Self-esteem as a moderator of response to pay inequity

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Self-esteem as a moderator of response to pay inequity

by

William Edward Cayley

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Introduction

In the exchange of wages for services, feelings of equitable or inequitable treatment may be experienced if an individual considers himself justly or unjustly recompensed for his services, effort, abilities, or other contribution to the task. The concept "felt inequity" is conceived as synonymous with "acutely felt injustice" and as relevant to "any social situation in which exchange takes place, explicitly or implicitly" when "there are expectations of what is a fair exchange". (Adams, 1965, p 276).

Equity theory (Adams, 1963a, 1965) purports to predict the behavior of individuals in situations characterized by such real or imagined disparity or inequity. Several studies have supported equity theory predictions, but a number of authors have criticized the theory and the supporting research. The most damaging criticism is that the procedures employed to create inequity result in a stronger threat to feelings of self-esteem and competence than to feelings of just treatment. Certain suggestions by the critics and the findings of unrelated studies support the notion that the variable "self-esteem" moderates response to inequitable treatment, though no one has yet directly proposed this in the context of the equity theory literature. Consequently, the present study will investigate the moderating effects of subjective level of self-esteem on responses to manipulated equitable or inequitable payment.
Equity Theory

Definition of Variables

Adams (1963a) has defined equity as a perceived correspondence between the input (I) - outcome (O) ratio of Person (P) and that of his comparison other (A), for a given task. Inputs may be any attributes, abilities, or effort P contributes to performance on a task, and outcomes may be any wages, satisfactions, or perquisites realized by P as a result of participation in the task. While inputs and outcomes may be conceptualized as independent (Adams, 1965) they are in fact imperfectly correlated. It is this imperfect correlation which for Adams justifies a concept like equity. Equity thus implies a set of "learned normative expectations" as to what the level of correlation between inputs and outcomes should be.

In order for inequity to occur, P and A must be involved in a task relevant exchange comparison. Further, a given input and/or outcome must be recognized by P as relevant to the comparison of his and A's I-O ratios. Felt inequity may thus be due to anything inducing perceived inequality in the expression \( \frac{O_p}{I_p} = \frac{O_a}{I_a} \) (Adams, 1965).

The various comparison situations in which this may occur can be delineated as perceived disparity between outcomes (inputs held constant), between inputs (outcomes held constant), or between resultant ratios of differing levels of inputs and outcomes. The exchange situation need not be direct, and in research an equity theory, it typically has not been such that P is rewarded for some performance by A. The comparison other may be P himself in another previous or anticipated situation and
thus not the other member of an interacting dyad, or A may be someone (e.g., co-worker) with whom P compares the relative fruits of his and A's exchanges with a third party (e.g., employer).

Equity theory predictions

Equity theory contains two postulates: (1) tension is created in proportion to the amount of inequity present, and (2) this tension will motivate the person to eliminate or reduce the inequity in proportion to the amount of tension (Adams, 1965). Initially the theory was stated in the form of the following two rather general predictions. "Within certain limits of inequity there will be a tendency on the part of Person to manipulate and weigh cognitively his own inputs and outcomes and those of Other in such a manner as to minimize the degree of felt inequity." "Beyond the limits of inequity the tendency will be to manipulate and weigh inputs and outcomes so as to maximize the inequity . . . this will increase the motivation to adopt behavior that will eliminate the inequity entirely" (Adams, 1963a, p. 427).

In a more recent theoretical article, Adams (1965) is more explicit, specifying six possible ways P might minimize the degree of felt inequity. (1) Person (feeling inequity) may alter his inputs. Increasing inputs will reduce advantageous inequity \( \frac{O_i}{I_i} > \frac{O_a}{I_a} \) and decreasing inputs will reduce disadvantageous inequity \( \frac{O_i}{I_i} < \frac{O_a}{I_a} \). (2) Person may alter his outcomes, increasing outcomes in disadvantageous inequity and decreasing outcomes in advantageous inequity. (3) Person may distort his inputs and outcomes cognitively, in a manner similar to the behavioral changes predicted in 1 and 2 above. For example, in advantageous
inequity P may derogate his outcomes or view himself as more competent than he initially thought himself to be. (4) Person may leave the field, remove himself from the situation which involves the inequitable comparison, e.g. quitting his job. (5) Person may attempt to induce his comparison other to change inputs or outcomes, though Adams (1965) indicates that there is no evidence to suggest this ever occurs. (6) Person may change the object of his comparison, resulting in a severed dyad or a shift in point of focus in a triad or larger group.

Alteration of inputs (e.g., 1 or 3 above) as an inequity reduction scheme is more likely than alteration of outcomes, since in most situations inputs (e.g. effort) are more manipulable by P than are outcomes (e.g. rate of pay). Manipulation of inputs may, however, affect perceived level of outcomes in the ratio. Also, a manipulation involving lowering outcomes would be akin to increasing costs and violate one of the following guiding conditions covering choice of mode of inequity reduction.

There are six postulates guiding selection of any of the above modes of inequity reduction (Adams, 1965): (1) Person will attempt to maximize positively valent outcomes and the valence of outcomes; (2) Person will minimize costly and effortful inputs; (3) Person will resist real and cognitive changes in inputs and outcomes central to his self-concept and self-esteem; (4) Person will be more resistant to changing conditions about his own than about A's inputs and outcomes; (5) Leaving the field will occur only when there is no good alternative mode of inequity reduction; (6) Person will resist changing his comparison other.
In summary, Adams' equity theory suggests that a person will feel inequity to the extent that his input-outcome ratio differs from that of a chosen or designated comparison other(s). P is predicted to reduce these feelings of inequity in certain ways. Ordinarily this will involve the actual or cognitive manipulation of inputs or outcomes, but may result, under conditions of extreme inequity, in disruption of the comparison relationship.

**Initial support for equity theory**

Prior to 1965 the findings for equity theory were that overpayment on an hourly pay schedule results in greater output (quantity) than in an equity condition whereas overpayment on a piece-rate schedule results in less output (Adams and Rosenbaum, 1962) but of better quality (Adams, 1963b). Hence, in an interview task, subjects were seen as defining the job in terms of turning in many interviews (quantity) in the hourly condition and in terms of turning in very complete interviews (quality, number of words per interview) in the piece-rate condition. In both of the above studies overpayment was created by holding outcomes constant (paying all subjects in the study the same rate) and manipulating inputs. This was accomplished by telling inequity subjects they were unqualified for the task, but that they would be hired anyway and paid at the same rate as qualified subjects; equity subjects were told they were qualified for that task and would be paid at the specified rate. This procedure of inequity induction has been designated input overcompensation (Wiener, 1970). Inequity was thus apparently reduced by increasing quantity inputs in the hourly overpayment condition and quality inputs
in the piece-rate overpayment condition. The decline of quality output in the latter case was seemingly a fortuitous result of the negative correlation between quantity and quality as measured in the interview task.

Adams (1963a) cited an unpublished Ph.D. dissertation by Arrowood who investigated the possibility that the unqualified subject induction created differential feelings of job security in the two groups and that this could account for the observed differences. However, both Arrowood, and Adams and Jacobsen (1964) found that their "security" manipulations did not differentially affect responses to inequity as defined by the unqualified subject induction.

Recent equity research

Since Adams' (1965) latest theoretical statement, research on equity theory has dealt primarily with two questions: Identifying the limiting conditions under which feelings of inequitable pay may influence performance, and the validity of the challenged qualifications induction as a means for creating inequity. It is the latter with which we are concerned here.

Leventhal, as primary investigator in a series of collaborative studies (see below), observed subjects reactions to allocation of rewards after task performance. His procedure called for two people to work together, one of them being an accomplice of the investigators. Equity theory predictions were generally supported when subjects reallocated outcomes after the accomplice equitability or inequitability divided the money. The findings of these studies are: (1) inequitably treated
subjects attempt to reduce inequity by actual (reallocation) or cognitive (questionnaire responses) manipulation of inputs and outcomes (Leventhal, Allen and Kemelgor, 1969; Leventhal and Bergman, 1969; Leventhal and Michaels, 1969; Leventhal, Weiss, and Long, 1969); and (2) when extreme inequity exists, self-deprivation behavior occurs (extreme underpayment subjects reduce their share), purportedly in order to reduce felt inequity by showing independence from the other member of the dyad (Leventhal and Bergman, 1969). It is unlikely, however, that an employer will engage in a reallocation relationship with an employee, in the same manner of Leventhal's accomplices, or that two employees would find themselves in such a relationship. These studies, therefore, do not accurately reflect the typical employer-employee relationship to which other researchers extrapolate at the equity concept.

In recent studies more suitably designed to reflect on a more typical employer-employee relationship, procedures identical to those of Adams' have been employed. In piece-rate studies, equity theory predictions have been supported by findings of low quantity-high quality for overpayment and high quantity-low quality for underpayment (Andrews, 1967; Evans and Molinari, 1970; Lawler, Koplin, Young and Fadem, 1968; Lawler and O'Gara, 1967; Wood and Lawler, 1970). Piece-rate underpayment had not been previously investigated, thus these underpayment findings reflect a unique contribution to equity research by Andrews and by Lawler and O'Gara. The underpayment manipulation in both of these studies was accomplished by paying subjects less than what pre-test data indicated to be a fair piece-rate for the task. In the hourly pay situation, the equity prediction (high quantity in the overpayment condition) has
received some support (Lawler, 1968a; Friedman and Goodman, 1967; Goodman and Friedman, 1968; Wiener, 1970), although Lawler reviews this evidence and finds that "at the present point it is not apparent that equity theory is needed in order to explain the results of overpayment in the hourly condition" (Lawler, 1968b, p. 605). He bases this inference on his conclusion that in the hourly condition subjects raise their inputs only in response to feelings of personal inadequacy and not pay inequity.

Employment of the unqualified subject induction, as originally developed by Adams and incorporated in the overpayment studies cited in the previous paragraph, has been strongly criticized. In telling a subject he is unqualified for the task and then hiring him anyway, it has been argued that the investigator is challenging the subject's self-concept, feelings of competence, and self-esteem, rather than establishing a disproportional input-outcome ratio as claimed by Adams (Lawler, 1968b; Pritchard, 1969). The suggested alternative explanation is that the results of such studies are due to devalued self-esteem (Friedman and Goodman, 1967; Wiener, 1970; Valenzi and Andrews, 1970), or personal insecurity (Evans and Molinari, 1970). These last four studies are the only ones in the equity theory literature to date which involved direct attempts to assess the self-esteem (security) explanation(s) in equity studies. Andrews and Valenzi (1970) found, in a role play situation encompassing a variety of inequitable treatment situations, that self-esteem, almost to the complete exclusion of equity notions, accounted for large portions of the variance in subjects' questionnaire responses. The impact of these findings is diminished, however, by the arguments
for non-isomeric relations between role-playing and experimental research (Freedman, 1969) and between questionnaire responses and action (Wicker, 1969).

**Assessments of self-esteem confounding**

Friedman and Goodman (1967) administered the unqualified overpayment (hourly) manipulation to subjects and analyzed their data in two ways. In their first analysis comparison of means for the equity and overpay groups showed no equity effect. For the second analysis the experimental (inequity) and control (equity) groups were dichotomized according to subjects' self-reported task qualifications as solicited prior to administration of the equity/inequity inductions. It was noted that means for "the two subgroups most similar to Adams' conceptual delineation of the experimental and control conditions (i.e. the unqualified experimentals and the qualified controls) are reversed relative to equity predictions, that is, the unqualified experimental group produced fewer interviews than did the qualified controls" (Friedman and Goodman, 1967, p. 414). The unqualified experimental group did produce more interviews than the unqualified controls, as predicted by equity theory, but the difference was not statistically significant. Comparing their data (number of interviews conducted) with Adams' (Adams and Rosenbaum, 1962), Friedman and Goodman conclude that Adams' groups probably consisted of subjects with low self-perceived qualifications for the interview task. Friedman and Goodman suggest a restricted theory of equity that may predict responses only for certain people. Lawler (1968b) makes a similar suggestion, except that he finds
equity notions possibly applicable to piece-rate situations and not to the hourly overpaid situation of Friedman and Goodman.

Wiener (1970) and Evans and Molinari (1970) manipulated the experimental situation so as to create differential feelings of self-esteem and security respectively. Wiener (1970) hired subjects for either $2.00 per hour or $3.00 per hour as advertised in the student paper. Subjects responding to the ad offering $2.00 per hour were randomly assigned to treatments according to a design which crossed two types of subject orientation (task orientation - this is a psycholinguistics research project; ego orientation - this is a test of mental alertness) with three levels of the equity manipulation (equity - you are qualified and are hired; input overcompensation - you are not qualified, but we need subjects so will hire you; outcome overcompensation - you are qualified and due to a recent authorization we will be able to pay you $3.00 per hour). Subjects responding to the ad offering $3.00 per hour were all equity condition subjects, randomly assigned to the task- and ego-orientation conditions. Strong equity effects occurred on ratings of pay and self-ratings of qualifications, all of which merely indicate that the subjects understood the inductions administered. Comparison of the outcome-overcompensation group with the $2.00 and $3.00 equity groups, controlling for pretested task ability, showed a significant main effect due to the equity manipulation. This was the only comparison to support equity predictions, however. Other analyses showed a significant main effect due to subject orientation (task vs. ego) and a significant interaction between orientation and equity inputs (i.e. input-overcompensation), ostensibly supporting the self-esteem
interpretation of the effects due to the equity manipulations.

This interpretation does not stand without qualification, however. As Lawler (1968b) notes, if the qualifications manipulation is employed, the equity manipulation remains potentially confounded with challenged security, regardless of other manipulations included in the study. In Wiener's design, this confounding was present, and would have inflated the sum-of-squares for the orientation x conditions of equity/inequity interaction which Wiener claims as support for the challenged self-esteem interpretation.

Evans and Molinari (1970), in a piece-rate study, found that manipulated insecurity was a better predictor of performance than was the equity manipulation. They crossed two levels of equity/inequity (equity and unqualified overpayment) with two levels of security (hired for four 2 hour sessions vs. hired for the first session and then evaluated for possible rehire) and noted that the equity-secure group produced more interviews of lower quality than did the other three groups. Finding for a security interpretation, they suggested, similarly to Lawler (1968b), that the unqualified overpayment manipulation creates insecurities about guaranteed employment that are not of concern to the equity-secure subjects, thus contradicting the earlier conclusion of Arrowood and of Adams and Jacobsen. Evans and Molinari did not, however, control for possible confounding of felt inequity and devaluation of self-esteem, and as a consequence their findings possess ambiguity as did Wiener's.

The findings in studies which included a condition of overpayment not involving the unqualified subject induction are not clear. Andrews (1967) paid subjects more than pretesting indicated as an equitable
piece-rate and found support for equity theory. Lawler (overpayment by circumstance, 1968a) and Wiener (outcome overcompensation, 1970) told subjects that due to a recent increase in grant funds, a high hourly rate was possible. Lawler found no difference between this group and the equity group, claiming support for a challenged self-esteem interpretation, whereas Wiener, controlling for pre-tested ability on the task, found differences supporting equity predictions.

The concept of self-esteem has been notably absent from discussions of underpayment (Andrews, 1967; Lawler and O'Gara, 1967). While the self-esteem variable may be inferred to affect responses in this condition, as will be discussed shortly, absence of this variable from the discussions probably reflects two related facts. First, most discussions of underpayment have only been with piece-rate studies, and secondly, there is general acceptance of the equity interpretation given of piece-rate studies (Lawler, 1968b; Pritchard, 1969).

Only one study to date presents an avowed attempt to study inequity motivation in the absence of a challenge to self-esteem. This was accomplished "... with an induction procedure which did not challenge the worker's job qualifications, eliminating devalued self-esteem as a confounding variable" (Valenzi and Andrews, 1971). The induction involved telling inequity subjects who had already completed one of two two-hour work sessions that they had been selected (at random) to receive a pay rate change. The change in pay was due to changed costs in another aspect of the project budget. Both overpayment and underpayment on an hourly pay schedule were employed (this is the first equity study published which included hourly underpay).
No statistically significant differences were identified for either quality or quantity measures on the clerical task (transferring data to IBM answer sheets) employed in this study. Comparing this result with the findings of studies previously criticized on the basis of "nonequity motivations" (i.e. challenged job qualifications), the authors claim support for the argument that significant differences identified in previous equity research were in fact due to challenged qualifications or devalued self-esteem.

At least two related restrictions may be placed on the interpretation Valenzi and Andrews gave their study. First, one may question whether or not they did in fact eliminate challenges to the subjects. It seems probable that a person would have some questions about either his "to be evaluated" performance or about the study in general when told, regarding the pay change: "It has nothing to do with your work, its just a matter of chance that you were selected. It is important that you don't tell anyone else about your pay change. We don't want to cause any bad feelings among other girls working in the project" (Valenzi and Andrews, 1971, p. 24). Rather, it would seem "evaluation apprehension" (Rosenberg, 1965) might well play an active part in influencing task performance, perhaps even to the point of minimizing differences between groups. A subject's feeling of evaluation apprehension refers to "an active, anxiety-toned concern that he win a positive evaluation from the experimenter, or at least that he provide no grounds for a negative one" (Rosenberg, 1965, p. 29). The subject "would hold back . . . any evidence of having been influenced" by the experimental manipulation (Rosenberg, 1965, p. 32), effectively
eliminating differences between the overpay, equity, and underpay groups employed by Valenzi and Andrews. This eventuality would diminish the impact of the conclusion that their study supports the challenged qualifications interpretation of earlier equity research.

The second restriction which relates directly to the first, is that the findings for hourly underpayment are ambiguous. Since the major purpose of the study (reducing confounding of the equity/inequity manipulation) may not have been accomplished, one cannot conclude that feelings of inequitable underpayment do not affect performance. Valenzi and Andrews (1971, p. 26) note, in fact, that there was an apparent affect on performance in this condition since "three of eleven underpay workers quit the job and five of the remaining six said they thought about quitting."

Stronger support for their conclusion would have been mustered if Valenzi and Andrews had included a condition wherein subjects' self-esteem was directly challenged, and if they had controlled for the possible effect of "evaluation apprehension."

**Self-esteem**

Coopersmith (1967) has defined self-esteem as "the evaluation which the individual makes and customarily maintains of himself; it expresses an attitude of approval or disapproval, and indicates the extent to which the individual believes himself to be capable, significant, successful and worthy" (Coopersmith, 1967, p. 4). This seems to be the sense in which most equity researchers employ the term and it provides a different view from which to consider certain of the issues previously discussed.
Returning to some of the previously discussed studies, let us assume for the moment that Friedman and Goodman's (1967) self-perceived unqualified subjects (regardless of the groups they were assigned to for the experiment) had lower self-esteem than subjects who felt more qualified for the task. Friedman and Goodman note that the unqualified experimental group produced more than the unqualified control group, as predicted from equity theory. Qualified experimental and control subjects, however, performed in a manner contradictory to equity theory. Coopersmith (1967) suggests that people differing in level of self-esteem respond differently to any given situation, particularly if the situation entails a challenge or threat to the person's feelings of competence. This suggestion, in the context of Friedman and Goodman's findings, raises the aspect of self-esteem as a moderator of responses to felt inequities, at least in the hourly pay situation, a notion which Wiener (1970) and Evans and Molinari (1970) were unable to test since they did not succeed in completely dissociating the self-esteem and equity/inequity manipulations.

Self-esteem may be viewed as a moderator variable in the piece-rate studies as well. Andrews (1967), while not directly concerning himself with the concept of self-esteem, precluded its contamination of his overpayment condition by not employing the unqualified subject induction. His finding for both overpayment and underpayment, that people who had earned high wages on other jobs produced more than people who had earned lower wages on other jobs, is compatible with the ideas that past successes add to one's self-esteem and confidence and that success increments the level at which one expects himself to perform. Korman (1967) in fact,
presents evidence to support a "closed loop" relationship between self-esteem and self-perceived abilities, such that high self-esteem individuals expect and achieve successes while low self-esteem individuals do not expect and do not achieve successes. In the Lawler and O'Gara (1967) piece-rate equity study, the CPI scales (Gough, 1957) which were found to correlate significantly with productivity would be expected a priori to relate to self-esteem (i.e., poise, ascendency, and self-assurance). Andrews' finding that quality was negatively related to previous high wage may reflect the negative correlation between quantity and quality as measured in the interview task, or taken in the context of Lawler and O'Gara's findings of significant correlations between quality and the CPI socialization, maturity, and responsibility scales, this may indicate differing orientations to the task by people who conceivably differ in level of self-esteem.

Korman has recently presented "an hypothesis of work behavior" based on cognitive consistency: "All other things being equal, individuals will engage in and find satisfying those behavioral roles which will maximize their sense of cognitive consistency" (Korman, 1970, p. 32). Drawing on earlier findings, that self-esteem operates as a moderator of vocational choice (Korman, 1966), and the previously mentioned closed self-esteem loop concept (Korman, 1967), Korman proposes and finds that high self-esteem subjects perform better on various tasks than do low self-esteem subjects. In three studies (Korman, 1970) these findings held for both chronic (measured) and acute ("task specific", manipulated) self-esteem. Korman interprets responses to inequity as indicants of "task specific competence," and hence amenable to his cognitive
consistency interpretation (he cites Adams and Rosenbaum, 1962, and Andrews, 1967, both piece-rate studies). Findings that in certain situations subjects overcompensate in response to "disconfirmed expectancies" (Carlsmith and Aronson, 1963; Kiesner, 1969) and Pritchard's (1969) proposal that certain conditions of inequity (e.g. high inputs and low outcomes) will be uncomfortable independently of the presence of a comparison person (i.e. "own inequity," Weik and Nesset, 1968), conform well with Korman's hypothesis. Thus, it is being suggested that self-esteem, the chronic good or not-so-good feelings a person has about himself and his capacities and capabilities, serves as a moderator of the manner in which a person responds to the inequitable treatment he experiences, independently of whether the inequity involves a specific attack on the individual's self-esteem.

**The present study**

**Self-esteem**

The earlier evaluation apprehension and self-esteem interpretations of certain equity research findings was post-hoc, even though Andrews (1967) and Friedman and Goodman (1967) derived their measures on the basis of theoretical considerations (Lawler and O'Gara's (1967) were exploratory). No one has specifically assessed subject's level of self-esteem and then used this measure as an experimental variable in an equity study. To do so requires assessment of the individual subjects' level of self-esteem (i.e. chronic self-esteem) prior to the inequity induction. This was accomplished in the present study by having all subjects respond to a self-esteem questionnaire prior to being introduced
to the experimental task. Also required is an equity manipulation that is specifically designed to minimize any residual threat to the subject's self-esteem, thus permitting assessment of responses to pay inequities while experimentally controlling self-esteem (by blocking on the basis of the pre-measure). These precautions avoid confounding the inequity induction with challenged self-esteem.

**Equity/inequity**

The present study included all six cells of a factorial design crossing the conditions of equity/inequity (underpayment, equity, overpayment) and schedules of payment (hourly, piece-rate).

**The comparison other**

One of the more ambiguous elements in equity research has been specification of A, the comparison other. Only Valenzi and Andrews (1971) have been more specific than to postulate that "others doing similar work" are receiving the same pay. This leaves much room for inference about whom exactly P is using for his A. In the present study, P specifically served as his own A. Conceiving inequity as a violated expectation, conditions of equity/inequity were manipulated with reference to each subject's response to a question ascertaining what he felt he should be paid for the job he was doing (selection of one of five values).

**Hypotheses**

The following predictions tested in the present study, are consistent with the above conceptualization of self-esteem as a moderator of responses to felt inequity.
(1) High self-esteem subjects in the overpayment and underpayment conditions, on both hourly and piece-rate pay schedules, will perform at approximately the same level as their respective equity group. This prediction derives support from Korman's (1970) finding that chronic self-esteem accounts for a significant portion of performance variance, and from Coopersmith's (1967) suggestion that low self-esteem subjects are more susceptible to motivational manipulations than are high self-esteem subjects.

(2) Low self-esteem subjects in the hourly overpay and in the piece-rate underpay conditions will produce at a higher level (quantity) after the experimental induction than their respective equity group performances, whereas low self-esteem subjects in the hourly underpay and piece-rate overpay conditions will produce at a lower level (quantity) after the experimental induction than their respective equity groups. These predictions, for low self-esteem subjects, conform with those derivable from equity theory.

(3) High self-esteem subjects in the piece-rate and hourly equity conditions will produce more than will low self-esteem subjects in these same conditions. In the absence of specific motivational manipulations, within the equity x pay schedule blocks high self-esteem subjects should outperform low self-esteem subjects (Korman, 1970). Differences between the equity condition x pay schedule blocks should also occur, in the direction predicted from hypothesis four of the present study. These differences are expected to be more pronounced for low self-esteem than for high self-esteem subjects.
(4) Subjects on a piece-rate pay schedule will tend to emphasize quantity productivity rather than quality productivity, but there will be no consistent differential emphasis among subjects on the hourly pay schedule.

Equity theory has received more consistent support for predictions of piece-rate productivity than of piece-rate quality of either of the indicators in hourly pay conditions. The specific connection of outcomes to productivity in piece-rate conditions would logically foreordain clarity and consistence among piece-rate data. Hypothesis number four as stated suggests that although there is no necessary correlation between productivity and quality measures in the present method (Wiener, 1970) there is a logical, empirically valid, reason to anticipate relative emphasis on productivity under certain of the experimental treatments. The arguments and counter-arguments about quality measures in equity theory studies do not lead to clear predictions, consequently within the bounds of the present study findings relevant to quality data as herein scored will be considered as exploratory.
Method

Subject sample

Subjects were 96 undergraduate students recruited from Introductory Psychology classes at Wisconsin State University-Eau Claire. The recruitment procedure employed required initial identification of potential subjects for the study (high and low scorers on the Berger Self Acceptance Scale, described below). A list of names of potential subjects and an accompanying sign up sheet were posted on the "sign up" board in the psychology department. The students were informed (via sign up instructions) that names appearing on the list were selected at random. This "random selection" served as a safeguard against the possibility that subjects would associate the administration of the self-esteem measure with the experimental task. The success of this and other safeguards are noted in the results section.

The following background information was obtained from each subject participating in the study: Sex (34 Males, 62 Females); age ($\bar{X} = 20.78$ years); year in college (12 Freshmen, 67 Sophomores, 9 Juniors, 8 Seniors); whether or not the subject had ever studied a foreign language (75 Yes, 21 No); whether or not the subject had ever studied French (22 Yes, 74 No). None of these variables correlated with productivity at an acceptable level of statistical significance.

Independent variables and design

Three variables were manipulated: conditions of equity/inequity, pay schedule, and level of self-esteem. The basic design for assignment of subjects to treatment conditions was a $2 \times 3$ factorial, crossing pay
schedules and conditions of equity/inequity with an added two level
dimension to provide for blocking on a level of self-esteem.

Conditions of equity/inequity were manipulated in the following
manner. Each subject indicated what he thought he should be paid for
participation in the present project (after a period of "practice to
familiarize" himself with the task). The subject was then told (on the
basis of random assignment one of the following: (1) his pay would be
as he indicated (equity), or (2) his pay would be some amount more than/
less than (overpay/underpay respectively) he feels he should be paid for
the job.

Pay schedule was manipulated by randomly assigning subjects to an
hourly or a piece-rate pay schedule for the job. The midpoint of the
scales on which subjects indicated what they felt they should be paid
was anchored at $1.65 for subjects in the hourly pay condition and at
$.17 per block of ten words (piece-rate equivalent of $1.65 per hour as
determined by pilot data accumulated at WSU-EC in the Fall Semester of
1970. The $1.65 wage rate is the average paid to students at the Eau
Claire financial aids office.

Level of self-esteem was manipulated by blocking within the pay
schedule x conditions of equity/inequity cells so that half of the
subjects in each cell in the design were in the top 25% and half in the
bottom 25% of scores on the Berger (1952) Self Acceptance Scale (see
Shaw and Wright (1967) and Robinson and Shaver (1969) for discussions
of reliability and validation of this scale. The writer obtained an
uncorrected split half reliability estimate of .804 (n = 56) and one week
retest of .818 (n = 44). Local norms for this scale were accumulated
to facilitate placement of subjects. This was accomplished by presenting the scale to Introductory psychology classes during their regularly scheduled meetings. They were told the scale was "an instrument I am developing for a research project I hope to get started with in about a year," thus segregating it from subsequent association with the present experimental task.

**Task**

The task and instructions were those administered by Wiener (1970) to his "task orientation" subjects. Minor changes in the instructions were necessary for the present study, but they do not change the essential aspects of Wiener's instructions. Briefly, the task required that the subjects extract five-letter words from French textual material and perform certain manipulations related to these words.

The task was originally designed according to the following five specific requirements (Wiener, 1970). (1) The task should be perceived as credible. (2) The task should be sensitive to motivational changes and should not possess an inherent interest value. (3) The task should be easy to learn, and should not feature large individual differences in the basic abilities involved. (4) The task should lend itself to simple and clear measures of quality and quantity. (5) The measures of quality and quantity should not correlate highly with each other so that independent changes in these measures can be assessed. Along with these criteria, use only of Wiener's "task orientation" instruction meets an additional criterion for the present study, that of minimizing the potential challenge to subjects' self-esteem. This was felt
necessary in order to avoid confounding the equity/inequity manipulation with task related feeling of competence.

Procedure

Subjects individually met with the experimenter at a prearranged time. At the outset they were (a) told they are participating in a project being conducted by the American Psycholinguistic Society (APS), (b) asked to fill out a "temporary employment information form" for "the records" of this APS project, and (c) given a brief "practice session on the sort of task involved in the study."

The standard set of instructions given to all subjects after completion of the employment form was as follows (as adapted from Wiener, 1970).

"The sponsor of this job is the American Psycholinguistic Society. They work now in cooperation with several university researchers, such as myself, in a project that has lasted for the past several months. The project as a whole is about to be completed and it seems that for future projects of this kind, the APS won't use any more people to collect data, since they are developing computer programs for that purpose. Meanwhile, the APS prefers many people - as many as needed - working on the job for a short time each, rather than fewer people working for longer periods. The reason for it is in the nature of these jobs, as you yourself might shortly realize. It simply turns out to be more efficient for them. Basically, the APS is concerned with a comparative study of different languages. Very generally, this kind of research deals with the probability characteristics of letters, or words, or any
other kind of language unit. Probabilities are calculated for characteristics like order of units, frequency of occurrence of certain units in given structures, and so forth. For example, in English the probability is 100% that "u" will follow "q". Similarly, two given words may seldom or never appear together. This kind of research is important to determine indices of meaningfulness of grouping of units in different languages, and it is essential in the comparative study of languages."

"Your job will be basically a matter of simple counting of certain units in relation to others. Many different kinds of jobs of this nature are carried out, and the one you will be doing today is just one of them."

"First, here is a sheet of sentences and a list of rules to follow for working with these sentences. Work on this sheet for about ten minutes to familiarize yourself with the sorts of things you will be doing and then we can get started on the APS job."

Upon completion of the practice session, subjects were asked if they had any questions, then directed to the main task in the following manner. "As you can see, the only thing this job requires is trivial clerical abilities. Still the APS expects, of course, the people that work for them to get done as much as they can with a minimum of errors. As you know, you are going to be paid for the work you will be doing, which will require about an hour. One of the things I am interested in that is not specifically a part of the APS project is what people feel is a fair rate of pay for various types of jobs they are doing. Since I have never collected information on this type of job before,"
I wonder if you would mind responding to this brief questionnaire for me before you start on the APS task."

The question to which subjects responded prior to starting the experimental task was: "The task you will be doing consists of the same sort of thing as you were just doing, except that you will be extracting words from a book rather than off a sheet of sentences. For this work, if you were permitted to set your own pay rate, which of the following would be a fair wage: $1.35 $1.50 $1.65 $1.80 $1.90 for one hour of work? (Piece-rate subjects were given the following scale: $.13 $.15 $.17 $.19 $.21 for each complete set of ten words.)"

After the subject responded to this question, administration of the experimental induction consisted of telling the subject "The prerogative of what to pay the participants has been left up to me by the APS and I have decided to pay all participants . . . ." For equity condition subjects, this statement was completed " . . . the amount you have indicated." For inequity condition subjects, this statement was completed " . . . (an amount one step higher or lower on the scale than the amount indicated, for appropriate overpay or underpay condition). You are probably correct in your assessment of what is a proper wage for your ability level, but in order to keep the bookkeeping simple, I am paying everyone . . . ." Any subject indicating one of the extremes on the pay scale, if he had been predetermined in a condition calling for exceeding the limits of the scale, was placed in the appropriate equity condition.

Following the induction, subjects proceeded to do the task. The experimental task required the same performance as the practice task,
except that a selection of text from a French language text was employed in place of the standard sheet of example sentences.

After one hour of task performance, subjects were stopped and asked to respond to the following questions.

1) Please indicate by underlining what you considered to be most important in your performance today, limiting mistakes or doing as many words as possible.

2) If someone wanted to hire you for a job such as the present language task, how qualified would you think yourself to be?

3) Can you make any suggestions which APS might use for improving this type of research?

4) What is your feeling about the wages you are going to be paid for participating in this project?

5) What were your first thoughts when I told you what you would actually be paid?

6) In order to appeal to subjects in my own future research, what order of importance were the following inducements as influences on your decision to participate in the present project (1 = most influential)?
money offered
extra credit offered
learn something about psychological research
see what the difference was between this and other projects I have participated in
see if I could guess what was going on
other (explain)

7) What do you think this study is all about?

After responding to this questionnaire, the subject was given a full explanation of what the study is about and asked not to discuss it with other students. All subjects were paid $2.00 for participating in the study.
Results

Quantity data

An omnibus analysis of variance of the number of words completed by each subject indicated that the only effect significant beyond chance levels was pay schedule ($F = 4.78, p < .05, df = 1.84$, see Table 1). Inspection of the means revealed that subjects on a piece-rate pay schedule produced an average of 14.25 more words per hour than those on an hourly pay schedule. Manipulated equity/inequity and blocking on measured self-esteem did not account for statistically significant portions of total variance in the present study.

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
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<td>517.0996</td>
<td>258.5498</td>
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<tr>
<td>Self-Esteem (SE)</td>
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<td>424.9984</td>
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<tr>
<td>Pay Schedule (PS)</td>
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<td>4873.5068</td>
<td>4873.5068</td>
<td>4.7847</td>
<td>.05</td>
</tr>
<tr>
<td>Eq x SE</td>
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<td>963.9794</td>
<td>481.9897</td>
<td>0.4732</td>
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</tr>
<tr>
<td>Eq x PS</td>
<td>2</td>
<td>4931.6917</td>
<td>2465.8459</td>
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</tr>
<tr>
<td>SE x PS</td>
<td>1</td>
<td>176.0466</td>
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</tr>
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<td>Eq x SE x PS</td>
<td>2</td>
<td>2015.3854</td>
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<tr>
<td>Error</td>
<td>84</td>
<td>85558.5453</td>
<td>1018.5541</td>
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<td></td>
</tr>
</tbody>
</table>
Hypotheses 1 and 2

Separate analyses for high and low self-esteem (HSE and LSE) subjects merely confirmed the above findings. Hypothesis number one, that there would be no differences among HSE subjects in the various experimental conditions received some support. None of the main effects or interactions in the analysis of variance for HSE subjects reached acceptable levels of significance (see Table 2).

TABLE 2

ANOVA: Number of Words Completed in One Hour By High Self-Esteem Subjects

<table>
<thead>
<tr>
<th>Source</th>
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<th>P</th>
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<td>Equity (Eq)</td>
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<td>1143.3699</td>
<td>571.6850</td>
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<tr>
<td>Pay Schedule (PS)</td>
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<td>1598.5409</td>
<td>1598.5409</td>
<td>1.7237</td>
<td></td>
</tr>
<tr>
<td>Eq x PS</td>
<td>2</td>
<td>3660.7794</td>
<td>1830.3897</td>
<td>1.9737</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>42</td>
<td>38951.1353</td>
<td>927.4080</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TABLE 3

ANOVA: Number of Words Completed in One Hour By Low Self-Esteem Subjects

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>SS</th>
<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity (Eq)</td>
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<td>337.7701</td>
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<tr>
<td>Pay Schedule (PS)</td>
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<td>3450.9775</td>
<td>3450.9775</td>
<td>3.1098</td>
<td>.10</td>
</tr>
<tr>
<td>Eq x PS</td>
<td>2</td>
<td>3286.2797</td>
<td>1643.1399</td>
<td>1.4807</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>42</td>
<td>46607.3873</td>
<td>1109.6997</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Hypothesis number two, that equity theory predictions would be supported for LSE subjects in both hourly and piece-rate conditions, received no support from the present data (see Table 3). Only the effect of pay schedule approached an acceptable level of statistical significance in this analysis. Add to this the fact that all means fell well within the 95% confidence interval of both the highest and lowest means in the present design ($\bar{X}_{h\text{-eq-hse}} = 99$, $sd = 44.19$; $\bar{X}_{pr\text{-eq-lse}} = 140.5$, $sd = 30.01$) and the impact of the aforementioned support for hypothesis number one is seriously weakened (see Table 4, Table of Means for Quantity data).

**TABLE 4**

Means: Number of Words Completed in One Hour

<table>
<thead>
<tr>
<th></th>
<th>Underpayment</th>
<th>Equity</th>
<th>Overpayment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LSE</td>
<td>HSE</td>
<td>LSE</td>
</tr>
<tr>
<td>Piece-rate</td>
<td>115.5</td>
<td>130.375</td>
<td>140.5</td>
</tr>
<tr>
<td>Hourly</td>
<td>113.0</td>
<td>107.625</td>
<td>100.375</td>
</tr>
</tbody>
</table>

Thus the present data provide no support for the hypothesized differential responses of HSE and LSE subjects to manipulated conditions of equity/inequity and schedule of payment. Differences that do occur are inconsistent with those called for by equity theory and are within the boundary limits of expected values for random data.
Hypothesis 3

Differences between HSE and LSE subjects in the piece-rate and hourly equity conditions were not statistically significant (piece-rate equity $t = 1.213$; hourly equity $t = 0.016$; df = 14). Thus the prediction that HSE subjects would exhibit higher productivity than LSE subjects in these cells was not supported.

The corollary prediction to hypothesis three was that piece-rate subjects would produce more than hourly paid subjects in the respective equity conditions. Comparison of these groups indicates statistical significance in the predicted direction ($t = 2.61$, $p < .05$, df = 14, see Table 4 for means). This occurs even when there is no self-report evidence (from the post task questionnaire) that more subjects intentionally emphasized productivity in either the piece-rate or hourly condition (10 subjects in each).

Hypothesis 4

The final prediction specifically evaluated in the present study was that subjects on a piece-rate pay schedule would tend to emphasize quantity rather than quality productivity while hourly paid subjects would not differentially emphasize either of their performance variables. Data to test this prediction were taken from responses to question #1 on the post performance questionnaire. As previously noted, there was no numerical difference between piece-rate and hourly conditions, resulting in a $\chi^2$ of zero.

In summary then, none of the major hypotheses guiding the present study received support from the data. Only the corollary hypothesis,
that piece-rate equity subjects would produce more than hourly equity subjects, was supported.

Quality data

Findings relative to quality data (number of errors) in the present study were to be considered exploratory. An omnibus analysis of variance of these data indicated no statistically significant effects (see Table 5). Separate analyses for HSE and LSE subjects were also non-informative (for group means see Table 6).

TABLE 5
Omnibus ANOVA: Number of Errors

<table>
<thead>
<tr>
<th>Source</th>
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<th>MS</th>
<th>F</th>
<th>P</th>
</tr>
</thead>
<tbody>
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<td>Equity (Eq)</td>
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<td>0.6709</td>
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</tr>
<tr>
<td>Self-esteem (SE)</td>
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<td>170.7472</td>
<td>170.7472</td>
<td>0.0940</td>
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</tr>
<tr>
<td>Pay Schedule (PS)</td>
<td>1</td>
<td>1926.0896</td>
<td>1926.0896</td>
<td>1.0609</td>
<td></td>
</tr>
<tr>
<td>Eq x SE</td>
<td>2</td>
<td>1500.9913</td>
<td>750.4957</td>
<td>0.4134</td>
<td></td>
</tr>
<tr>
<td>Eq x PS</td>
<td>2</td>
<td>3373.3116</td>
<td>1686.6558</td>
<td>0.9290</td>
<td></td>
</tr>
<tr>
<td>SE x PS</td>
<td>1</td>
<td>5133.3735</td>
<td>5133.3735</td>
<td>2.8274</td>
<td>.10</td>
</tr>
<tr>
<td>Eq x SE x PS</td>
<td>2</td>
<td>1506.0480</td>
<td>753.0240</td>
<td>0.4148</td>
<td></td>
</tr>
<tr>
<td>Error</td>
<td>84</td>
<td>152509.4847</td>
<td>1815.5891</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
TABLE 6
Means: Number of Errors

<table>
<thead>
<tr>
<th></th>
<th>Underpayment</th>
<th>Equity</th>
<th>Overpayment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LSE</td>
<td>HSE</td>
<td>LSE</td>
</tr>
<tr>
<td>Piece-rate</td>
<td>25.5</td>
<td>50.625</td>
<td>62.75</td>
</tr>
<tr>
<td>Hourly</td>
<td>58.0</td>
<td>32.0</td>
<td>57.625</td>
</tr>
</tbody>
</table>

Questionnaire data

Responses to four items on the post task questionnaire reflect directly on the results of the present study. Subjects' estimates of their own task competence (question #2) have been previously employed as a control condition in the analysis of equity/inequity data (Friedman and Goodman, 1967). These data were used in the present study to evaluate the relationship between this estimate, measured self-esteem, and task performance.

In order to assess the success of the pay manipulation, subjects were asked how they felt about their pay (question #4) as well as to describe their first thoughts when they learned what their "actual pay" would be (question #5).

The final question (question #6) asked subjects what they thought the study was all about. Responses to this question provided data to assess the degree to which subjects accepted the pre-task experimental instructions.
Estimates of ability

Estimates of own task ability should demonstrate relationships illuminating two points. First, following Korman (1967), it was anticipated that HSE subjects would view themselves as more qualified on the task than would LSE subjects. This would be supported by significant differences between HSE and LSE subjects in their responses to question #2 on the post task questionnaire. Secondly, it was anticipated that HSE subjects would have a more accurate view of their task abilities than would LSE subjects. This would be supported by a stronger relationship between self-adjudged task ability and task performance for HSE than for LSE subjects.

The expectation of differential estimates of own task ability received no support. In five of six experimental cells there was a tendency for HSE subjects to view themselves as more qualified than did LSE subjects. These differences, however, did not reach acceptable levels of statistical significance. Overall, the mean indication by HSE subjects (on a 99 point scale) was 72.98 (sd = 21.64) whereas for LSE subjects the mean was 64.71 (sd = 21.43); the difference between the means was not statistically significant (t = 0.384). The positive correlation between self-adjudged task ability and measured self-esteem (r = .189, p < .10, df = 95) was spuriously high due to the use of extreme groups.

The notion that HSE subjects have a more accurate view of their abilities than do LSE subjects received tentative support from the difference of the correlations between self-adjudged task ability and task performance (quantity) for each group (HSE, r = .295; p < .05;
LSE, \( r = .080, \) ns: df = 47). When tested by use of Fisher's z-transformation, the difference between these two levels of correlation does not reach a conventional level of significance (\( z = 1.06, .15 > p > .14 \)).

Thus, it is suggested that HSE subjects may make more accurate estimates of their task performance, but do not differ on the average from LSE subjects in estimating their level of competence on the task.

**Fairness of pay**

Inspection of the omnibus correlation matrix indicated that the fairness of pay indication by subjects was correlated with cell in the experimental design (\( r = .258, p < .01, \) df = 95). Inspection of the table of means for fairness of pay responses (Table 7) indicated that hourly paid subjects were in fact more satisfied with what they thought their actual pay would be than were piece-rate subjects, irrespective of condition of equity/inequity (\( t = 2.298, p < .05, \) df = 94). Indeed, the continuum of means suggested by the correlation between fairness of pay and cell in the design occurred (\( \text{prup} < \text{preq} < \text{prop} < \text{hup} < \text{heq} < \text{hop} \); see Table 7).

**TABLE 7**

Means: Responses on Fairness of Pay Scale

<table>
<thead>
<tr>
<th></th>
<th>Underpayment</th>
<th>Equity</th>
<th>Overpayment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Piece-rate</td>
<td>55.625</td>
<td>59.312</td>
<td>61.250</td>
</tr>
<tr>
<td>Hourly</td>
<td>61.500</td>
<td>65.437</td>
<td>74.500</td>
</tr>
</tbody>
</table>
Fairness of pay was also correlated at an acceptable level of significance, although negatively, with what subjects (after the practice session) indicated a fair pay rate to be ($r = -.283, p < .01, df = 95$). Subjects indicating a higher wage as fair were apparently less satisfied with what they expected to receive. Working backwards from the findings cited in the preceding paragraph, we note that in fact piece-rate subjects (who were less satisfied than were hourly subjects) indicated higher wage rates as fair ($t = 2.437, p < .05, df = 94$) on the equated five point scales employed for the fair pay rate indication.

This relationship between pay satisfaction and fair pay rate indication may be attributable to lack of familiarity among subjects with the type of work they were doing. Several piece-rate subjects, but no hourly subjects, observed loudly enough to be heard (usually directed to the experimenter) that they had no idea of what might be a fair rate for this type of work. In spite of the fact that all subjects knew the practice session accounted for ten minutes, only one piece-rate subject specifically attempted to compute what an hourly rate would be if he worked at the rate indicated by his practice performance.

Subjects' responses to the open-ended question about their first thoughts when they found out what they would "actually be paid" demonstrated no consistencies that might be informative. Consequently, these data do not permit a test of equity theory predictions.

What is the study about

Responses to the final question on the questionnaire were analyzed to ascertain the success of the instructions employed in the study.
Responding to the question, "What do you think this study is all about?", 24 subjects reflected the instructions (word analysis, language study, etc.), and nine left the available space blank. Thus, 33 subjects explicitly accepted, or at least did not overtly reject, the setting of the present study. Twelve subjects retrospectively viewed the study in a manner credibly related to language skills study (learning, thinking, following directions, reading ability) and 18 subjects indicated they did not know what the study was about if not according to the instructions. Thus, 63 subjects appear to have generally accepted the setting of the study as valid.

One might be "tempted to conclude" that since 1/3 of the subjects in the present study responded divergently from the intent of the instructions, the instructions were not sufficiently clear. This reasoning is not credible on two counts. First, they were essentially the same instructions employed by Wiener (1970) in a study which achieved statistically significant relationships. Secondly, it is not possible to assess the degree to which these divergent responses may have been the product of the specific question itself. In other words, upon being asked what the study was about, some subjects may then have reviewed the preceding 1 1/4 hours and fabricated a response to the question. There is no way to determine that responses to this question related to a directive influence on task performance. Moreover, an analysis of variance of data from the 63 subjects who appear to have accepted the study as valid, yielded no significant main effects, essentially replicating the analysis for data from the total sample. The interaction between equity and pay schedule reached significance at the .05 level.
in this analysis, but this simply substantiates the interpretation that pay schedule was an important determiner of behavior in the present study. It does not seem, therefore, that inferred "non-acceptance" of the investigator's instructions can explain the present data.
Discussion

Equity/inequity

The present findings do not support equity theory. They are based on different and possibly more sound evidence than has been previously offered.

Four possible inferences about subjects' performance in the present study merit consideration. These four alternatives (A - subject insensitivity to the equity manipulation; B - "evaluation apprehension"; C - all subjects were in an overpayment condition; D - insufficient differences of amounts "paid" to subjects) are competing explanations for the lack of predicted significant differences among the various equity/inequity conditions.

(A) The first explanation to be considered is that subjects in the present study were insensitive to the equity/inequity manipulation, viewing it as irrelevant to performance in the present study.

On the post task questionnaire, subjects were asked for their "first thoughts" upon learning what they would "actually" be paid. Twenty-five subjects indicated that the money made no difference to them, that they would have participated in the study even if money were not involved. Another eight subjects responded in a manner suggesting a lack of pecuniary motivation ("no big incentive", "not overwhelmed", "always paid more than you are worth", "I didn't have the right to question", "I should have offered to do it free", "none", "it's not work one my age gets paid for", "made me giggle"). Thirty-four percent of the present sample were thus apparently immune to the payment manipulation.
Of those subjects who did report being affected by the manipulation (e.g., "I thought it was great"), some may have responded merely as a result of the question being posed. It is possible that for some the very presence of the question induced a response at variance with any indifference they might have felt at the time of the manipulation. Even if this did not occur for any of the remaining subjects, a significant portion of the present sample probably viewed the monetary manipulation as irrelevant to their performance in "psycholinguistics" research, or research itself.

A large number of subjects (29) indicated that their primary motive for participating in the study at all was to obtain "points" (examination credit in their general psychology class), whereas only 13 indicated money as their primary incentive. Thus, it seems that performance differences in response to a monetary manipulation did not occur in the present study due to subjects' insensitivity to the manipulation. The financial inducement was probably irrelevant to differential performance on the present task.

(B) It is also possible that there was some ambiguity among subjects regarding the purpose of their participation. This might have caused feelings that they were being "psychologically evaluated".

During the debriefing, a number of subjects said such things as, "I wondered what you were up to. Why would a psychologist do this sort of research; this is different from other experiments I have been in."

These reactions indicate that some subjects apparently did not fully accept that they were working for the "American Psycholinguistics Society"
on a language research project. Rather, they seemed to view their participation in this study as "another experiment". On the post task questionnaire, six subjects indicated "see if I could guess what was going on" and one indicated "see what the difference was between this and other projects I have participated in" as their primary reason for participating in the present study: nine indicated the former and thirteen indicated the latter as secondary reasons. These responses are artifacts of the larger research environment. During the past year, the course in experimental psychology at the institution where the present data was accumulated has undergone a significant expansion, including implementation of a formal policy for participation of general psychology students in psychological research to earn examination credits. Consequently, many of the subjects participating in the present study were not naive of psychological research, although they were naive of "dissonance theory type" research. Viewing the present study as an "experiment" rather than the sort of research described by the experimenter, subjects might have experienced "evaluation apprehension" in similar manner and with the same results as previously discussed relative to Valenzi and Andrews' (1971) research.

(C) The third possible explanation is that in the present study, indeed one could argue that in most equity research, the only condition to have been adequately represented is overpayment. With the exception of Wiener's (1970) study, subjects have generally arrived at an appointed meeting place with no clear idea of what to anticipate as remuneration for participation. As a consequence, subjects might view any payment as more than anticipated, particularly if the subjects bring inaccurate
preconceptions about remuneration to the task. If subjects anticipated only token payment, anything they were told would probably be higher than their expectation and thus be considered operationally an overpayment.

Two items in the present study suggest such might have occurred. First, on the post task questionnaire, only five subjects (1 piece-rate underpayment, 1 piece-rate overpayment, 3 hourly underpayment) indicated that their "actual" pay was less than fair (fair = 50 on a 99 point anchored scale). Secondly, fourteen students from the same population as the experimental sample served as a pilot group in order to establish equivalence between the hourly and piece-rate pay schedules. No mention of money was made to these subjects, although the instructions administered were identical in all other respects to those for the experimental subjects. Mean performance by this group was 95.5 (sd = 31.46) words in one hour. This contrasts with a mean of 114.67 (sd = 32.19) words accomplished in one hour by the 96 subjects in the study and is less than any of the twelve group means in the study. The distributions overlap extensively and the difference between means is not statistically significant (t = 2.12, df = 108). The difference is, however, in the direction one would predict comparing performance of subjects expecting to be paid as opposed to subjects not expecting to be paid for their work.

It appears then that money may have been an effective motivator in a general sense, inducing higher average performance for those paid than for those not paid. Differential payment was not, however, effective in creating performance differences among those paid.

Finally, it is possible that the pay differentials employed in the present study were too small to be effective. Most equity theory
studies have employed the unqualified subject Induction. By this procedure all subjects are paid the same amount, although some are lead to believe they are overqualified (underpaid) or underqualified (overpaid) for the task. Three previous studies have employed manipulation of the actual amounts of money subjects were led to believe they would receive as the primary method for creating inequity (Andrews, 1967; Wiener, 1970; Valenzi and Andrews', 1971).

Andrews (1967) identified by pretesting a piece rate equivalent to a preset hourly rate for his equity condition. He then arbitrarily subtracted $.05 per piece for underpayment and added $.10 per piece for overpayment. Wiener (1970) arbitrarily established $2.00 and $3.00 hourly pay schedules. Valenzi and Andrews (1971) paid equity subjects "the going rate" on campus ($1.40). They arbitrarily increased this by $.60 to $2.00 for their overpayment condition and decreased this by $.20 to $1.20 for their underpay condition. It seems too obvious to be worth noting, but there is no convention for describing what amounts represent inequitable overpayment or underpayment. One might question, however, that in the light of the rather large differences employed by these authors, the $.15 per hour or $.02 per ten words differences employed in the present study were too small to create feelings of inequity. This question is all the more pointed since no inequity effects were noted in the present study.

Data collected subsequent to the completion of this study lend some credence to this argument. Six (overpayment) subjects were run up to, but not including, performance on the experimental task. They were then interviewed by the investigator to ascertain if they felt one step above
or below what they indicated as fair would be an unfair amount to pay for performance on this task. Four of the six subjects indicated that the one step difference would not be unfair and two indicated that it would be unfair. The validity of this data as support for the above-mentioned criticism is difficult to assess, however. Of the group of four, one also spontaneously indicated that the only reason for participation in the study was out of interest, one participated for research credits, and one indicated that her response would not be valid for a person in less financial need than she (she would have considered "almost any amount" to be fair). These statements more strongly indicate the irrelevancy argument posed earlier, rather than the present argument of insufficient differences.

Another compelling argument also invalidates this fourth alternative as a plausible explanation for the present findings. The pay intervals employed are valid indicators of pay differentials in the present research setting. The rates of pay offered by the local financial aids office are widely publicized and are common knowledge among students where the study was conducted. For the type of task employed in the present study, clerical assistants at this university are paid $1.60 per hour. This is the lowest level of pay available through the financial aids office. Technical assistants are paid $1.75 and tutors $1.90. These pay differentials are of the same magnitude although the absolute levels are lower than the top three levels employed in the present study.

If two students at this university were doing "clerical" work, one of them paid as a clerical assistant but the other receiving the pay of a technical assistant, a logical presumption (assuming they know each
other's pay rate) would be that the first would feel cheated (i.e. underpaid) and/or the second would feel elated (i.e. overpaid). To validate this assumption, the investigator asked several "work study" participants how they would feel under such a differential pay scheme. In every case it was considered "unfair". In this context, it would seem absurd to tell someone that "although you think $1.65 ($.17) is fair, you will be paid $2.55 ($.29)." This large a difference is clearly uncalled for by the type of work subjects were engaged in and would in fact open the study to greater criticism on the question of credibility than on the present basis of too small pay differentials.

If support for equity theory is dependent upon pay differences which are so great that they extend beyond credible pay levels, the practical significance of the data and hence the theory itself would be highly questionable.

A further argument to consider is that inequity effects were different for subjects indicating different amounts of pay as "fair" after the initial ten-minute practice session. This argument would suggest that subjects marking one of the extremes on the five-point scale as fair might respond differently than subjects marking one of the middle three values, when told what their "actual" pay would be. Inspection of the omnibus correlation matrix and the separate correlation matrices for the HSE-LSE dichotomy and the piece-rate hourly dichotomy were uninformative. In order to determine if the low correlations were due to curvilinear relationships, separate scatter plots for the total data set and for the six pay schedule x equity/inequity blocks were prepared. None demonstrated consistent relationships upon visual inspection. The only
outstanding occurrence was the large number of equity condition subjects (15) who indicated one of the extremes as "fair". This was expected, however, due to the procedure for subject assignment, but had no discernible effect on the mean or variability of scores for these subjects.

Thus, three (A, B, C) of the four possible explanations for the present equity/inequity results have data to support them. The writer is more inclined to accept the irrelevancy argument (A) for the present study, since the evidence supporting this inference seems more substantial than for the other two alternatives. The arguments of (B) "evaluation apprehension" and (C) overpayment of all subjects cannot be rejected out of hand, however, and deserve future investigation.

The notion of irrelevancy has both theoretical and practical implications. Prior to examining these implications, however, the present self-esteem findings and a reformulated concept of "equity" will be discussed. This will permit analysis of the irrelevancy argument, touching on both its theoretical and practical implications, in the context of the present study and leading toward a sound alternative to equity theory itself.

Self-esteem

The preceding discussion has centered on the manipulation of pay. Consideration must also be given the variable of self-esteem in the present study. Irrelevancy of the monetary manipulation does not explain the lack of predicted performance differences between high and low self-esteem subjects.
Korman (1971, p. 46), presenting a theory of self-consistency (also derived from cognitive dissonance theory), reviews eleven studies as supporting his conclusion that "individuals will perform in a manner consistent with their self-conception."

Two overlapping considerations may point to an explanation of the divergence in the present study from others which support the hypothesized performance - self-esteem relationship. These are the fact of different indices of self-esteem in the various studies cited and the notion of task specific self-esteem.

In the studies cited by Korman (1971) the self-concept measures that were employed typically related specifically to the task employed in each particular case (e.g., previous task performance, estimate of own competence on the task). One would not expect, therefore, that the various measures employed would necessarily correlate with each other as estimates of the individual's self-concept in a global sense. It is exactly this sense of task specific self-concept in which Korman (1970) discusses equity theory research. The Berger scale employed in the present study, however, is an attitude scale assessing generalized or global self-esteem, in terms of interpersonal relationships and personality characteristics (e.g., "I don't question my worth as a person, even if I think others do."). The validation evidence for this scale, as reviewed by Robinson and Shaver (1969) and by Shaw and Wright (1967), comes predominantly from clinical assessments of personality or pathology (e.g., stuttering), not from task productivity assessments. If one could conceive of a task for which personality characteristics were relevant determiners of performance, then perhaps differences as measured by the
Berger scale might relate to performance differences. Such was not the case in the present study; hence, the assumption that threat to operationalized self-esteem was minimized in the present study is credible. It seems, therefore, that for equity theory research, the appropriate procedure is assessment of task specific self-concept. An assessment may be obtained perhaps by conducting two performance sessions, with subjects evaluating their own abilities on the task after the first session. In a sense this is what was done by Friedman and Goodman (1967) finding some support for equity theory. They had subjects estimate their task qualifications prior to the equity/inequity induction and prior to collecting any data. The task they used (interviewing), however, represents a more familiar domain of behavior (face-to-face communication) than the clerical task employed in the present study. Valenzi and Andrews (1971) had subjects perform on their clerical task for two sessions but did not accumulate the type of data necessary to test these notions. (Other studies employing a repeated measures design, e.g., Lawler and O'Gara (1967), Lawler (1968a), have shown only that "equity" phenomena created by the unqualified subject induction, dissipate over time). By having subjects estimate their task qualifications, however, one would be creating the conditions both necessary and sufficient to threaten subject self-concept. Any public statement of self-appraisal may be viewed in this light, hence it would seem that equity effects cannot be achieved without incurring some threat to subjects' self-esteem or self-concept. Therefore, unless the subjects are in a position to relate the task to some aspect of their self-concept, and the investigator accumulates the appropriate data, the conditions would seem to proscribe identification
of the self-esteem - task-performance relationship. Further, as these conditions are identifiable in previous "successful" equity research, the threatened self-concept interpretation of these studies is all the more credible.

The equity concept reconsidered

Opsahl and Dunnette (1966) note that very little is definitive about the pay-performance relationship. They go on to commend Adams for his derivation of equity theory as a start toward clarifying this relationship. The present study suggests, however, that equity or inequity as proposed by Adams are not viable predictive constructs, unless the individual's (task-specific) self-concept is taken into consideration. That is, to be effective as a determiner of performance, pay inequity must be conceived as relevant to one's self-concept, more than simply a variable in a performance-outcomes ratio. To do this, pay must provide accurate information to the recipient about his performance relative to expected or others' performance and/or it must be viewed by the individual as one of his set of goals.

The irrelevancy argument proposed by the writer is an analogue of the threatened self-concept argument. Threat to feelings of self-competence by an experimental manipulation would be clearly minimized if the manipulation was irrelevant to subjects' performance in the study.

It is not totally surprising that subjects viewed pay as irrelevant to their performance on the present task. Specific efforts to dissociate the amount of pay from possible challenge to self-concept seem to have been successful. The fact that a "relevant" manipulation might be
required to achieve "equity" results was demonstrated by Lawler, Koplin, Young, and Fadem (1969), who obtained a positive correlation between productivity and expressed need for money (subjects were hired through a newspaper advertisement). This finding is fully consistent with the notion that performance is related to goal or intention, but not related to pay when intentions are controlled (Locke, Bryan, and Kendall, 1968). Thus, if one wishes to study job "equity", goals or intentions would seem to be more salient than pay as a variable of interest. Pay equity would then be of interest only if pay is part of the individual subject's goal set.

Money may have been a goal for some in the present study (i.e., subjects responding to question #6 "money offered" as the first or second most influential inducement for participation). The thirty-seven subjects thus identified, however, had a mean of 109.27 (s.d. = 31.38) on the task. This is well within the 95% confidence interval of the overall mean. Therefore, if money was an inducement to participation as mentioned earlier, it evidently was not viewed by subjects as an inducement to differential levels of performance. The motive to participate must have been satisfied by the realization that they would in fact be paid. The irrelevancy problem could have been eliminated from the present study only by making certain that the motivational manipulation employed was relevant to participation in the project. For example, if it were possible to manipulate examination credits obtained through participation, one would predict a greater probability of performance differences related to this specific manipulation than to variable amounts of money (at least for another sample drawn from this same population). Another possibility
is a different method of selection, perhaps from a somewhat different subject population, for which monetary payment would be more salient (e.g., by running an advertisement in the campus newspaper or even the local public newspaper).

Thus, if the amount of expected pay had provided some information to subjects concerning their ability to perform (i.e., if subjects had been recruited by an advertisement and/or if pay had been tied to their practice period performance), a suitable threat might have been present. The predicted equity/inequity effects should then have occurred. Since these effects did not occur, apparently due to successful minimization of threat to self-concept on two counts (lack of threat in the experimental induction procedure and a motivational manipulation viewed by the subjects as irrelevant to differential task performance), the threatened self-concept explanation of previous equity theory research assumes increased validity.

This being the case, the experimental results which had previously been interpreted as supporting equity theory need to be reconsidered, at least from the point of view of the motive base for behavioral differences. The simplified input/outcome ratio, while appealing conceptually, seems inappropriate for explanatory purposes. Rather, differences seem more probably to have been created by the arousal of threats to the individual subjects' self-concept.

A revised or redefined concept of equity may perhaps remain as a viable predictive construct. One may still speak in terms of inequitable disparity between investments and outcomes. For predictive purposes, however, relevant investments and outcomes may be limited to those which
are potentially psychologically threatened. Manipulation only of valid indicators of a valued performance competence would thus yield "equity" results. It is doubtful, however, that predictions relating to such a manipulation would be derived from a theory of "equity". Unfortunately, the present study does not contain data appropriate to test the utility of this reformulation.

**Alternatives to equity theory**

Expectancy theory (Vroom, 1964; Porter and Lawler, 1968) and Self-Consistency theory (Lecky, 1945; Korman, 1971) provide current alternatives to Adams' equity theory.

Vroom's (1964) theory postulates performance (the force to perform) as a multiplicative function of the valence (preference) of outcomes and the expectancy (probability) that outcomes will be realized in relation to the given performance. Porter and Lawler's (1968) linear model proposes that effort (the resultant of some combination of value of reward and perceived effort-reward probability) combines with abilities, traits, and role perceptions to determine task performance. In this model, value of reward is influenced by satisfaction (which in turn is influenced by the individual's perception of whether or not rewards for performance are equitable), and the perceived effort reward probability is influenced by observation of whether or not performance of a certain type leads to anticipated rewards.

The self-consistency theories (of which cognitive dissonance theory is also an example), do not explicitly state relationships as the above expectancy theories do. For some (e.g., Korman, 1971) this is part of
both the advantage and disadvantage to this theoretical orientation. The fundamental postulate of self-consistency is that an individual's performance may be understood as an attempt to attain or maintain consistency in his perception of himself and his environment (of which the investments - rewards relationship may in fact be but one component).

Irrelevancy finds expression in each of the above theoretical positions. For Vroom, irrelevancy is reflected in a zero valence, "... when the person is indifferent to attaining or not attaining (the outcome)" (Vroom, 1964, p. 15). For Porter and Lawler (1968) irrelevancy would be reflected in a value of reward equal to zero. For self-consistency, theorists irrelevancy is reflected in a lack of perceived relationship between two thoughts, attitudes, variables, cognitions (Korman, 1971, p. 41), for the subject.

Accepting the irrelevancy minimized threat interpretation of the present data, the superior alternative to equity theory, in a post hoc analysis, is expectancy theory. The present study was conceptualized on the assumption that equity/inequity data could be explained by equity theory, employing self-esteem as a control variable. This assumption has received no support from the present study. The self-consistency theories are unable to explain the differences between pay schedules identified in the present study. This performance difference is predictable, however, from an expectancy theory analysis.

According to Lawler:

... expectancy theory can be said to emphasize persons trying to maximize their positive outcomes, while equity theory emphasizes persons trying to balance their inputs against their outcomes. (Lawler, 1968b, p. 598).
The difference between piece-rate (121.79) and hourly (107.54) means for the productivity data is as predicted by expectancy theory. This difference is sensible according to the theory since a piece-rate pay schedule allows subjects greater flexibility than an hourly pay schedule to maximize their positive outcomes. One would therefore expect greater productivity for subjects paid on a piece-rate pay schedule, all other things being equal.

Our earlier reasoning that pay inequity effects may occur only when pay is a relevant goal, or is viewed as important to the individual's self-concept, also finds expression in expectancy theory. Porter and Lawler (1968) include this provision in their expectancy theory analysis by specifically calling for a clear performance – rewards relationship.

The higher the perceived probability that pay depends upon job performance factors, the more effort an individual will devote to performing his job effectively. (Porter and Lawler, 1968, p. 62).

Thus, the present study clearly supports expectancy motivation as the primary influence on job or task performance and not equity motivation. The expectancy theory analysis of earlier "equity" studies is thus supported, the conclusion being that the results obtained in those studies must have been due to threats to self-esteem aroused by the induction procedure, rather than unbalanced input/outcome ratios.
Summary

Skinner (1956) presents a selection from his book, *Walden Two*. In this selection, he comments on "unsuccessful" attempts at research:

Eventually I realized that the subjects were always right. They always behaved as they ought. It was I who was wrong. I had made a bad prediction. (Skinner, 1956, p. 233).

In the present study, "bad" predictions were derived from equity theory. The equity/inequity manipulation was irrelevant to subjects' performance in the study since it did not reflect on a valued aspect of the individual's self-concept (i.e., task performance). Predictions concerning level of self-esteem were "bad" due to the fact that global rather than task specific self-esteem was assessed. The success with which threats to self-esteem were eliminated from the experimental induction procedures, along with the absence of an assessment of task specific self-esteem, shielded subjects from threats to self-esteem which appear to be a necessary condition for the occurrence of "equity" phenomena. Significant differences were noted only for pay schedule grouping (piece-rate versus hourly). The only theoretical formulation capable of accounting for this result, in the context of the other findings, is expectancy theory.

Equity theory as originally proposed seems insufficient for the domain in which it purports to predict, without major modification. The writer agrees with Lawler that a concept like equity may help elaborate one aspect of traditional (expectancy) motivation theory (Lawler, 1968b, p. 609).
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