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Abstract	The relationship between satisfaction, rewards or outcomes, and performance has been of prime interest for at least four decades now, and inevitably will continue to be popular until man finds some answers to the model linking these concepts. Despite the time and energy devoted to this area, not to speak of the space given this topic in the literature, little, if any, " conclusive " evidence has come forth. In an effort to obtain a better understanding of the performance-satisfaction relationship, and, to relate and give some direction to some of the traditional work done, a particular approach was employed. This study was designed to examine any causal relationships that might exist between our performance measure, various rewards or outcomes, and a global measure of satisfaction. The data provided the needed sufficiency for a look at causality : longitudinal measurements and correlational-causal analysis. Within this study, the Porter and Lawler model of performance causing satisfaction through outcomes, was not substantiated.; although moderate evidence was presented for a correlational relationship between satisfaction and performance moderated by intrinsic and interpersonal (extrinsic) rewards. No causal relationship was discovered supporting " human relations " movement (i. e., satisfaction causing performance) either. Some of many implications from these results were suggested for understanding complicate behavior patterns within complex industrial organizations in Japan.
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Satisfaction-Rewards-Performance Relationships: A Correlational-Causal Analysis¹⁾

Takao Minami²⁾ and William A. Schieman³⁾

The relationship between satisfaction, rewards or outcomes, and performance has been of prime interest for at least four decades now, and inevitably will continue to be popular until man finds some answers to the model linking these concepts. Despite the time and energy devoted to this area, not to speak of the space given this topic in the literature, little, if any, "conclusive" evidence has come forth.

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Within this study, the Porter and Lawler model of performance causing satisfaction through outcomes, was not substantiated; although moderate evidence was presented for a correlational relationship between satisfaction and performance moderated by intrinsic and interpersonal (extrinsic) rewards. No causal relationship was discovered supporting "human relations" movement (i.e., satisfaction causing performance) either.

Some of many implications from these results were suggested for understanding complicate behavior patterns within complex industrial organizations in Japan.

1) This study is part of a larger research project directed toward understanding the process whereby newcomers in an organization become established their role (The Japanese Role-Making Study).

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Satisfaction-Rewards-Performance Relationships

The issue of causality has been one of concern for centuries, and the restrictions needed to infer causality are numerous, to say the least. There is, however, a technique developed to infer likelihood of causality; it is usually referred to as "cross-lagged panel correlation technique." The method was originally discussed by Simon (1954, 1957) and later by Blalock (1962, 1964, 1969), Pelz and Andrews (1964) and Campbell and Stanley (1963). Various criticisms and limitations of the model are pointed out by Rozelle and Campbell (1969). Some recent uses of the model have been Andrews and Farris (1972), Lawler (1968) and Lawler and Suttle (1972).

The technique works as follows: one gathers data on two variables for which causal analysis is desired at two points in time; one then sets up a diagram as in Figure 1, and computes the six correlations possible. Correlations *A* and *B* relate the two variables simultaneously at each time measurement. Correlations *C* and *D* relate the stability of the measures over time or the test-retest reliability. The correlations *E* and *F* can represent relations of one variable with the other at the different time periods.

Lawler (1968) and others suggest that if $F > A = B > E$, then there is reasonable evidence to suggest that *F* more likely has caused

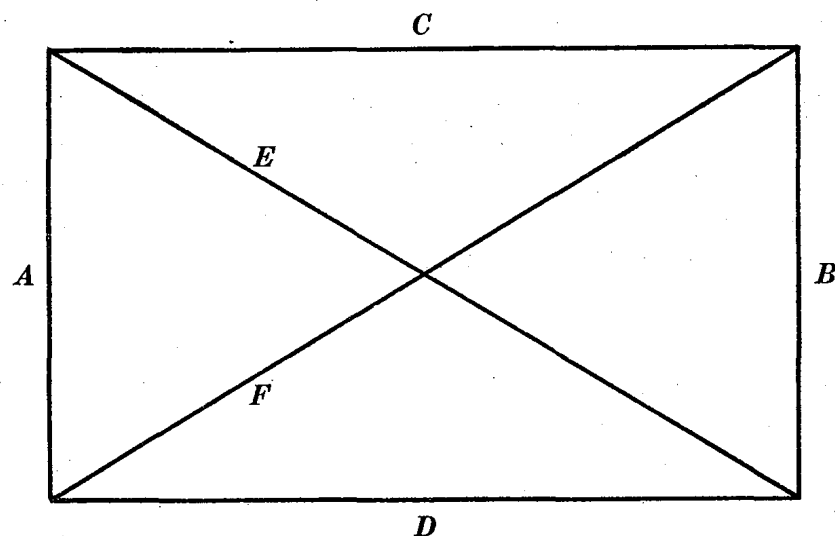


Figure 1. CAUSAL MODEL

E than the reverse.¹⁾ The same would hold true for reversing F and E in the equation. The primary weakness in this technique is that the method cannot rule out the possibility that some third variable causes the two variables under study to covary.

The logic of this analysis depends on one variable affecting another over some time period k . If performance causes satisfaction over time k (and not the reverse), then the correlation of performance at time "one" with satisfaction at time " $k+1$ " should be higher than satisfaction measured before performance or for that matter at the same time. Stated another way, present performance should be more strongly related to future satisfaction, than to present or past satisfaction, if performance causes satisfaction, and there should be some optimal time interval k which represents the time it takes performance to have maximal effect on satisfaction.

Vroom (1966) has suggested another method of dynamic correlations which has the strong point of being able to rule out the possibility of a third variable being responsible for the relationship found. It is weak, however, in the sense that it cannot tell whether performance has caused satisfaction or the reverse. We have left this supplemental analysis for later research.

The cross-lag approach has the advantage of detecting causal relations with a significant time distance for effect to occur. Vroom's technique is designed to measure immediate causality. As we expect a considerable delay in effect, we have chosen to use the lag approach for exploration.

1) Rozelle and Campbell (1969) show that there are actually four hypotheses being tested: a) increases in variable X increase variable Y , and decreases in X decrease Y ; (b) increases in X decrease Y and decreases in X increase Y ; (c) increases in Y increase X and decreases in Y decrease X ; and (d) increases in Y decrease X and decreases in Y increase X . Where we find $r_{X_1Y_2}$ greater than $r_{Y_1X_2}$, we really have the joint effect of X increasing Y and Y decreasing X greater than the joint effect of Y increasing X and X decreasing Y .

"Inferring the amount of attenuation (due to time lag) is the problem" (Rozelle and Campbell, 1969, p. 77), in determining causal relationships. As Rozelle and Campbell point out, one temptation is to use cross-correlations (A and B in Figure 1), where they remain constant as a no-cause reference base. But these values (as a reference base) are too high unless they are zero because they are based on instantaneous correlations and do not have the effect of time decay. Thus, these values as a comparison to lagged correlations, which have the effect of time and the true correlation (error is assumed to be random and thus cancel out), are inappropriate unless they are corrected for attenuation.

One method of accomplishing this is to obtain some measure of internal consistency reliability. The test-retest correlations (C and D in Figure 1) cannot be used as they indicate both attenuation and evidence of unreliability. By using a split-half reliability with a Spearman-Brown correction or the Kuder-Richardson, an estimate of the test-retest correlation with no interval is obtained. The attenuation coefficient which reduces these obtained momentary reliability values to the observed C and D could then be used to attenuate A and B values into cause-free expectation for E and F .

In terms of significance testing, the Z -transformation (Fisher's) has been shown to be very conservative; another test, although still somewhat conservative, was suggested by Pearson and Filon (1940). It takes into account indirect correlations between arrays computed from the other four values in our diagram (causal).

We have decided to be conservative due to the amount of conditions which must be met for causality. Therefore, we have chosen to use the Fisher Z -transformation for significance testing. This would mean that, not only must correlation E or F be significant, but one must be significantly greater than the other. With this test, the levels of A and B are less important as long as C and D are stable.

Hypothesis Basically, we have hypothesized, following the Porter and Lawler model on the satisfaction-performance relationship that performance will lead to satisfaction through various rewards or outcomes (Porter and Lawler, 1968; see Fig. 2). At this point, we are not willing to hypothesize whether intrinsic or interpersonal outcomes¹⁾ will moderate more strongly; we will let the data bear this out. It would be very hard to generalize on whether intrinsic or interpersonal outcomes are most important in a different culture. It is possible that interpersonal rewards will carry more weight due to the percent of variance accounted for in the factoring process. This held true in all ratings.

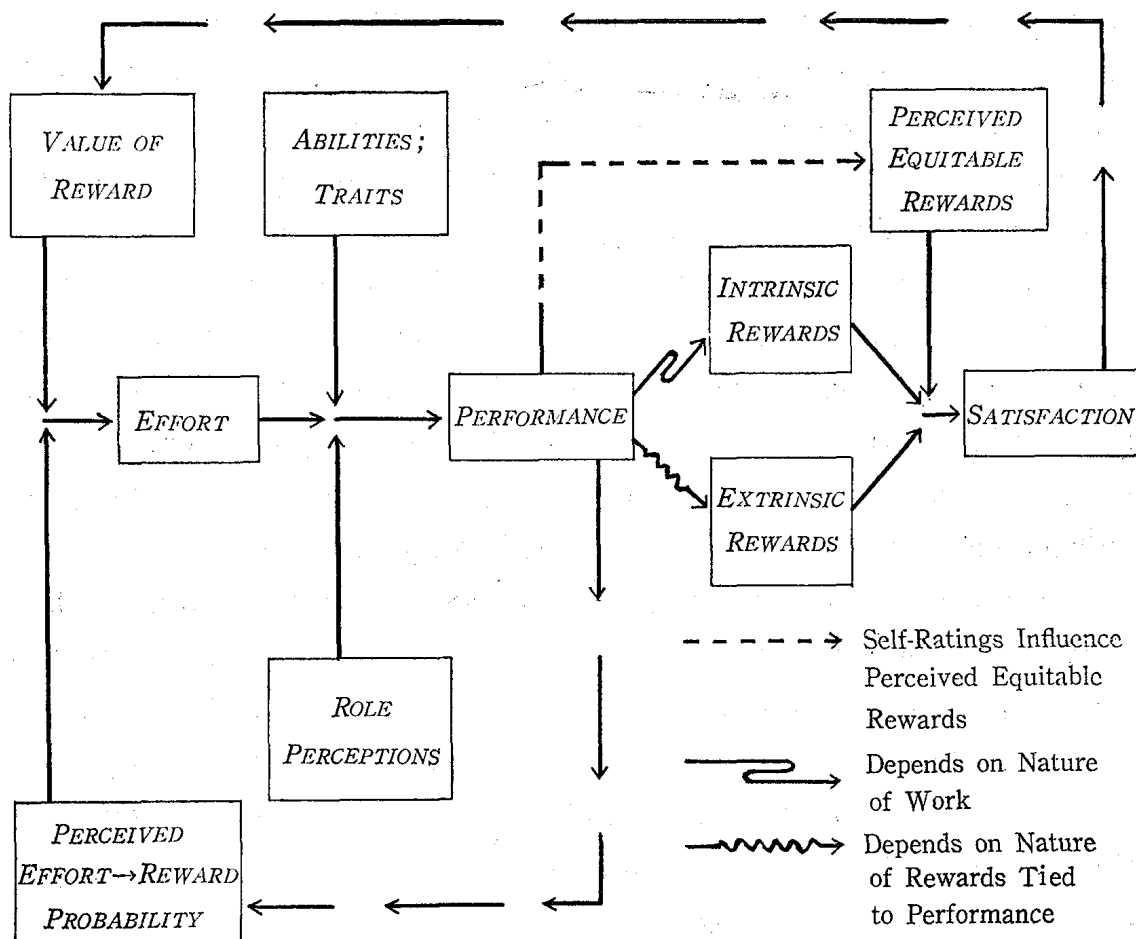


Figure 2. PORTER-LAWLER MODEL

1) It was discovered, and will be represented under "instruments" that our "outcome" measure contains two factors: intrinsic and interpersonal.

Thus, hypothesis "one" (H^1) is: *performance (supervisor rated) will lead to satisfaction (self-rated) through intrinsic and interpersonal outcomes (self-rated or supervisor-rated)*. This hypothesis refers to self-ratings of satisfaction and outcomes. We would expect the same hypothesis when all variables are rated by the supervisor, except those relating interpersonal outcomes. We think supervisory people will deny interpersonal favorites, as a supervisor is suppose to be neutral and reward only through expected channels. Expected channels are extrinsic rewards. Unfortunately, we do not have an extrinsic factor or this may have been borne out. We would expect extrinsic outcomes to carry the same hypothesis as those for intrinsic from the supervisory point of view. Thus, hypothesis "two" (H^2) is: *performance (supervisor rated) will lead to satisfaction (supervisor-rated) through intrinsic outcomes (supervisor rated)*.

From the literature, we would hypothesize that performance evaluation should be most closely related to self-ratings of outcomes as discovered by Porter and Lawler (1968), than to supervisory ratings of outcomes. Porter and Lawler found a significant relation between performance evaluation and rewards. Their study also discovered a relationship between performance evaluation and satisfaction (self-rated) in middle and lower level managers. The Japanese group of management trainees should match this managerial level.

Porter and Lawler (1968) also found a significant relationship between intrinsic rewards and satisfaction, stating that these rewards are much more effective in creating satisfaction. The authors thought that the relation may be more significant in managerial groups because they have much more opportunity to derive intrinsic satisfaction in their jobs. It will be interesting to see how closely intrinsic rewards are tied to satisfaction.

Graen (1969) found extrinsic outcomes were not significantly related to satisfaction, but that intrinsic rewards were. Mitchell and Albright (1972) also found that satisfaction and intrinsic rewards

are much closer than satisfaction and extrinsic rewards.

Method

Subjects The subjects are 70 management trainers in a large Japanese manufacturing organization. All are single and of the same race. These newcomers have all been employed less than one year; more specifically, at time "one" and "two," they were in the organization for six months and nine months respectively.

The sample consists of three main job types: research and development, clerical and administrative, and plant workers. No significant differences relating to any of the measures employed in this study were found across job types (Gallagher, 1973).

Instruments Three basic instruments have been employed—a measure of performance; satisfaction; and outcomes or rewards.

Table 1
PERFORMANCE FACTOR LOADINGS

The thirteen original performance items were subjected to Principle Axes factor extraction with squared multiple correlation communality estimates yielding one factor accounting for 75.8 percent of variance.	
Attributes	Loading
1. dependability.....	.79
2. alertness .....	.69
3. interpersonal competence.....	.63
4. planning .....	.74
5. know-how and judgment .....	.47
6. present level of performance .....	.72
7. interpersonal attraction.....	.75
8. expected level of performance .....	.65
9. over-all job satisfaction .....	.50
10. organizational commitment.....	.49
11. future success prediction—over-all .....	.51
12. future success prediction—general manager60
13. future success prediction—staff specialist38

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Performance Performance evaluation is rated by the supervisors. The items composing this category are listed in Table 1. The supervisors were asked to rate each subordinate on a scale of 1 to 5 where 1 represents "very poor" and 5 represents "excellent."

Principle Axes factor extraction with squared multiple correlation communality estimates was performed on the thirteen performance items yielding one factor accounting for 75.8 percent of the variance. The factor loadings are listed in Table 1. Three of the lowest loadings were discarded and the remaining ten were used to form the performance evaluation composite score by summing the ten scores for each individual.

Table 2
OUTCOME FACTOR LOADINGS

The seventeen outcome items were subjected to Principle Axes factor extraction with squared multiple correlation communality estimates yielding two factors accounting for 53.4 percent and 20.7 percent of the variance. The factor were then rotated orthogonally to the Varimax criterion yielding two factors accounting for 53 percent and 47 percent of the extracted variance.

Factor I: (53.4% unrotated) Interpersonal factor	Loading
6. performance feedback .....	.57
9. consideration from supervisor .....	.58
10. competent supervision .....	.71
12. trust by supervisor .....	.47
13. close supervision/attention .....	.49
15. support from supervisor .....	.72
16. influence with supervisor .....	.72
Factor II: (20.7% unrotated) Intrinsic factor	
1. job challenge.....	.76
2. participation in decision making .....	.50
3. legitimate authority .....	.55
5. information about management policies and decisions.....	.65
7. professional development.....	.52
8. job latitude/autonomy .....	.46
11. status feedback .....	.56
14. information about changes; inside information .....	.58

Note: "Cooperation from peers" and "choice of work location" did not load.

Outcomes Outcomes received are a particular domain of rewards which were measured via verbal self-ratings and via verbal supervisory ratings. There are seventeen outcomes identified. The ratings for each outcome received are based on a five point scale, ranging from "about none" to "a great deal."

Principle Axes factor extraction with squared multiple correlation communality estimates was performed on the seventeen outcomes, yielding two factors. The first factor accounted for 53.4 percent of the variance and the second factor 20.7 percent. The factors were then rotated orthogonally to the Varimax criterion yielding two factors accounting for 53 percent and 47 percent of the extracted variance. The factor loadings are given in Table 2.

The two primary factors were identified quite clearly: one apparently deals with "interpersonal relations with supervisor" and the other deals with "job related rewards" (intrinsic factor). Several of the outcomes were also ambiguous or irrelevant and were dropped. One might be surprised not to find some "extrinsic" factor, but upon further pondering, it may be obvious that the measures did not contain enough extrinsic content areas to derive such a factor.

Satisfaction Satisfaction was global question "How satisfied are you with your overall job situation" and could be answered on a five point scale similar to those already presented. The question was asked of focals and of their supervisor (that is, the question was rephrased for the supervisor to ask about the focal).

Procedures

Time effect With a time effect, it was thought that a better measure of change would come from newcomers alone, as their rate of change or acclimation to the organization is expected to be much greater than that of tenured employees. Tenured people would tend to change very slowly, and since our only access to time data was over three months, we believe that any effect in a short period would more likely appear in this group.

Ratings: supervisor vs. self A question arises regarding the appro-

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priateness of supervisor or self-ratings of a focal's received outcomes. Obviously, the supervisor's perception may be the same as the focal, in which case we would tend to see some demonstration for the existence of a fact. If they are not in agreement, then who is right? One may surely think that an individual knows exactly what he receives, but that is not always the case as we know from cognitive dissonance (Festinger, 1957) theory and other work dealing with relative response. One may well be angry with his supervisor and be distorting his perceptions innumerable ways.

Thus, we must look at self report in light of its general reliability and correlation with supervisory report (Strauss, 1966). He has found correlations of .39 ($p < .05$) between supervisor and self-ratings on productivity. Strauss claims that self images are formed primarily from *perceptions* of supervisor ratings rather than *actual* ratings, and that self-ratings and perceptions of supervisory ratings correlated .68 ($p < .01$). He also concludes that among supervisory groups, job satisfaction is related to more objective supervisor ratings.

Porter and Lawler (1968) also found low reliability in supervisory and self-ratings of effort and quality of job performance.

Thus, supervisor ratings may well differ from self-ratings or they may be the same. Whose perception is more correct? In fact, the question may not be whose perception is most correct, but instead, whose is more appropriate for what information? With newcomers, the supervisor ratings may be as much or more accurate than the subordinates as he has an existing frame of reference from which to judge. The newcomer has only his previous experience with which to compare, and this has not been in this firm. One may argue, however, that this other frame of reference is the relevant one from which the newcomer deduces expectancies and equities in the system (Adams, 1963; Pritchard, 1969).

In Japan, firms recruit during the last year of college and most students decide to go with one firm or another. Thus, few, if any, of the newcomers has had "full time" work experience outside of the present employment. Therefore, his frame of reference may be fresh and developing although previous experience (family beliefs, readings, expectations from friends,

etc.) may still influence his frame of reference. Our argument here lies in the statement that the supervisor may be in a better position to judge consistently over new individuals, and within an existing frame of reference, the amount of outcomes they are actually receiving; however, from a motivational standpoint, the perceptions of the focal are certainly more salient.

Rater bias Some of the sociometric studies relating to interpersonal attraction and friendship formation have reported that personal bias of supervisory performance appraisal is a potential problem (Quinn, 1969). Quinn says that this bias claim is not particularly applicable to the relation between supervisor and subordinate in ratings. In his study, he found several conclusions supporting his view.

First, the relation between rating scores and the degree of similarity between the raters and the ratees in their background or other non-performance characteristics reflected little positive bias (only occurred for racial and marital status—ratings were higher for those with similar characteristics).

Second, the relation between the rating scores and the degree of similarity between raters and ratees may be counter to that assumed. That is, for some categories, significantly lower ratings were obtained when the rater-ratee pairs were similar than different. Quinn explains this as due possibly to a more accurate or critical knowledge of the similar persons by the ratee and an unwillingness to evaluate the less well known.

Third, it appeared that rating scores were more often related to the characteristics of the ratee himself than to the similarity in the characteristics of the rater and ratee.

Fourth, superiors agree more closely, in rating scores assigned to their subordinates, when the subordinates possess characteristics in common with their superior.

Finally, raters agree quite well on the range of ratings that should be associated with particular characteristics of the ratee, but they vary considerably in the ratings they give when the ratee does not possess the characteristics under consideration.

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Thus, hopefully from this analysis, we can be relatively confident that supervisors are not biasing their ratings based on individual similarities to the supervisor, but rather on their true perceptions of the individual performance and outcomes received and preferred. From the above analysis, it appears likely that the supervisor may be more critical and consistent within the range of those similar to him, but his ratings of others should deviate randomly around the mean of the more similar employees.

The only biasing effect, of race and marital status (found by Strauss), appears to be eliminated in this study. All workers are of the same race and all employees are single.

The unfortunate part of supervisor ratings anywhere, especially in Japan, is that they may well represent the attitudes and beliefs expressed as company policy as to what they "formally" do. Since Japan is very formal in its rules, we might expect this tendency to be stronger here. What they say they do and what they actually do may really be two different things. We will leave these questions and others to the data.

Results

The results are shown in Figure 3, 4, and 5. Figure 3 shows the values for focal's self-rating of satisfaction and outcomes (Factor I and Factor II), and performance evaluation of the focal's immediate supervisor. Figure 4 gives the values when satisfaction and outcomes are supervisory rated. Figure 4a exhibits self-ratings of satisfaction with supervisory rated outcomes. Figure 5b displays self-rated outcomes with supervisory rated satisfaction. Individual outcomes did not show much promise in relating any causal effect.

In looking at Figure 4a the relationship between satisfaction and performance is significant in both diagonals. Using Fisher's Z-test between diagonal values, however, suggests that no causal relation can be inferred.

In looking at the relationship between performance and outcomes (see Fig. 4b), no significant relationship exists for factor I outcomes (interpersonal rewards); but for factor II outcomes (intrinsic rewards),

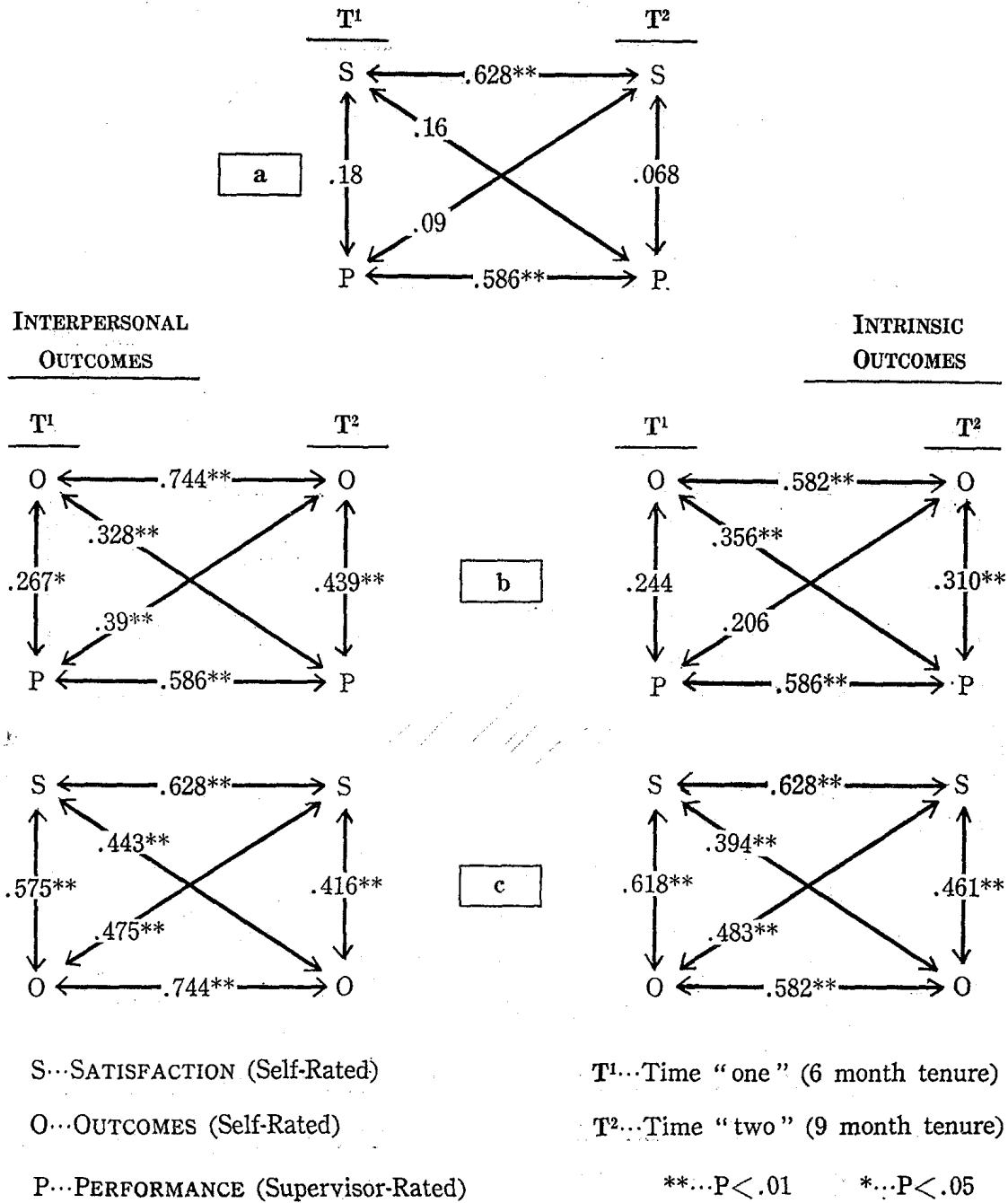


Figure 3. CAUSAL DATA

there is a significant relationship between performance at time "one" and outcomes at time "two." The correlation r_{P1O2} (.257) is significant ($p < .05$) and r_{O1P2} is not. The lowest value is the correlation between outcomes at time "one" and performance at time "two," while the

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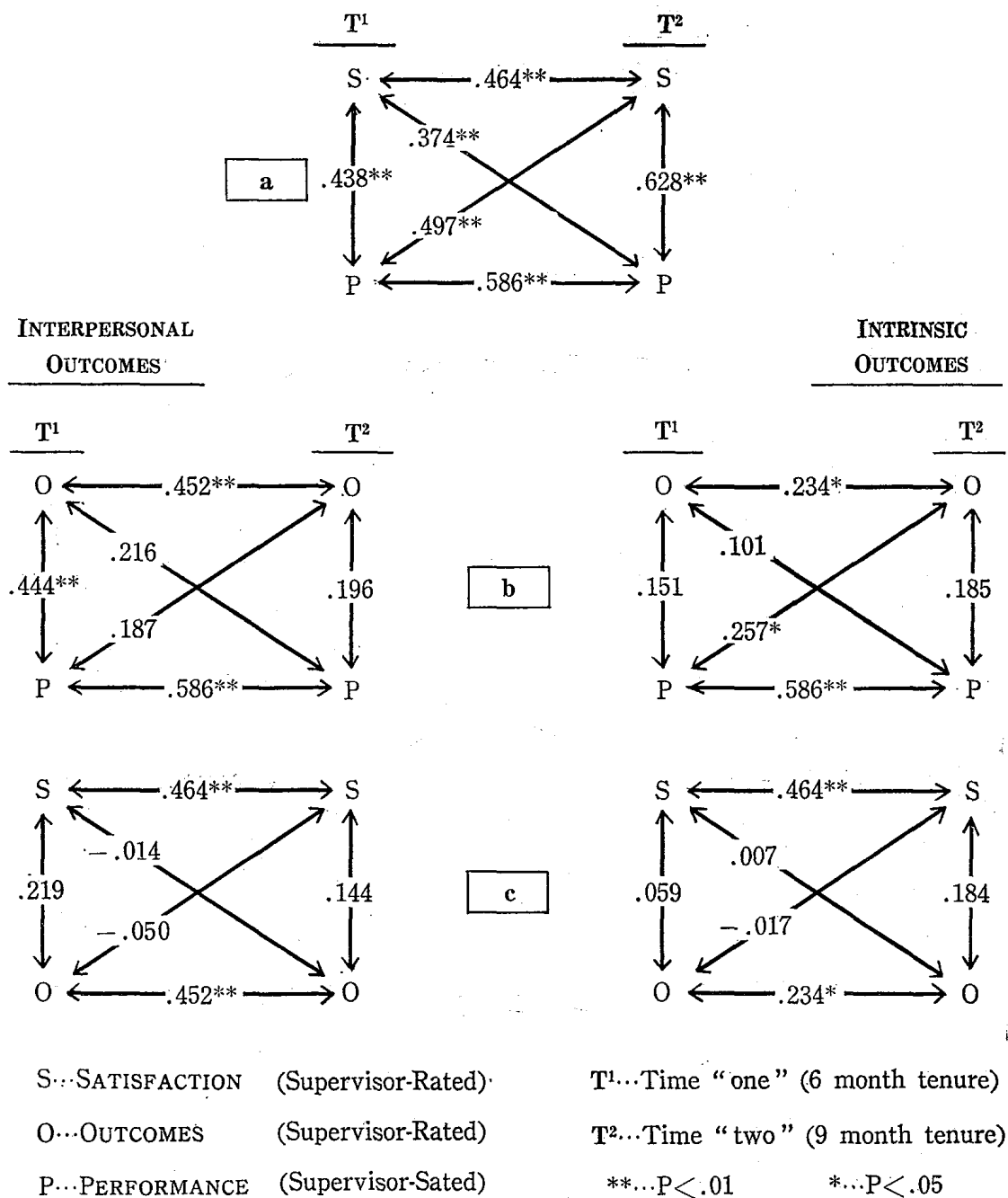
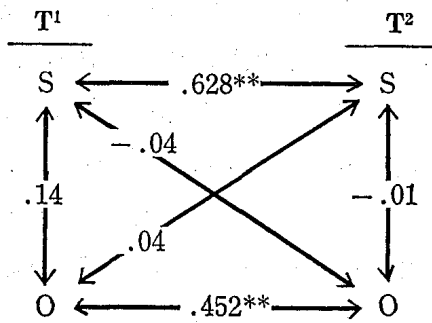


Figure 4. CAUSAL DATA

simultaneous correlations between the two variables fall between the cross-lagged correlations. This would fit Lawler's criterion for causal inference (1968). When a Fisher Z-test is performed on .257 over .101, however, no significant difference occurs. Thus, we would not

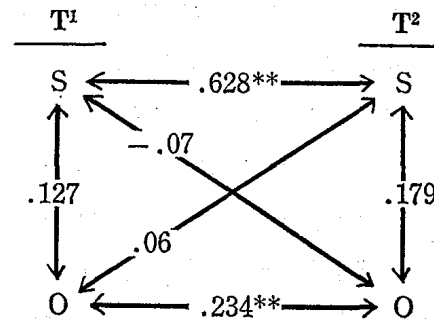
INTERPERSONAL
OUTCOMES



S...SATISFACTION (Self-Rated)

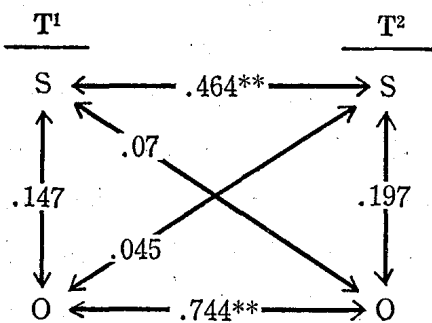
O...OUTCOMES (Supervisor-Rated)

INTRINSIC
OUTCOMES



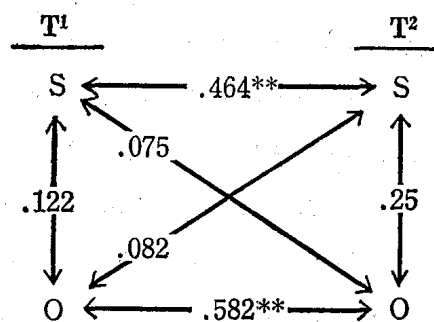
**...P<.01

*...P<.05



S...SATISFACTION (Supervisor-Rated)

O...OUTCOMES (Self-Rated)



**...P<.01

*...P<.05

Figure 5. CAUSAL DATA

claim causality, but only relationship between the two variables.

The relations between outcomes and satisfaction (Fig. 4c) exhibit no significant correlations between the two variables at any cross.

Now, looking at Figure 3, where satisfaction and outcomes are self-rated, one can see that satisfaction and performance are not related (Fig. 3a). There is no significance in any of the correlations between the two variables.

Viewing the relationship between outcomes and performance (Fig. 3b), a significant relation exists between intrinsic outcomes at

time "one" and performance at time "two." This correlation is significant, whereas the .206 of performance leading to intrinsic outcomes is not. Both simultaneous correlations between the two variables are significant and lie between the cross-lagged correlations. Also, the time lagged correlations are significant and stable. Again, this model would fit Lawler's (1968) criterion of causal relations, but does not fit our criterion of between-correlation significance. That is, .356 is not significantly greater than .206 at the .05 level. Thus, we will view this as correlational evidence only.

With interpersonal outcomes and performance, however, both cross-lagged correlations are significant, but one is not significantly greater than the other. Thus, the model does not fit; however, we can assume some interrelation between the two variables.

In Figure 3c, one can see that satisfaction and both factors of outcomes are significantly correlated ($p < .01$) simultaneously and at lagged times. Thus, a definite relation exists between satisfaction and interpersonal and intrinsic outcomes, although the direction of causality, if any, cannot be determined from this data. There appear to be potential indications that outcomes are more likely to lead to satisfaction, but this is only conjecture from the relative magnitudes of the cross-lagged correlations.

One further point deserves mention as well; both outcomes (interpersonal and intrinsic) have about the same correlation with satisfaction (.475 and .483). Thus, it appears that both factors relate about equally well to satisfaction.

Figure 5a shows no relation between satisfaction and job outcomes (of either type) for satisfaction rated by the focal and outcomes rated by the supervisor. The same holds true for Figure 5b.

Discussion

What perspective is the most accurate and what does this data lead us to believe? First, it would appear that focal ratings of their

received outcomes would be much more realistic in evaluating their satisfaction and relation to performance. After all, the individual sees or perceives his performance evaluation and operates from there. He is in the best position to view his outcomes received and logically, he will respond to these outcomes and not those perceived by the supervisor. In a previous study (Schiemann, 1974), it was found that the supervisor has very poor perceptions of what the focal actually perceives as outcomes received. This appears to hold true for both interpersonal and intrinsic outcomes. Thus, we believe the focal is the only one who can truly rate his outcomes in terms of how it will affect either his attitudes or behavior. The individual will not respond to non-perceived outcomes.

Second, we would argue the same for satisfaction. Unless, the individual has been particularly vocal, and maybe not even then, the supervisor will be hard pressed to speak for the affective response of his subordinates. His idea of their satisfaction can only be based on his idea of their performance and outcomes, and Schiemann (1974) has shown how poorly the supervisor perceives outcomes received by his subordinates. From the data here (see also Fig. 6b), however, it seems that the supervisor does not even use his perceptions of his subordinates' outcomes in predicting satisfaction, as there is no relation between the two when rated by the supervisor. The supervisor also shows no relation between his ratings of their performance and interpersonal outcomes he believes he gives. In effect, he may be displaying the lack of relationship he places between performance and interpersonal outcomes. Of course, this is the formal response expected by the supervisor. It is not organizationally sanctioned to favor one subordinate over another, even though we see this as actual behavior from the focals' point of view (Schiemann, 1974).

What the supervisor does relate to performance is intrinsic outcomes, and this is only mildly ($r=.257$). That is, he sees higher

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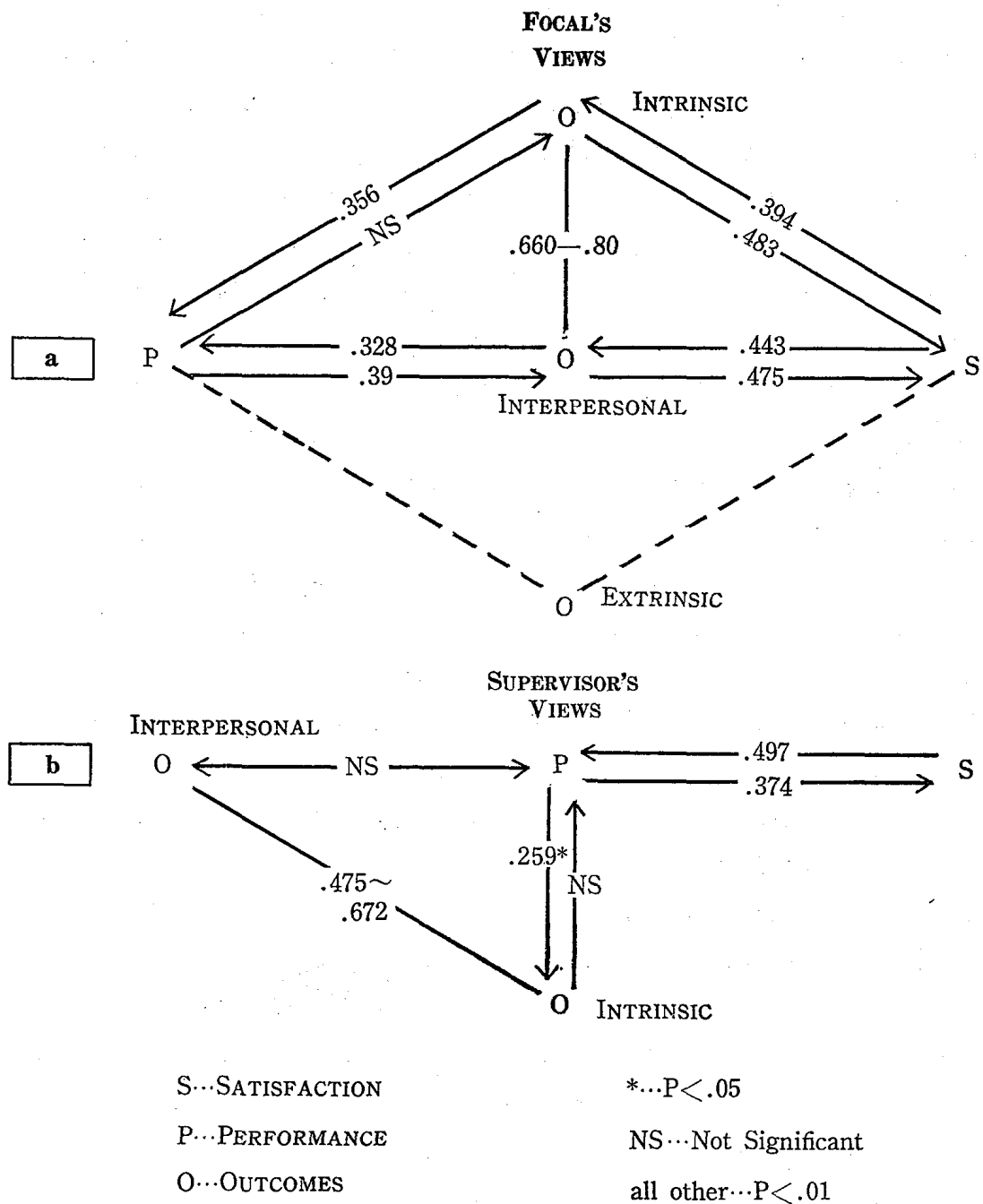


Figure 6. CORRELATIONAL DATA

performers receiving more intrinsic outcomes which are job related or a part of the work, and not rewards which he administers. This is a nice "cop-out" on the part of the supervisor in that he takes no responsibility for performance motivation or employee satisfaction,

but assumes that these necessities occur naturally as a part of the system.

The supervisor also sees performance and satisfaction well correlated. Since he sees intrinsic outcomes as a result of performance, but outcomes are not related at all to satisfaction, it implies that the supervisor sees some other variables (third variables) moderating or causing performance and satisfaction (could be extrinsic outcomes not measured here). Unfortunately, we do not have any data on extrinsic or formal organizational rewards administered by the supervisor. This might give us some answers as to how the supervisor expects his employees to attain satisfaction. If that was his (supervisor) answer, it would display a quite traditional managerial attitude. We might say that the supervisor is giving us the traditional view or formal theory on what management expects, but he is surely missing (or simply not expressing) what goes on.

If we look at satisfaction and outcomes from the focal point of view, along with performance evaluation, a more realistic relationship develops (see Figs. 3 and 6a). The focal sees his satisfaction and outcomes interrelated. Intrinsic rewards are more highly correlated with future performance than present performance is with future intrinsic outcomes. Performance and interpersonal rewards are linked, but performance and satisfaction are not related directly.

It is interesting to look at the relationships in correlational instead of causal form (see Fig. 6). The implications are that intrinsically rewarding jobs will lead to better performance. Interpersonal rewards may increase performance evaluation and they may be affected by performance. Both forms of outcomes may lead to satisfaction, and, satisfaction may lead to more rewards.

If these conclusions are appropriate, then management should be able to increase performance on the job and satisfaction of the individual most directly by increasing the intrinsic outcomes of the job. Apparently, employees see little or no connection between per-

forming now (if this can be captured in performance evaluation), and receiving intrinsic rewards later. Either this is true, or "performance evaluation" has exposed some of its shortcomings. It is possible that focals see a clear relation between "performance evaluation" and receiving interpersonal rewards since administering rewards is dependent on the performance perceptions of the supervisor and not actual performance; whereas, the reception of intrinsic outcomes is actually dependent on performance, and focals see no relation to its evaluation by their supervisor.

Thus, it is hard to say, for sure, that performance on the job now is not linked well with intrinsic outcomes. They *are* receiving intrinsic outcomes, and, if the outcomes are coming from some other source, then it may well be true that rewards are not linked to performance; otherwise, they may just be receiving them from performance and our measure of performance is not capturing it (this could be corrected by using a more objective measure of performance).

In any case, we *do* know that intrinsic outcomes, if increased, will have a positive affect on both performance and satisfaction. This is one area management can work on. One potential avenue for increased intrinsic rewards may be through job redesign (Guest, 1957; Ford, 1969; Hulin, 1971; Paul, Robertson, and Herzberg, 1969; Lawler, 1969).

The other way to increase performance and satisfaction would be with proper manipulation of interpersonal rewards, which apparently moderate the relationship of satisfaction and performance. How this occurs in this sample is a matter for further research.

This second device for manipulating performance and satisfaction may be slightly more dangerous as we know little about its control. How long are the effects of giving certain employees more "trust" or "consideration"? Does this practice lead to stereotyped "in" people and "out" people? If so, do "out" people ever return to the

flock or do they give up and quit. If all members produce highly, how can the supervisor differentially reward, or does increasing interpersonal rewards for some, at the same time, imply decreasing rewards for others? These are all questions for further research.

One might argue that the moderate correlations between outcomes and satisfaction self-rated (see Fig. 6a) could be a result of the measure (i.e., both rated by the same person) instead of true variance. However, we would then expect similar correlations between outcomes and satisfaction when both are supervisor-rated. Instead, we find no relation between these two concepts. Thus, we would consider measure variance minimal in this rating situation.

Japanese organizations are especially suitable for this research as dissatisfaction has increased in recent years, but individuals do not just pick up and leave the organization there. Absenteeism is low and turnover is *extremely* low; thus, "mortality" rate of subjects (Campbell and Stanley, 1963) in the research design is kept to a minimum, and the quality of the data improved.

Improvements for Further Research

In this study, the most pressing need is for a more objective measure of performance in order to clear up the relation of intrinsic rewards to performance in this firm. A partial way to get around this problem (at least for solution of the performance-intrinsic reward problem) would be to get self-ratings of performance. With this, it would be possible to see if focals saw the two concepts related, and most important, whether performance led to intrinsic outcomes. If not, it would be well worth while to seek the source of these intrinsic rewards. Again, objective measures of performance would be much better.

Another important improvement would be to obtain a better measure of satisfaction. As pointed out by Hulin and Smith (1965),

job satisfaction is not a unidimensional variable; it is made up of a number of factors or distinct subareas. Some of these areas relate to another factor which we could not obtain in this data: extrinsic rewards. It would be interesting to see how this other important way of rewarding is utilized in Japanese culture. It may provide the link to the source of supervisory perceptions of focal satisfaction.

As pointed out by Schwab and Cummings (1970), "...the most pressing need...for additional research on the dimensionality of satisfaction and performance and on the specific conditions under which they are related" (p. 428); with this, it will also be important to begin to use standardized research instruments which capture this dimensionality of the concepts involved.

We also think that a better way is needed to measure individual preferences for various outcomes. If this is accomplished, we can account for individual differences much better than currently.

One pressing problem is that of measuring optimal time lag for maximal effect in causally relating satisfaction and performance in an industrial setting. This is an important dimension to research. We had no idea whether our lag period was optimal. It would be useful to replicate these correlations over different lag periods and then test for causal relationships.

Finally, when we have a good feel for the concepts herein, it will then be important to fill in the gaps through the study of moderators which affect those interrelations. We have a good "handle" on some of them currently but will need others to develop a more useful and complete theory of performance and satisfaction.

Implications

Implications from this study are three-fold. First, this study shows merit for the initialization and development of controlled "interpersonal outcomes" as a means of linking satisfaction and

performance. This outcome, although needing further research, may be quite effective as a potential motivator of performance and source of satisfaction, not to speak of the increase in interpersonal communication and cooperation possible. All of these effects have potential advantages to both the individual, the supervisor, and the organization.

Second, the study highlights the lack of awareness of the supervisor as to how the subordinates view the relation between performance, outcomes, and satisfaction. The subordinates see no direct relation between performance and satisfaction, but do relate both interpersonal and intrinsic outcomes to the two concepts. The supervisor does not see rewards linked at all to satisfaction and only intrinsic rewards linked to performance. This traditional or naive view of the supervisor is indeed in need of change.

Finally, the Porter and Lawler model of performance causing satisfaction through outcomes, was not substantiated, although moderate evidence is presented for a correlational relationship between satisfaction and performance moderated by intrinsic and interpersonal rewards. No causal relationship was discovered supporting the "human relations" movement either (i.e., satisfaction causing performance). It was apparent that other moderators would also be necessary to more fully explain the relationship between the two concepts (satisfaction and performance). Presently, it appears that research relating many moderators between satisfaction and performance might be most fruitful in explaining this intriguing relationship.

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