Relationship of Internal–External Control to Work Motivation and Performance in an Expectancy Model

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Internal–external control represents the extent to which a person perceives himself to control the events around him. Internality (perception of much control) was hypothesized to be positively related to the following: (a) the concept of instrumentality from expectancy theory, (b) work motivation as measured by ratings and by expectancy theory measures, (c) job performance as measured by ratings, and (d) rank. Data were collected from naval personnel comprising 52 work groups of four each; ratings from their supervisors were also obtained. These hypotheses were confirmed at or beyond the .05 significance level. A multitrait-multirater matrix showed convergent but no discriminant validity for ratings by supervisors, peers, and the subjects themselves on the subjects' job effort and performance.

The Internal–External Scale (Rotter, 1966) measures a person's perception that the events which happen to him are contingent upon his behavior. An internal person essentially feels in control of the things which happen to him; an external person believes that the events in his life are for the most part beyond his influence. Commonly used terms for designating the two ends of this continuum are the belief in skill and the belief in chance.

Perceptions of Internal–External control (I–E), as measured by the I–E scale, have been related by many hundreds of studies to numerous variables in almost all areas of psychology. Bibliographies of I–E research have been compiled by Throop and MacDonald (1971) and by MacDonald (1972, Note 1); reviews of I–E research can be found in Rotter (1966), Lefcourt (1966), and Joe (1971).

The one major area in psychology where the I–E construct has been little studied is that of organizational psychology. Organ and Greene (1974), studying scientists and engineers, found externality to be positively associated with role ambiguity and negatively associated with work satisfaction. Satmoko (1972), studying Indonesians in the United States for long-range training, found that the internals were more resistant to manipulation, that they perceived themselves to be more efficient and competent on the job, and that they had more self-confidence on the job. Tseng (1970), studying vocational rehabilitation clients, found internals to show more ability to work with others and more cooperativeness, self-reliance, courtesy, reliability, and work knowledge.

One of the most influential contemporary theories of motivation is Valence–Instrumentality–Expectancy (VIE) theory, frequently referred to as expectancy theory. VIE theory depicts motivation as resulting from the extent to which a person perceives that he can and wants to perform well and the extent to which he perceives that such performance will produce desired outcomes. Reviews of VIE research can be found in Mitchell and Biglan (1971) and in Heneman and Schwab (1972). Despite differing models and measures, the body of empirical research using VIE theory shows it to have a modest but fairly consistent capability for predicting work motivation and performance.

The I–E construct bears a fundamental similarity to the concept of instrumentality in VIE theory. Instrumentality in this context
is the extent to which one perceives that performing at a given level on the job will result in desired outcomes. Both instrumentality and I–E represent the extent to which one feels influential in one's environment. The differences between the concepts are two: I–E is a perception regarding the world in general, while instrumentality pertains only to the job situation; I–E is conceived of as a relatively enduring, stable personality trait, while instrumentality is conceived of as a perception based primarily on a person's current job situation. Consequently, it was hypothesized that a positive (but not strong) correlation exists between internality and instrumentality.

**Theoretical Model**

The model used in this study was based for the most part on a number of VIE models already developed. The definitions of the model variables relevant here are as follows:

- **Outcome**—an event which might result for the individual on the job.
- **Valence (V)**—perception of the attractiveness or unattractiveness of each outcome.
- **Instrumentality (I)**—perception of the probability that doing a good job will result in the attainment of a positive outcome or in the avoidance of a negative outcome.
- **Activity**—a type of behavior engaged in on the job.
- **Self-expectancy (E)**—perception of the probability that, if one tries, one will be able to perform well at a given activity; that is, the perception that effort will result in adequate performance. ("Self-expectancy" was deliberately employed to clearly distinguish the concept from the everyday usage of the word expectancy.)
- **Self-expectancy of doing a good job (Ej)**—perception of the probability that, if one tries, one will be able to do a good job overall.

Some of the traditional expectancy theory models state that motivation is a function of valence, instrumentality, and self-expectancy of doing a good job, as follows:

\[ M = E_j \sum (V)(I) \]

In turn, performance is seen to be a partial function of motivation.

The hypotheses investigated in this study were as follows:
1. I–E scale scores are correlated with average instrumentality indexes. In other words, internals are more likely to see rewards as being generally contingent upon job performance than externals.
2. Internals are more motivated to perform on the job than externals.
3. Internals are better performers on the job than externals.
4. Self-expectancy and instrumentality are positively correlated.
5. Those occupying higher pay grades in the Navy are more internal than those occupying lower pay grades.

**Method**

**Subjects**

Subjects were 80 officer, and 127 enlisted, naval personnel from 12 different locations. They represented a variety of different occupations and positions. The subjects were selected in work groups, a work group being comprised of four people of approximately the same pay grade (i.e., rank) who were doing approximately the same type of work, aware of the quality of each other's work, and supervised by the same person. One enlisted subject was lost immediately prior to questionnaire administration. The supervisor of each work group was also asked to participate by rating the members of his work group.

**Measures**

Two questionnaires were developed for use in this study, one for the supervisors and one for the subjects themselves. The supervisor questionnaire contained two scales on which the four work-group members were to be rated relative to one another. First, all four subjects in a work group were to be rated on a 7-point Likert scale on the overall quality of their job performance. Second, all four subjects in a work group were to be rated on a 7-point Likert scale on the overall effort they put forth to do the job.

The 6 relevant scales in the subject questionnaire are described below; all but the I–E scale were 7-point Likert scales.

- **Valence (V)**. This scale measured the subjects' perceptions of the attractiveness-unattractiveness of each of 21 job outcomes.
- **Instrumentality (I)**. Subjects' perceptions of the extent to which doing a good job helps to result in, bears no relationship to, or helps to prevent these same 21 job outcomes were measured on this scale.
- **Self-expectancy (E)**. This scale measured the extent to which the subjects felt they would be success-
ful at each of 15 job activities if they tried hard. One of these 15 activities was "doing a good job," which represented the measure of $E_j$.

**Internal-External Locus of Control.** This forced choice scale consisted of 29 items (6 of which were fillers). Each item consisted of an external statement and an internal statement. A high score on the scale signified externality.

**Ratings of job performance.** Subjects' perceptions of the quality of the job performance of the other three members of their work group were measured; the other members' names were provided on the questionnaire.

**Ratings of job effort.** This scale measured subjects' perceptions of the effort put forth on the job by all four members of their work group, themselves included.

For the $V$, $I$, and $E$ scales, the subject was instructed to give a rating to each item only if he felt that that item was applicable to his job. To compute the subject's mean score for each of these sets of items and appropriate combinations of items, only those items (or pairs of items) which the subject answered were included. Mean $I$ by itself was not computed because it is not a meaningful number, being an average of ratings designating "helps to result in" and ratings designating "helps to prevent." It should be noted that the way in which $V \times I$ was computed—"both helping to result in an attractive outcome and helping to prevent an unattractive outcome—arithmetically contributed to the subject's overall motivation score.

**Procedure**

For the enlisted subjects, the questionnaires were administered in the work groups, and the experimenter was available to answer questions at the administration sessions. For the officer subjects, the questionnaires were mailed with a letter of explanation; the completed questionnaires were mailed directly back to the experimenter. All supervisors who participated were allowed to complete their questionnaires at their own convenience.

**RESULTS**

The mean of the $I-E$ scores was found to be 7.40, with a standard deviation of 4.32. The distribution of scores was approximately normal, with a slight negative skew.

A test–retest measure of the reliability of the subjects' scores on the $I-E$ scale was obtained by mailing the $I-E$ scale to a random sample of the subjects 6–8 weeks after the first questionnaire administration. The reliability coefficient for the test–retest data on the $I-E$ scale was computed for 37 subjects and found to be .67. This coefficient was significantly different from zero at $p < .001$ and falls within the range of other test–retest coefficients obtained by other researchers (Rotter, 1966).

Pearson product-moment correlations were computed between the $I-E$ scores and each of the components postulated to contribute to motivation. These results are shown in Table 1. The negative direction of the correlations indicates that internals (low scorers on the $I-E$ Scale) tended to score higher on all of the motivational model components under consideration in this study. The correlation of $- .39$ between the instrumentality index $(V \times I)$ and $I-E$ supports Hypothesis 1.

Next, a multitrait–multirater matrix was produced for the effort and performance ratings, using the same methodology as Williams and Seiler (1973) whose analytic approach was based on Campbell and Fiske's (1959) multitrait–multimethod concept. This matrix is presented in Table 2. Evidence for a moderate amount of convergent validity is apparent by noting the circled correlations, which represent covariance between items in which the same trait (i.e., effort or performance) is measured by different types of raters. There are two methods available in this case to determine the existence of discriminant validity. First, any given trait should correlate more strongly with the same trait rated by a different rater (circles) than it should with a different trait rated by a different rater (dotted squares). A comparison of these two sets of correlations shows their magnitude to be about the same. Second, the circled correlations should be higher than those between different measures rated by the same type of rater (solid squares). This comparison shows clearly that the strongest basis of communality among the ratings is the type of rater.

**TABLE 1**

<table>
<thead>
<tr>
<th>Model component</th>
<th>$I-E$ score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean $V$</td>
<td>-.27*</td>
</tr>
<tr>
<td>Mean $V \times I$</td>
<td>-.39*</td>
</tr>
<tr>
<td>Mean $E$</td>
<td>-.28*</td>
</tr>
<tr>
<td>$E_j \times (\text{Mean } V \times I)$</td>
<td>-.38*</td>
</tr>
</tbody>
</table>

*Note. $N = 207$. $V =$ Valence; $I =$ Instrumentality; $E =$ Self-expectancy; $E_j =$ Self-expectancy of doing a good job. $p < .01$, two-tailed test.
not the trait being rated. It was therefore concluded that a moderate amount of convergent validity was present but that no discriminant validity was present. On the basis of these results, it was decided to treat each of the five ratings independently, even though expectancy theory specifies that the performance ratings should be a partial function of the effort ratings.

Pearson product-moment correlations were computed between the I–E scores and each of the five ratings of effort and performance. The results for the effort ratings were — .20 (p < .05), — .15, and — .14, respectively, for ratings by supervisors, peers, and self. The results for the performance ratings were — .19 (p < .05) and — .17 (p < .05) for ratings by supervisors and by peers, respectively. All five correlations were in the predicted direction.

The effort correlations gave support to Hypothesis 2, that internals are more motivated to perform on the job. Further support for Hypothesis 2 was present in the results of Table 1 in which all the components of the motivational model were related negatively to externality. The performance correlations gave support to Hypothesis 3, that internals are better performers than externals.

Mean E and mean V × I were related in the form of a Pearson coefficient to test Hypothesis 4. The result was a correlation of .28 which is in the predicted direction and significant at p < .001.

The Pearson correlation coefficient between pay grade and I–E score was — .27, which was in the predicted direction and significant at p < .001. Therefore, Hypothesis 5, that personnel of higher pay grade are more internal, was supported.

**Discussion**

The findings of this study fit as predicted into the larger pattern of knowledge already available on the I–E construct. Previous research has shown internals to have better mental health than externals (in terms of being less likely to be suffering from neuroses or psychoses), to have more self-control, and to be more achievement oriented (Lefcourt, 1966; Joe, 1971). The results of this study supplement this overall picture by indicating that internals as employees are more motivated to work than externals, actually perform better, and see working hard as being more instrumental in obtaining what they want. However, to determine the generalizability of this study's findings, data from a nonmilitary sample are needed. Also, since the sample was 98% male, caution must be exercised in generalizing to females. Another limitation to the study is that slightly different data collection methods were used among officer subjects, enlisted subjects, and supervisors, and it is possible that method variation accounts for some of the differences in their responses.

The fact that no discriminant validity was found between the effort and performance ratings represents a problem in terms of the theoretical framework of VIE theory which depicts effort and performance as separate concepts. The instructions on the questionnaire drew a distinction between the two concepts to encourage the rater to discrimi-
nate between them. The fact that no discrimination was obtained could be a result of the fact that the instructions were not sufficiently clear, that the raters simply did not have enough information about the behavior of the subjects to make a differentiation, or that, for these subjects, their performance really did match their effort.

On the other hand, taken together, the results on convergent and discriminant validity may point to the fact that the effort and performance concepts used here lack construct validity. Particularly, it may not be useful to treat the two as separate constructs. The results of the multitrait-multirater matrix in this study are very similar to the results of Williams and Seiler (1973). They obtained global ratings of effort and performance from engineers and their supervisors and found convergent validity, but little discriminant validity, between the two traits. The fact that the matrix results in both studies were so similar indicates that the results are not likely to be an artifact of the measures employed in a particular study.

The concept of instrumentality is a person's perception of the relationship of his behavior to the outside world, and it was because of this definitional similarity to I–E that instrumentality was hypothesized to be related to I–E. An important contribution of VIE theory is its stress on the perceptual aspects of motivation, and it is at this point that its logical ties to the I–E concept are strongest. The results showed that not only were instrumentality and I–E correlated, but that this correlation was higher than any of the correlations between I–E and the other motivational model components.

The concept of self-expectancy, in contrast to that of instrumentality, is a person's perception of the relationship between his effort and his performance, that is, a perception of a relationship internal to himself. Self-expectancy and instrumentality were hypothesized to be correlated, not because they represent similar concepts, as was the case between instrumentality and I–E, but because it was believed that people who tend to feel confident about their capability to influence their environment, also tend to feel confident about their capability to influence their own behavior. In other words, perceptions of control, whether they be of external or internal events, tend to generalize for an individual. The picture which emerges from this study, taken together with the knowledge about the I–E construct and about VIE theory, is that there exists for people a general attitude or feeling toward life which might tentatively be labeled "positivity" which is based on the extent to which they feel they can control their own behavior and their own destinies.

While the hypotheses in this study were supported, indicating that people's perceptions of their environmental influence do have an effect on their behavior, an alternate explanation of this study's findings might lie in the tendency for personality measures to be intercorrelated. For instance, in this study I–E and V were found to be significantly correlated even though this relationship was not predicted to be different from zero.

This study dealt primarily with constructs that refer to the person's perceptions rather than environmental variables (with the exception of pay grade). There is a growing trend away from focusing on such personal constructs exclusively and instead simultaneously considering the importance of environmental variables. One reason for this new emphasis is the intercorrelation problem mentioned above. New directions in I–E research might be usefully addressed to the relationship between this construct and variables in the work environment.

\[1\] Credit is to be given to Dr. Ralph White for suggesting the use of this term.

REFERENCE NOTE


REFERENCES


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