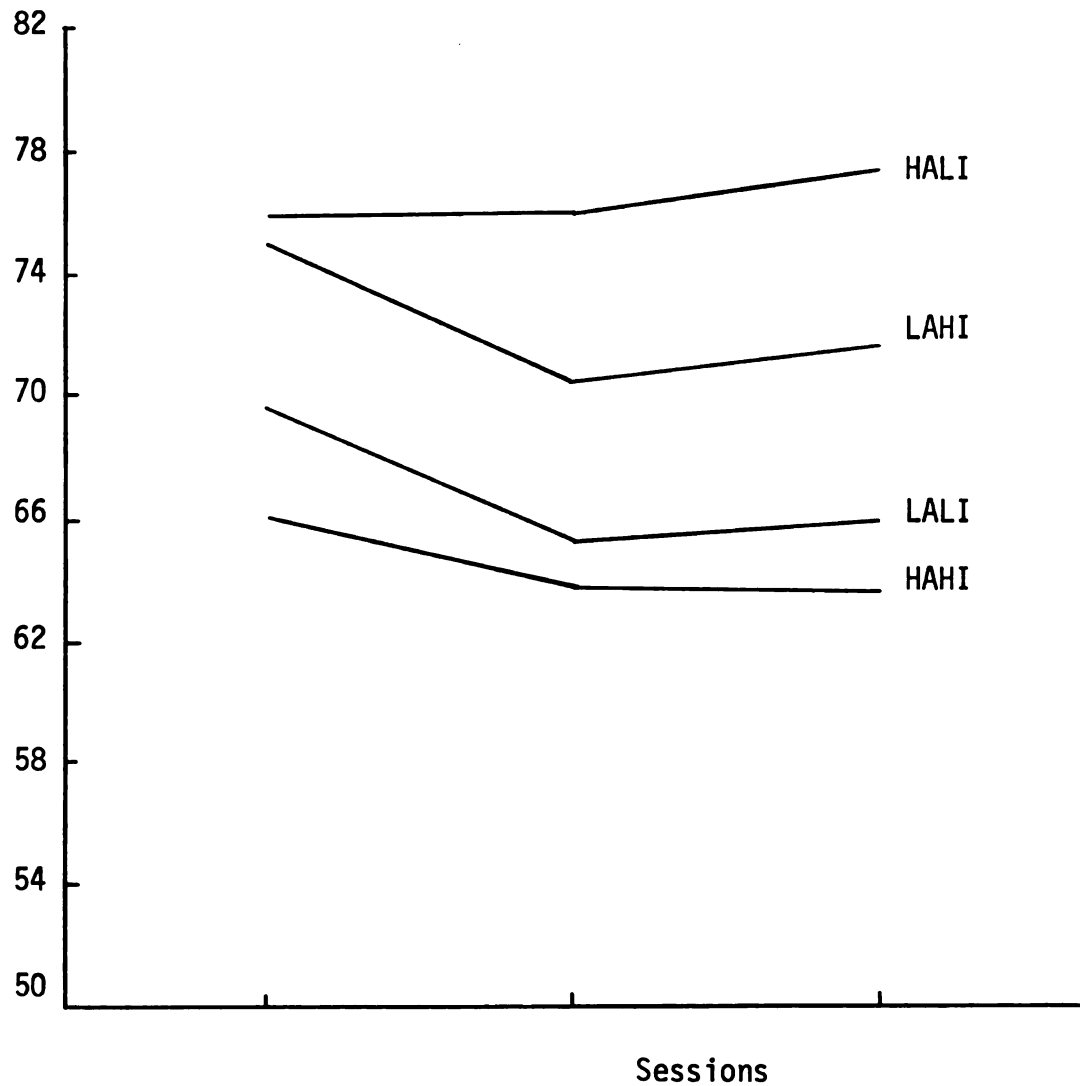
72.05

69.76

71.67



Figure 5.18. Ability-Input Orientation Interaction.

Groups123

High Abil.-High IO

65.95

63.52

63.52

High Abil.-Low IO

75.82

75.82

77.24

Low Abil.-High IO

74.76

70.24

71.47

Low Abil.-Low IO

69.48

65.19

65.91

relevant inputs (Ability) have the greater effect on Pay Satisfaction. Figure 5.16 shows that congruency between Performance and Ability is related to Pay Satisfaction. Thus, those whose actual inputs matched relevant inputs were more satisfied. Figure 5.17 indicates that high Input Orientation is associated with lower satisfaction across performance groups supporting the contention that high Input is related to relative reward devaluation.

Finally, Figure 5.18 shows the Ability x Input Orientation interaction. Equity theory would predict that higher Ability and Input Orientation would be associated with lower satisfaction. This prediction might rank combinations from high to low satisfaction as follows: High Ability-High Input Orientation, High Ability-Low Input Orientation, Low Ability-High Input Orientation, Low Ability-Low Input Orientation. The data only show that High Ability-High Input Orientation follows this prediction. High Ability-Low Input Orientation Ss were the most satisfied. This may be related to the fact that high ability Ss needed to produce less effort to obtain performance. The ambiguous results obtained here are difficult to explain.

Generally, the evidence indicates that bonus treatment and Input Orientation are likely to affect Pay Satisfaction. From an individual difference standpoint only Input Orientation is consistently inversely related to Pay Satisfaction.

5.4.3 Bonus Receipt and Other Outcomes

The main outcomes in areas outside of Pay Satisfaction rest with actual payment and satisfaction with the task. Bonus receipt accounted for the most variance of any main effect for both Pay

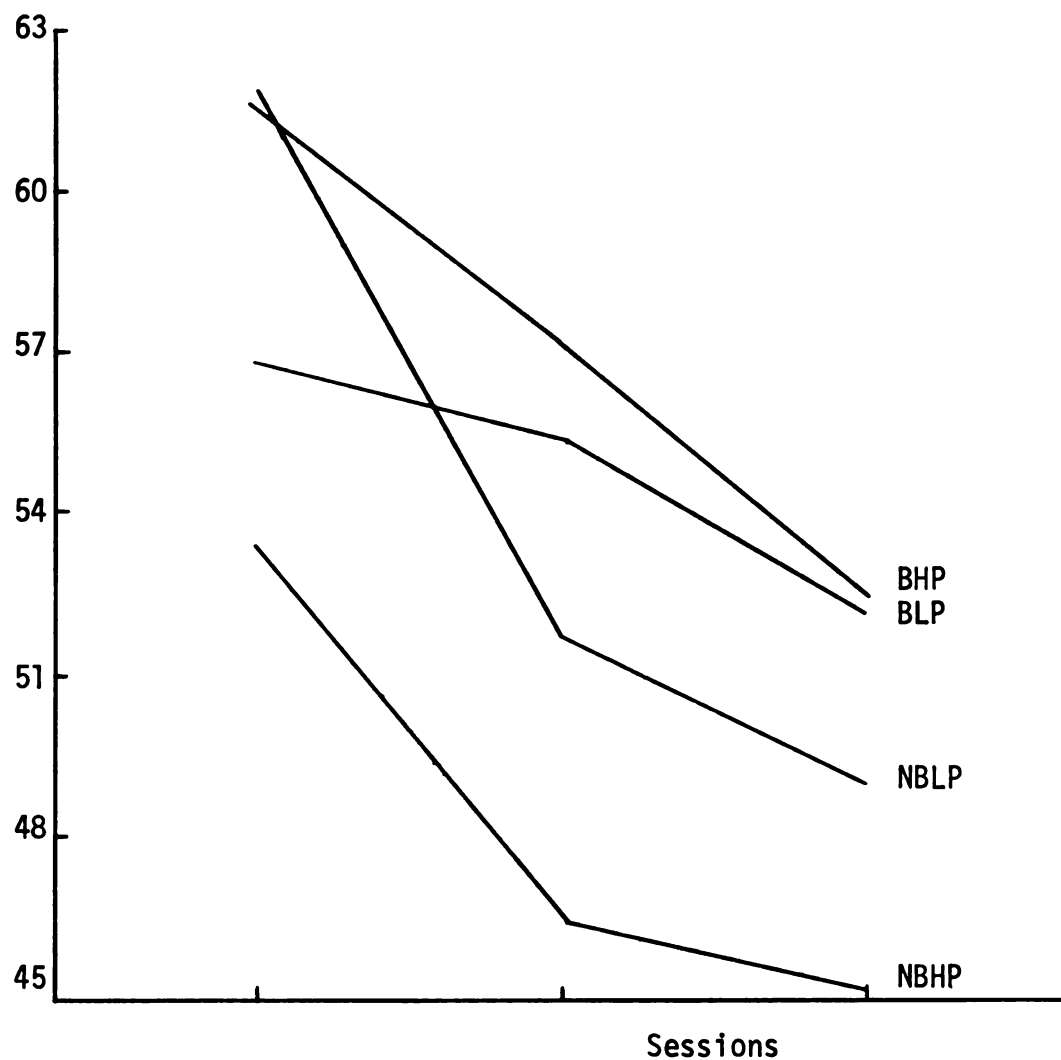
Satisfaction and Perceptions of Competence, but not Task or Co-Worker Satisfaction. Dependent variables and variances accounted for (η^2) by bonus treatment were: (1) Pay Satisfaction, 28%; Task Satisfaction, 2%; Co-Worker Satisfaction, NS; and Performance Deviation, 3%. The fact that bonus treatment was not strongly related to Task or Co-Worker Satisfaction may mean that these variables also serve as outcomes. Equity theory would suggest that underpaid Ss might enhance outcomes to restore equity (Weick, 1966). However, the small but significant bonus effect for Task Satisfaction suggests the opposite.

Figures 5.19 through 5.24 depict the two-way interactions of various treatment effects over time for Task Satisfaction. There were no significant differences by groups in any of the third hour situations, but an examination is important to see if task enhancement exists. This would mean that overpaid Ss should reduce Task Satisfaction while underpaid Ss should increase Task Satisfaction.

Figure 5.19 demonstrates that task enhancement did not exist for Bonus-Performance combinations. Figure 5.20 shows only slight task enhancement for Bonus-Ability interactions after the final session. Bonus-Input Orientation combinations in Figure 5.21 also show slight enhancement effects in the third hour. Figures 5.22 through 5.24 are not relevant for enhancement hypotheses.

Thus, very slight task enhancement effects were found. Bonus treatment has the greatest effect on satisfaction. This finding confirms the idea that high pay was the most relevant valent outcome for this experiment.

Figure 5.19. Bonus-Performance Interaction.

Groups123

Bonus-High Perf.

61.50

57.10

52.35

Bonus-Low Perf.

56.74

55.32

52.05

No Bonus-High Perf.

53.35

46.35

45.06

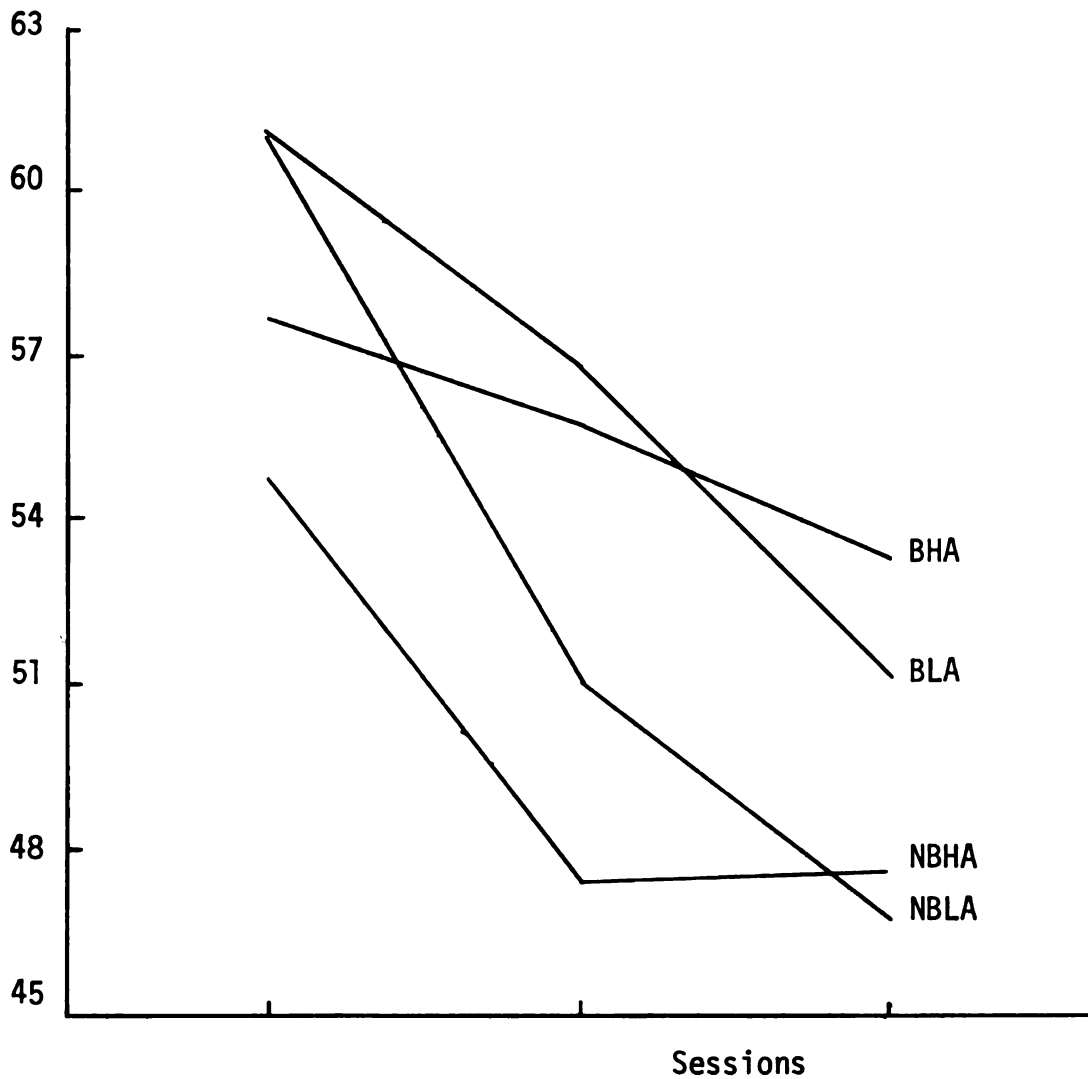
No Bonus-Low Perf.

61.70

51.65

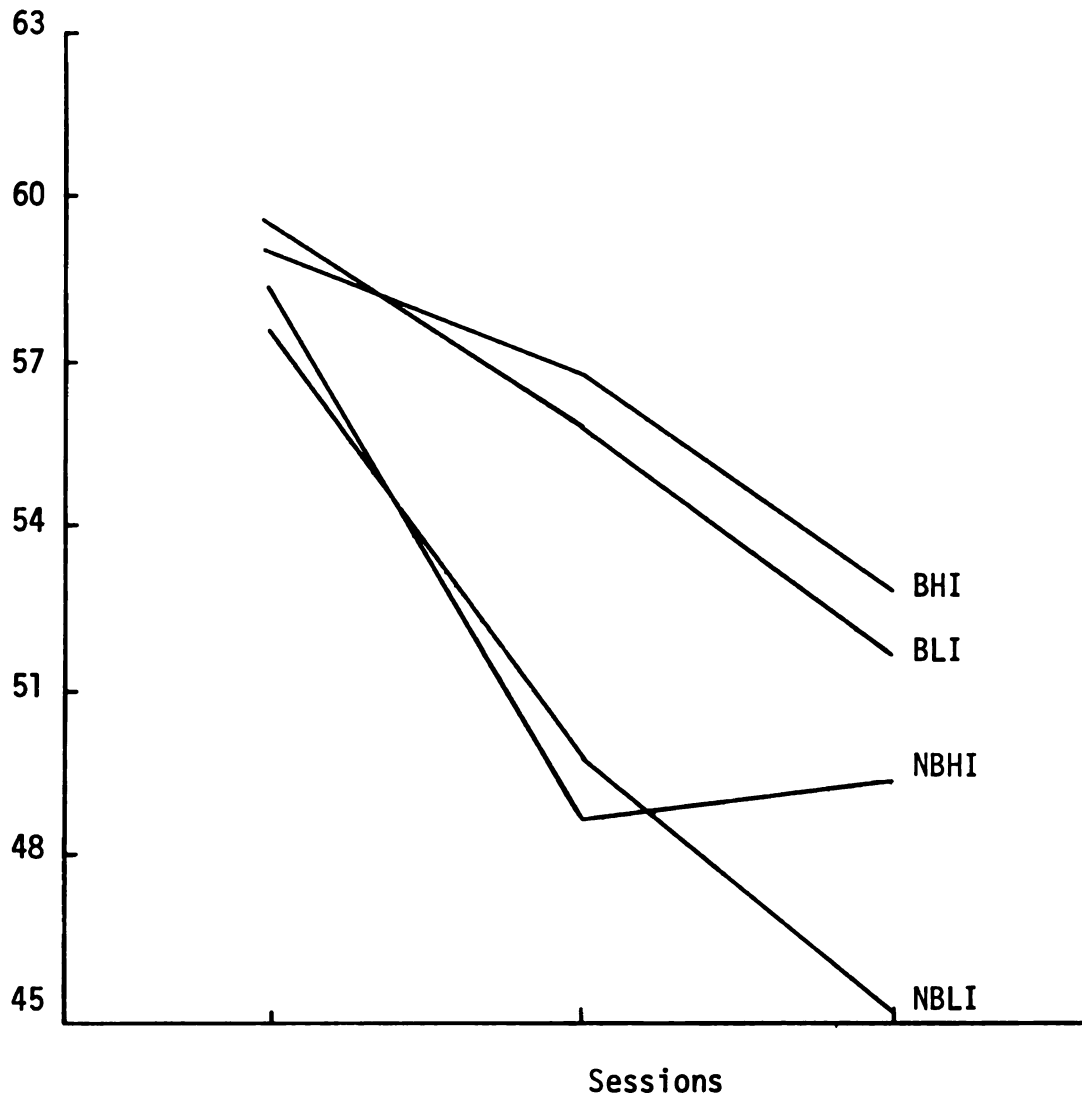
48.90

Figure 5.20. Bonus-Ability Interaction.



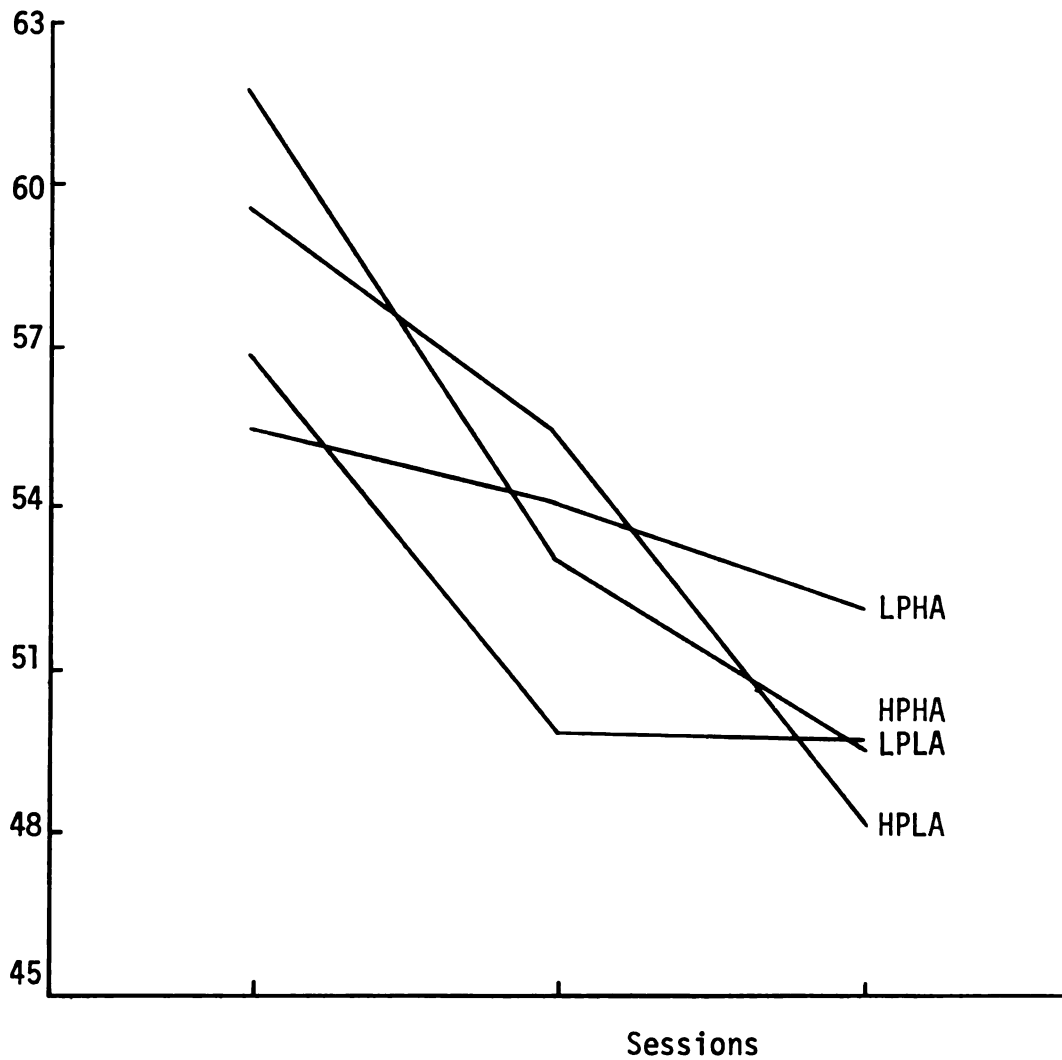
<u>Groups</u>	<u>1</u>	<u>2</u>	<u>3</u>
Bonus-High Ability	57.55	55.70	53.25
Bonus-Low Ability	60.89	56.79	51.11
No Bonus-High Ability	54.72	47.33	47.56
No Bonus-Low Ability	60.84	51.00	46.74

Figure 5.21. Bonus-Input Orientation Interaction.



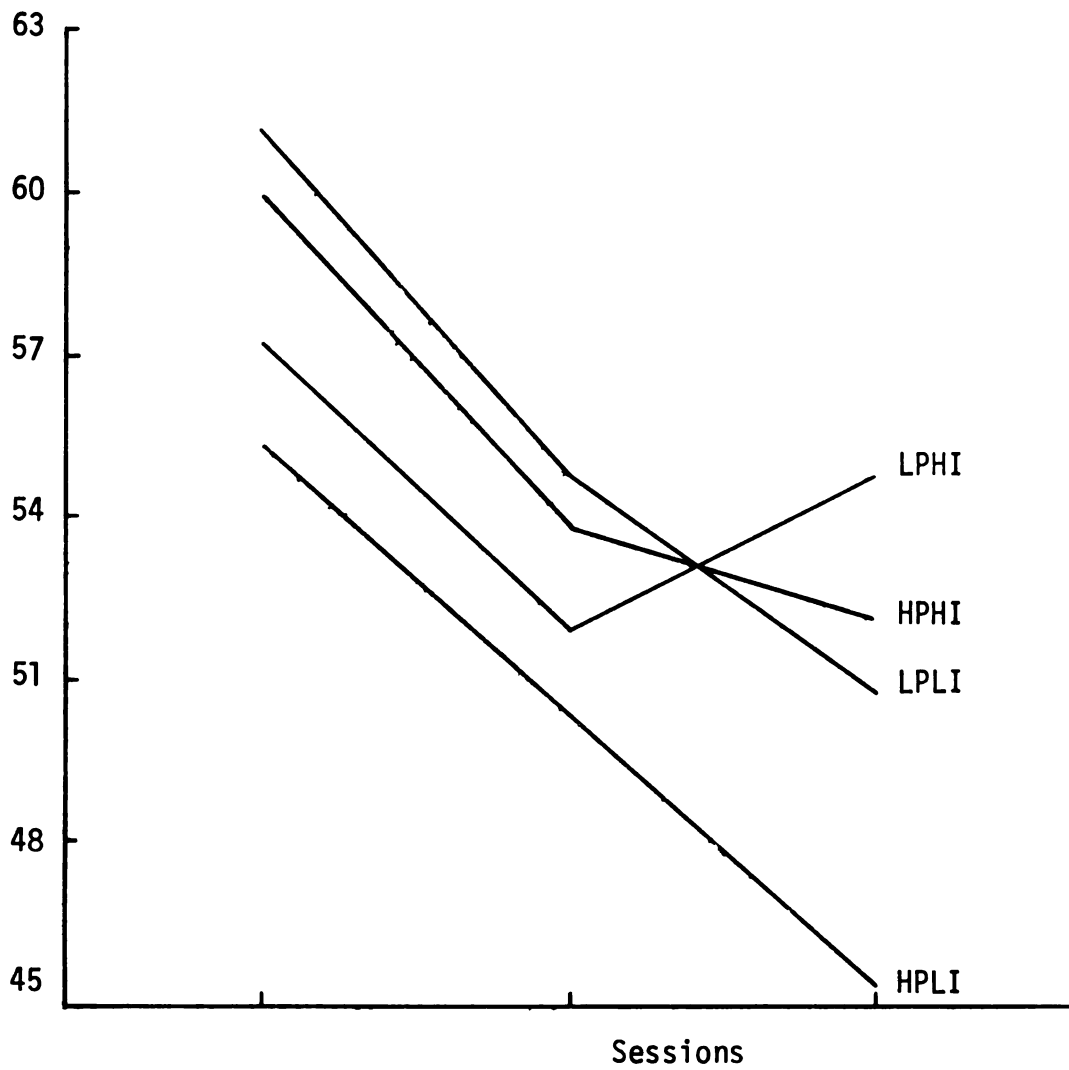
<u>Groups</u>	<u>1</u>	<u>2</u>	<u>3</u>
Bonus-High IO	58.95	56.70	52.80
Bonus-Low IO	59.42	55.74	51.58
No Bonus-High IO	58.22	48.61	49.28
No Bonus-Low IO	57.53	49.79	45.11

Figure 5.22. Performance-Ability Interaction.



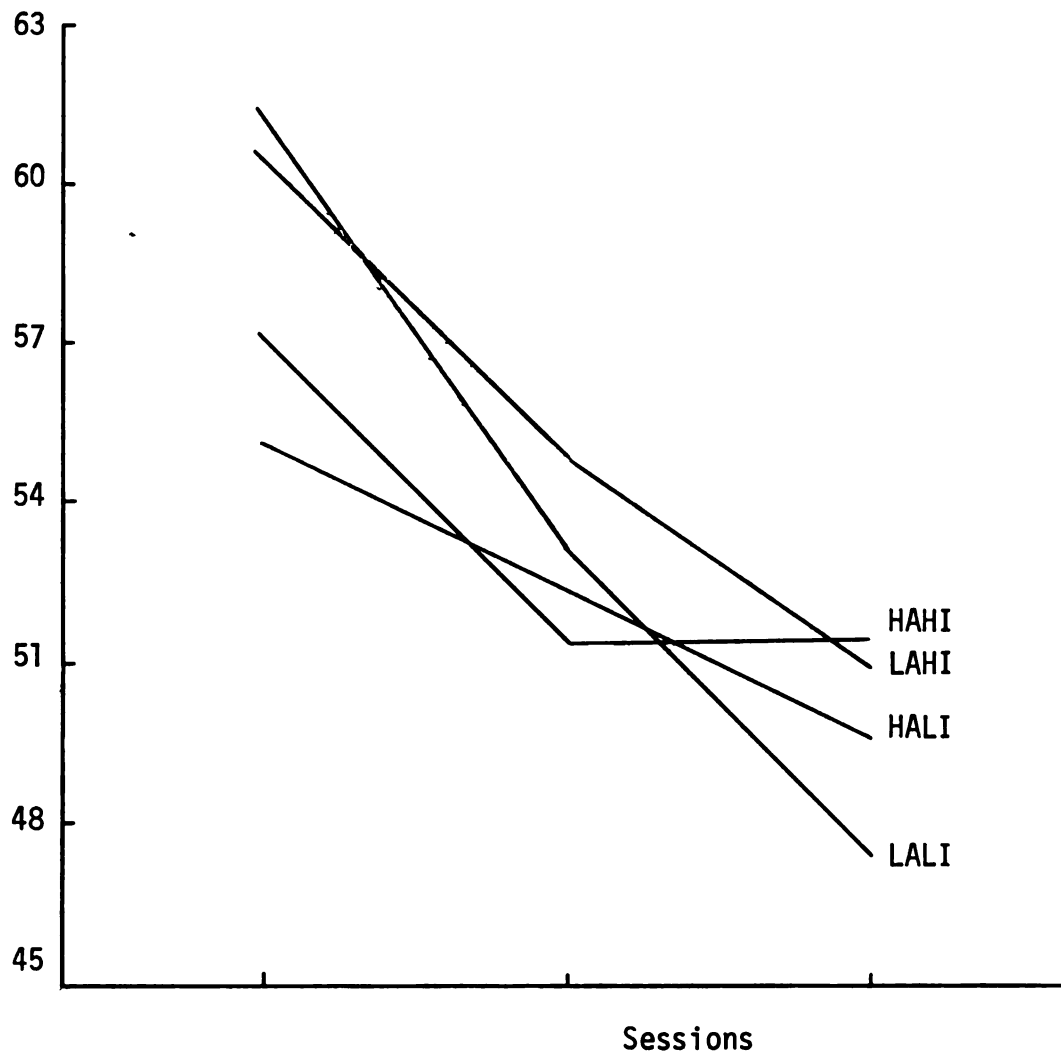
Groups	<u>1</u>	<u>2</u>	<u>3</u>
High Perf.-High Abil.	56.70	50.22	49.57
High Perf.-Low Abil.	59.50	55.36	48.07
Low Perf.-High Abil.	55.47	54.07	52.07
Low Perf.-Low Abil.	61.67	53.04	49.42

Figure 5.23. Performance-Input Orientation Interaction.



Groups	1	2	3
High Perf.-High IO	59.85	53.75	52.10
High Perf.-Low IO	55.29	50.29	45.35
Low Perf.-High IO	57.22	51.89	54.76
Low Perf.-Low IO	61.05	54.76	50.76

Figure 5.24. Ability-Input Orientation Interaction.



Groups	1	2	3
High Abil.-High IO	57.10	51.24	51.38
High Abil.-Low IO	55.12	52.35	49.53
Low Abil.-High IO	60.47	54.88	50.82
Low Abil.-Low IO	61.19	53.10	47.38

5.4.4 Dependent Variable Variance and Findings Summary

This section will review the MANOVA findings across dependent variables, comment on differences in findings for Pay and Task Satisfaction, and review some overall findings for the study.

5.4.4.1 MANOVA Interpretation

The MANOVA interpretation is complicated by the fact that some of the experimental effects are confounded due to the collinearity of ability with performance, and unequal cell sizes caused by individual difference level assignment. Thus, the order of elimination of confounding affects the results. Keeping this in mind, the MANOVA will first be examined by effect and then by dependent variable. Table 5.1 contains Friedman (1968) η^2 for each significant effect by dependent variable.

5.4.4.1.2 Effects

This study was explicitly designed with a strong pay manipulation. Ss receiving bonuses would get almost 60% more pay per hour than non-rewarded Ss. Thus, pay may have been related to satisfaction with a variety of outcomes. Results of the MANOVA indicated that bonus treatment was significantly related to four of the five dependent variables including Performance Deviation. From an overall standpoint, bonus treatment explained more variance than any other factor.

Performance was significantly related to two criteria. Obviously Performance and Performance Deviation were related, but Performance was also negatively related to Co-Worker Satisfaction. High performers were less satisfied with co-workers than low performers. This is not unusual since the highest low performer makes the same as all low

Table 5.1. Dependent Variable Variance (η^2) by Effect.¹

Effect	Criteria				
	PS	TS	CWS	PC	PD
Ability (A)					.09***
Input Orientation (IO)	(.02 ^x)				
Bonus (B)	.28***	.02 ^x		.15***	.03**
Performance (P)			.02 ^x		.36***
Sessions (S)		.05**		.10***	
A x IO	.02**				
A x P	.06***		.02	.02*	
IO x P					
IO x B					
A x B					.05**
A x S					(.02 ^x)
IO x S					
B x P					(.02 ^x)
B x S					
P x S					
A x IO x S					
A x IO x B	.06***	.02 ^x	.02*		.02*
A x IO x P				(.02 ^x)	
A x P x S					
IO x B x S					
A x B x S					
A x B x P					
IO x P x S					
IO x B x P					
B x P x S					
Variance accounted for	.42	.09	.06	.27	.55

¹ Items in parentheses not significant in overall MANOVA

^xP for effect $F < .10$

*P for effect $F < .05$

**P for effect $F < .01$

***P for effect $F < .001$

performers and the highest high performer makes no more than the lowest high performer within bonus treatments.

Ability was significantly related to Performance Deviation. Statistical regression explained the negative ability relationship with Performance Deviation over time.

The sessions effect was significant for Task Satisfaction and Perceptions of Competence. Both declined markedly for the second hour and increased slightly the third hour. This is probably related to the repetitive nature of the task and the competitive atmosphere in which it was performed.

The Bonus-Ability interaction for Performance Deviation supports an equity interpretation since, given ability levels, inequitably paid Ss within bonus treatments were less satisfied with pay and behaved as equity theory would predict for the overpay group. The interaction indicates that high ability (relevant input) and low ability (no relevant input) Ss were less satisfied within incongruent bonus conditions. The presence of this interaction reinforces the idea that equity is a generally valent outcome.

The Performance x Ability interaction also indicates that Ss whose ability was not congruent with performance were less satisfied. Finally, the Bonus x Ability x Input Orientation interaction demonstrated that individual differences measured in this study were not simply related to the criteria.

5.4.4.1.3 Dependent Variables

The main question here is related to the question of whether expectancy, equity, or individual differences were most likely to have



influenced the results. Since performance and ability were confounded and since performance assignment was done before the manipulation, ability will consist here as the sum of variance accounted for by performance and ability. The expectancy explanation will consist of the bonus effect, while equity will be the sum of Input Orientation and the interaction effects. It should be remembered that equity is penalized as an explanation in two ways: (1) the experiment had an explicit expectancy induction, and (2) all main effect confounding has been partialled out of the interactions.

Pay Satisfaction is largely a function of bonus receipt since this factor accounted for two-thirds of the explained variance. Equity was also related as 15% of the variance was attributable to Input Orientation and the interactions. Significant Pay Satisfaction interactions indicated that equity and its restoration is a valent outcome since within bonus conditions, lower satisfaction was related to inequitable treatment. Further support from an input standpoint was found when the Performance x Ability interaction demonstrated lowest satisfaction among Ss whose performance was not congruent with ability.

Only 9% of Task Satisfaction variance was explained, none by ability, and only 2% by each of equity or expectancy effects. Of the remainder, the other 5% was attributable to a decline in Task Satisfaction over time.

Six percent of Co-Worker Satisfaction was explained with 2% associated with ability and 4% with equity effects.

Perceptions of Competence was explained by three effects: expectancy (15%), time (10%), and equity (2%). Time is probably

significant because of the nature of the task and possible feelings of fatigue related to the evening hours of the job. The expectancy effect was probably related to the E's communications of performance through bonus awards. Ss saw their inputs as relevant for outcomes and thus upgraded the relative instrumentality of their performance relative to others.

The final dependent variable relates to individuals' performance relative to others in their groups. As one would expect, of the total of 55% explained variance, the greatest portion was related to ability (45%), followed by equity (7%), and expectancy (3%). The Bonus x Ability interaction here supported an equity interpretation since both low ability and high ability Ss receiving the bonus outpaced similar Ss who did not. Further, bonuses seemed to spur productivity among able Ss since the gap across bonus for high ability Ss was about six units vs. only 2.6 units for low ability Ss. The behavior of Ss supports an equity interpretation outside of ability effects. It also suggests that unless a strong communication to the contrary is given by a superior, Ss will behave consistent with relevant ability rather than perceived fairness.

5.4.4.2 Summary and Interpretation

The data support an expectancy interpretation of outcome satisfaction. There was little behavioral change in output in the face of inconsistent rewards. Satisfaction was most highly related to bonus treatment for three of four scales. This indicates that the main valent outcome sought here is high wages and that satisfaction flows from this attainment.

On the other hand, while equity was not stressed as a possible valent outcome by E, and all rewards for the attainment of equity would have been to a S, the evidence did show that equity is a secondary motive. This may indicate that equity can be included in a class of generally valent outcomes for many individuals.

Ss' adaptation to inequity, however weak, was largely cognitive as the relative change in the behaviorally alterable output only took place for underpaid Ss, and was not significant. Perceptions of inputs were altered markedly when faced with E's "feedback." This reinforces Graen's (1969) contention that the employer determines and communicates the instrumentality of various types of performance. The paradoxical finding here is that while E reduced Ss' cognitions relating to their inputs when non-rewarded, there was a much smaller concomitant behavioral change. Ss evidently assumed that there was a real basis to the communications and that continued hard work was necessary for reward outcomes.

In terms of pre-manipulation perceptions of inputs, Ss correctly differentiated themselves on the basis of performance but following the initial manipulation these measures demonstrated that by the third hour non-rewarded Ss had low scores while Ss receiving the bonus had high scores. Ss' behavior was not consistent with perceptions of inputs. Throughout the experiment high performers continued in their same relative positions on both total performance and group Performance Deviation measures. Slight, but non-significant, differences existed between bonus earners prior to the manipulation. While Ss were randomly assigned to bonus conditions, this slight difference in performance related to bonus receipt was probably due to MCT score differences (non-significant)

which were in the same direction. The gap widened slightly between Bonus-High Performance and No Bonus-High Performance groups, but narrowed for No Bonus-Low Performance and Bonus-Low Performance groups. The most parsimonious interpretation of the performance changes would be to conclude that statistical regression had occurred, but the directionality of change for the No Bonus-High Performance group casts doubt on this.

Equity theory predicts that Person will be more satisfied if he is being equitably paid, regardless of over- or underpayment. The theory also predicts that Person may revalue his inputs. If the latter occurs, maximum gain motives can be subsumed under equity. The Overall Performance Perceptions and Bonus Expectations data show some trends along the lines of revaluation for the Bonus-Low Performance group but not enough to reach the level of the Bonus-High Performance group (although the difference was not significant). Pay Satisfaction was not consistently higher for equitable relationships, but consistently greater for higher rewards. Thus the notion that Person revalues or ignores his inputs seems obvious. Equity needs do not seem to be particularly strong.

The aspects of the study relating to equity theory's concepts of outcomes are equally ambiguous. Supposedly, if Person feels inequitably treated, he may either express this in the form of lower satisfaction and/or behaviorally attempt to change outcomes; or failing this, he may enhance aspects of the task. In a situation where alleged competition leads to rewards, Ss with low actual inputs may not be able to alter inputs upward, relatively. However, in this study it does not

appear that even the No Bonus-High Performance group behaviorally altered inputs significantly downward to obtain equity, nor did the Bonus-Low Performance group decrease inputs to attempt to avoid the unearned bonus. Thus the notion that Person will attempt to behaviorally alter inputs seems suspect. It is interesting to speculate whether the repetitive nature of the task and the requirement for clerical speed and accuracy made it impossible to improve output relatively. Certainly high performers could have lessened output, but this did not occur.

According to earlier findings (Weick, 1964), task enhancement should be reflected by higher scores related to aspects of satisfaction with the job situation for underpaid Ss. If satisfaction is most strongly related to equitable treatment, satisfaction measures should be lower for inequitably-paid Ss. The data do not support either interpretation. Rewarded Ss, after the first hour, score consistently higher on Task Satisfaction. No task enhancement and no lowered satisfaction due to inequity are evident. In fact, maximum gain for level of actual input appears to lead to highest satisfaction with the task.

Overall, the data indicate that satisfaction follows primarily from higher pay outcomes, and secondarily from equity. Performance is most highly related to ability, not expectancy. Equity has a consistent relationship with both satisfaction and performance but accounts for less variance than expectancy for satisfaction, or ability for performance. The data indicate that equity is a generally desired outcome, but not the most important. Ability is related to performance, but not satisfaction. All of these outcomes have implications for practice, to be discussed later.

5.5 Weaknesses of the Study

Unfortunately, this study cannot completely answer whether or not specific outcome expectancy or equity is most important for performance or satisfaction. The main weakness in the study is related to the degree to which equity rather than pay satisfaction has been measured. Each of the equity scales contained the bi-polar adjectives "fair-unfair." There is considerable support for the idea that the other items in the equity scales were also responded to by Ss from a fairness standpoint since correlations between total scales and answers to the "fair-unfair" set ranged from .59 to .73 and increased over the three hours. A more comprehensive equity measure included in an unobtrusive manner would have clarified some conclusions.

Second, some a priori indication by Ss of the degree to which money and equity, as outcomes, were important to them could have helped to determine the degree of support, a priori, that either an expectancy model or equity formulation might have been expected to receive. It would also have provided an opportunity to match behavior and intentions.

5.6 Applications

From a practical standpoint, the results demonstrate again the low performance-satisfaction relationship usually found, with satisfaction contingent on rewards while performance is not. The Ss' low degree of resistance to cognitive changes regarding inputs is also evident. It again lends credence to the continued findings that satisfaction and performance are essentially unrelated from a simple standpoint. However, it also would tend to support March and Simon's (1958) proposition

that when one's inducements fall below contributions, contributions will not be reduced but motivation for organizational participation will decline.

In regard to wage and salary administration, the data do point to some possible applications. The two main findings appropriate are related to communication of salary treatment and satisfaction. Lawler (1967b) claimed that pay secrecy had dysfunctional consequences in the organization. Although Milkovich and Peterson (1971) disputed this, Lawler found that employees frequently overestimated salaries of comparison persons. Thus, he advocated the publication of salaries as a way of reducing dissatisfaction. The study leads to some interesting conclusions in this area. The data obviously show satisfaction to be higher for individuals who received higher pay even though salary treatment had little or nothing to do with subsequent performance. These findings suggest that a company could make merit guides public, and at the same time, consistent efforts should be made to reward persons for performance and publicize relative results. Since the data here indicate that pay treatment did not alter performance but did affect satisfaction, perhaps this type of pay treatment and publication might lead to decreased turnover for rewarded employees and increased turnover for unrewarded poorer performing employees. One of the reasons for this contention is the fact that underrewarded Ss did not substantially decrease performance, but did have the lowest satisfaction. A long-run effect of dissatisfaction would probably be increased turnover.

The role and effect of feedback on performance is relatively vague in this study since feedback was related to salary and not actual

performance. One thing that does appear is the fact that performance can't easily be enhanced relative to talented others in a competitive situation. Thus, a high talent staff has a substantially higher effect on organizational attainment of goals than attempting to communicate performance to lesser qualified members. Ability, rather than attempts to increase motivation, determine performance, but not satisfaction. The practical implication here for the organization is that job attitudes are more important for predicting outcomes other than performance. It also indicates that behavioral change is not necessarily controllable by management. No substantial behavioral change resulted from experimental manipulations here.

From a salary administration standpoint, high rewards may not elicit greater effort. This is reasonable from an organizational standpoint since pay increases are usually a recognition of relative past performance rather than an incentive for future performance. Further, being treated as a high performer (regardless of performance) leads to satisfaction (or less dissatisfaction) with most facets of the job. Finally, the practitioner might link pay to performance and publicize it. Apparently, little can be done to alter performance by pay practices, but overall satisfaction levels and turnover rates may be related to pay.

5.7 Future Research

In terms of extending knowledge in the areas of equity and expectancy theory, future research should consider the following:

(1) An a priori cataloging of Ss' relevant valent outcomes (including equity) given the experimental task and setting.

(2) A more extensive, tested measure of perceptions of fairness for both Own and Comparison equity--at least to the degree to which inequity in induced situations (high and low) are recognized, and the measures must have discriminant validity for the two equity conditions.

(3) A situation in which Ss have a variety of possible behavioral alternatives, including quitting, as possible modes for resolving inequity.

(4) Continued use of individual difference measures to determine moderating influences on inequity perceptions is necessary.

(5) A more complete a priori ordering and cataloging of what Ss believe to be relevant inputs and their personal valuation of the degree to which they possess them.

Using these additional and continuing features, and extending the period of time to encompass at least one eight-hour period would help to confirm, modify, or refute various aspects of equity theory.

5.8 Impact of This Study

As a study in organizational behavior, two audiences are addressed: theoreticians and practitioners. From a theoretical standpoint, the findings support the contention that equity is but one of a number of valent outcomes. The data indicate that the instrumentality of various forms of behavior is determined by the organization and feedback can alter perceptions of individuals. Satisfaction is related to management's apportionment of rewards. Finally, the inability or

failure of these Ss to change behavior is evident, supporting the contention that individual differences largely explain performance differentials.

For the practitioner, these data indicate the high degree to which the attainment of preferred outcomes are related to satisfaction. In this case it can also be seen that job attitudes don't have much to do with performance, while ability does. Finally, employers can take heart from the fact that even though this was a boring, discouraging task, reliabilities of performance were high, and productivity did not decline during the final hour.

REFERENCES

REFERENCES

- Adams, J. S. Inequity in social exchange. In L. Berkowitz (Ed.). Advances in Experimental Social Psychology. Vol. 2. New York: Academic Press, 1965, 267-299.
- Adams, J. S. Effects of overpayment: Two comments on Lawler's paper. Journal of Personality and Social Psychology, 1968, 10, 315-316.
- Adams, J. S., and Jacobsen, P. R. Effects of wage inequities on work quality. Journal of Abnormal and Social Psychology, 1964, 69, 19-25.
- Adams, J. S., and Rosenbaum, W. E. The relationship of worker productivity to cognitive dissonance about wage inequities. Journal of Applied Psychology, 1962, 46, 161-164.
- Andrew, D., Paterson, D., and Longstaff, H. Minnesota Clerical Test. New York: Psychological Corporation, 1933.
- Andrews, I. R. Wage inequity and job performance: An experimental study. Journal of Applied Psychology, 1967, 51, 39-45.
- Andrews, I. R., and Valenzi, E. R. Overpay inequity or self-image as a worker: A critical examination of an experimental induction procedure. Organizational Behavior and Human Performance, 1970, 5, 266-276.
- Argyris, C. Some problems in conceptualizing organizational climate: A case study of a bank. Administrative Science Quarterly, 1958, 2, 501-520.
- Bem, D. J. Dissonance reduction in the behaviorist. In R. P. Abelson, E. Aronson, W. J. McGuire, T. M. Newcomb, M. J. Rosenberg, and P. H. Tannenbaum (Editors). Theories of Cognitive Consistency: A Sourcebook. Chicago: Rand McNally, 1968.
- Bock, R. D., and Haggard, E. A. The use of multivariate analysis of variance in behavioral research. In D. K. Whitla (Ed.). Handbook of Measurement and Assessment in Behavioral Sciences. Reading, Mass.: Addison-Wesley, 1968, 100-142.
- Brayfield, A. H., and Crockett, W. H. Employee attitudes and employee performance. Psychological Bulletin, 1955, 52, 394-424.

- Campbell, D. T., and Fiske, D. W. Convergent and discriminant validation by the multitrait-multimethod matrix. Psychological Bulletin, 1959, 56, 81-105.
- Cherrington, D. J., Reitz, H. J., and Scott, W. E., Jr. Effects of contingent and noncontingent reward on the relationship between satisfaction and task performance. Journal of Applied Psychology, 1971, 55, 531-536.
- Clyde, D. J., Cramer, E. M., and Sherin, R.J. Multivariate Statistical Programs. Coral Gables, Fla.: University of Miami, 1966.
- Cronbach, L. J. Coefficient alpha and the internal structure of tests. Psychometrika, 1951, 16, 297-334.
- Cronbach, L. J. The two disciplines of psychology. American Psychologist, 1957, 12, 671-684.
- Evans, M. G., and Molinari, L. Equity, piece rate overpayment, and job security: Some effects of performance. Journal of Applied Psychology, 1970, 54, 105-114.
- Ferguson, C. E. Microeconomic Theory. (Revised Edition.) Homewood, Ill.: Irwin, 1969.
- Festinger, L. A Theory of Cognitive Dissonance. Evanston, Ill.: Row, Peterson, 1958.
- Finn, R. H., and Lee, S. M. Salary equity: Its determination, analysis, and correlates. Journal of Applied Psychology, 1972, 56, 283-292.
- Fleishman, E. A. Leadership climate, human relations training, and supervisory behavior. Personnel Psychology, 1953, 15, 205-222.
- Fossum, J. A. Urban-rural differences in job satisfaction. Industrial and Labor Relations Review, 1974, 27, 405-409.
- Friedman, A., and Goodman, P. Wage inequity, self-qualifications, and productivity. Organizational Behavior and Human Performance, 1967, 2, 406-417.
- Friedman, H. Magnitude of experimental effect and a table for its rapid estimation. Psychological Bulletin, 1968, 70, 245-251.
- Georgopolous, B. S., Mahoney, G. M., and Jones, N. W. A path-goal approach to productivity. Journal of Applied Psychology, 1957, 41, 345-353.
- Goodman, P., and Friedman, A. An examination of the effect of wage inequity in the hourly condition. Organization Behavior and Human Performance, 1968, 3, 340-352.

- Goodman, P., and Friedman, A. An examination of quantity and quality of performance under conditions of overpayment in piece rate. Organizational Behavior and Human Performance, 1969, 4, 365-374.
- Goodman, P., and Friedman, A. An examination of Adams' theory of inequity. Administrative Science Quarterly, 1971, 3, 271-288.
- Gordon, M. E. An evaluation of Jaques' studies of pay in the light of current compensation research. Personnel Psychology, 1969, 22, 369-390.
- Gouldner, A. W. The norm of reciprocity. American Sociological Review, 1960, 25, 161-178.
- Graen, G. B. Instrumentality theory of work motivation: Some experimental results and suggested modifications. Journal of Applied Psychology, 1969, 53, 2, part 2, 1-25.
- Hebb, D. O. Comment on altruism: The comparative evidence. Psychological Bulletin, 1971, 76, 409-410.
- Hellreigel, D., and French, W. A critique of Jaques' equitable payment system. Industrial Relations, 1969, 8, 269-279.
- Heneman, H. G., III, and Schwab, D. P. Evaluation of research on expectancy theory predictions of employee performance. Psychological Bulletin, 1972, 78, 1-9.
- Herman, J. B., and Hulin, C. L. Managerial satisfactions and organizational roles: An investigation of Porter's need deficiency scales. Journal of Applied Psychology, 1973, 57, 118-124.
- Homans, G. C. The Human Group. New York: Harcourt, Brace, and World, 1950.
- Homans, G. C. Status among clerical workers. Human Organization, 1953, 12, 5-10.
- Homans, G. C. Social Behavior: Its Elementary Forms. New York: Harcourt, Brace, and World, 1961.
- Hulin, C. L., and Blood, M. R. Job enlargement, individual differences, and worker responses. Psychological Bulletin, 1968, 69, 41-55.
- Jaques, E. Equitable Payment. New York: Wiley, 1961.
- Krebs, D. L. Altruism--an examination of the concept and a review of the literature. Psychological Bulletin, 1970, 73, 258-302.

- Krebs, D. L. Infrahuman altruism. Psychological Bulletin, 1971, 76, 411-414.
- Lawler, E. E., III. The multitrait-multirater approach to measuring managerial job performance. Journal of Applied Psychology, 1967, 51, 369-381. (a)
- Lawler, E. E., III. Secrecy about management compensation: Are there hidden costs? Organizational Behavior and Human Performance, 1967, 2, 182-189. (b)
- Lawler, E. E., III. Effects of hourly overpayment on productivity and work quality. Journal of Personality and Social Psychology, 1968, 10, 306-313. (a)
- Lawler, E. E., III. Equity theory as a predictor of productivity and work quality. Psychological Bulletin, 1968, 70, 596-610. (b)
- Lawler, E. E., III. Pay and Organizational Effectiveness: A Psychological View. New York: McGraw-Hill, 1971.
- Lawler, E. E., III, Koplin, C. A., Young, T. F., and Fadem, J. A. Inequity reduction over time in an induced overpayment situation. Organizational Behavior and Human Performance, 1968, 3, 253-268.
- Lawler, E. E., III, and O'Gara, P. W. Effects of inequity produced by underpayment on work output, work quality and attitudes toward work. Journal of Applied Psychology, 1967, 51, 403-410.
- Locke, E. A. What is job satisfaction? Organizational Behavior and Human Performance, 1969, 4, 309-336.
- Locke, E. A., Bryan, J. F., and Kendall, L. M. Goals and intentions as mediators of the effects of monetary incentives on behavior. Journal of Applied Psychology, 1968, 52, 104-121.
- March, J. G., and Simon, H. S. Organizations. New York: Wiley, 1958.
- Maslow, A. H. Motivation and Personality. New York: Harper, 1954.
- McArthur, L. A., Kiesler, C. A., and Cook, B. P. Acting on an attitude as a function of self-percept and inequity. Journal of Personality and Social Psychology, 1969, 12, 295-302.
- Milkovich, G. T., and Campbell, K. A study of Jaques' norms of equitable payment. Industrial Relations, 1972, 11, 267-271.
- Mitchell, T. R., and Biglan, A. Instrumentality theories: Current uses in psychology. Psychological Bulletin, 1971, 76, 432-454.

- Mosvick, R. K. An experimental evaluation of two modes of motive analysis instruction in an industrial setting: A study in method. Unpublished doctoral dissertation, University of Minnesota, 1966.
- Opsahl, R. L., and Dunnette, M. D. The role of financial compensation in industrial motivation. Psychological Bulletin, 1966, 66, 99-118.
- Osgood, C. E., Suci, G. J., and Tannenbaum, P. H. The Measurement of Meaning. Urbana, Ill.: University of Illinois Press, 1957.
- Patchen, M. The Choice of Wage Comparisons. Englewood Cliffs, N. J.: Prentice-Hall, 1961.
- Peak, H. Attitude and motivation. In Jones, M. R. (Ed.). Nebraska Symposium on Motivation, 1955. Lincoln, Neb.: University of Nebraska Press, 1955.
- Porter, L. W. Job attitudes in management: II. Perceived importance of needs as a function of job level. Journal of Applied Psychology, 1963, 47, 141-148.
- Porter, L. W., and Lawler, E. E., III. Managerial Attitudes and Performance. Homewood, Ill.: Irwin, 1968.
- Pritchard, R. D. Equity theory: A review and critique. Organizational Behavior and Human Performance, 1969, 4, 176-211.
- Pritchard, R. D., Dunnette, M. D., and Jorgenson, D. O. Effects of perceptions of equity and inequity on worker performance and satisfaction. Journal of Applied Psychology, 1972, 56, 75-94.
- Richardson, R. Fair Pay and Work. Carbondale, Ill.: Southern Illinois University Press, 1971.
- Schmidt, F. L. Implications of a measurement problem for expectancy theory research. Organizational Behavior and Human Performance, 1973, 10, 243-251.
- Schuler, R. Worker background and job satisfaction. Industrial and Labor Relations Review, 1973, 26, 851-853.
- Shepard, J. M. Functional specialization, alienation, and job satisfaction. Industrial and Labor Relations Review, 1970, 23, 207-219.
- Smith, A. An Inquiry into the Nature and Causes of the Wealth of Nations. New York: Random House, 1937.

- Tornow, W. W. The development and application of an input-outcome moderator test on the perception and redirection of inequity. Organizational Behavior and Human Performance, 1971, 6, 614-638.
- Turner, A. N., and Lawrence, P. R. Industrial Jobs and the Worker: An Investigation of Response to Task Attributes. Boston: Harvard University, Graduate School of Business Administration, 1965.
- Tyler, L. C. The Psychology of Human Differences. New York: Appleton-Century-Crofts, 1965.
- Valenzi, E. R., and Andrews, I. R. Effect of hourly overpay and underpay inequity when tested with a new induction procedure. Journal of Applied Psychology, 1971, 55, 22-27.
- Vroom, V. H. Work and Motivation. New York: Wiley, 1964.
- Weick, K. E. Reduction of cognitive dissonance through task enhancement and effort expenditure. Journal of Abnormal and Social Psychology, 1964, 68, 533-539.
- Weick, K. E. Laboratory experimentation with organizations. In J. G. March (Ed.). Handbook of Organizations. Chicago: Rand McNally, 1965, 194-260.
- Weick, K. E. The concept of equity in the perception of pay. Administrative Science Quarterly, 1966, 11, 414-439.
- Weick, K. E., and Nasset, B. Preferences among forms of equity. Organizational Behavior and Human Performance, 1968, 3, 400-416.
- Whyte, W. F. Money and Motivation. New York: Harper and Row, 1955.
- Wood, I., and Lawler, E. E., III. Effects of piece-rate overpayment on productivity. Journal of Applied Psychology, 1970, 54, 234-238.
- Zaleznik, A. Worker Satisfaction and Development. Boston: Harvard University Graduate School of Business Administration, Division of Research, 1956.
- Zedeck, S., and Smith, P. C. A psychophysical determination of equitable payment: A methodological study. Journal of Applied Psychology, 1968, 52, 343-347.

APPENDICES

APPENDIX A

SUBJECTIVE PERFORMANCE RATING

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SUBJECTIVE PERFORMANCE RATING

Please estimate on the following 7-point scales how you thought you did on the variables given, and your estimate of whether or not you earned the bonus.

<u>Quantity of work</u>	7 6 5 4 3 2 1
<u>Quality of work</u>	7 6 5 4 3 2 1
<u>Overall performance</u>	7 6 5 4 3 2 1
<u>Probability of getting bonus</u>	7 6 5 4 3 2 1

Name _____

APPENDIX B

DATA CODING FEASIBILITY STUDY SATISFACTION QUESTIONNAIRE

APPENDIX B

DATA CODING FEASIBILITY STUDY SATISFACTION QUESTIONNAIRE

On the following pages you will find eight sets of adjectives. There may be as few as three or as many as eleven grouped together. Before each set is a phrase which pertains to you and some facet of this job. You are asked to indicate how strongly one or the other of each pair of adjectives applies to how you feel about that aspect of this job.

An example of the format of the questions follows:

My life

Neither one
nor the
other

Extremely Quite Slightly

Slightly Quite Extremely

Happy

Sad

Please place a check mark in the blank that comes closest to describing how you feel about your life. All of the questions are in this format.

Now, please place your name, and the session of work we are in on the space provided below.

Name _____ Session _____

Neither one
nor the
other

My pay

Neither one
nor the
other

[illegible]

My pay in comparison with what others in my group received

	Neither one nor the other				
	Extremely	Quite	Slightly	Quite	Extremely
Fair	_____	_____	_____	_____	Unfair
High	_____	_____	_____	_____	Low
Unreasonable	_____	_____	_____	_____	Reasonable

My pay in comparison with what others get for similar work on the campus

	Neither one nor the other				
	Extremely	Quite	Slightly	Quite	Extremely
Superior	_____	_____	_____	_____	Inferior
Low	_____	_____	_____	_____	High
Reasonable	_____	_____	_____	_____	Unreasonable

My fellow workers

	Neither one nor the other				
	Extremely	Quite	Slightly	Quite	Extremely
Sociable	_____	_____	_____	_____	Unsociable
Obstructive	_____	_____	_____	_____	Helpful
Pleasant	_____	_____	_____	_____	Unpleasant
Selfish	_____	_____	_____	_____	Unselfish
Cooperative	_____	_____	_____	_____	Uncooperative

1

[illegible]

My pay in comparison with the effort I expended

[illegible]

My satisfaction with this work

[illegible]



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