

MMPI INDICES OF INTERNAL-EXTERNAL LOCUS OF  
CONTROL OF REINFORCEMENT

by

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## ABSTRACT

The present study investigated the correlates of various MMPI indices of anxiety or maladjustment with a generalized expectancy of an external locus of control of reinforcement as measured by Rotter's I-E Scale. The MMPI and the Rotter I-E scale were administered to 110 male and 209 female out-patients at a mental health center. Significant Pearson Product-Moment Correlation Coefficients between the measures of maladjustment (the Taylor Manifest Anxiety Scale, the Welsh A scale, a combination of the two former scales [AP Scale], and a measure of overall elevation on the MMPI) and the I-E scale were interpreted as evidence supporting the hypothesis that a generalized expectancy of external locus of control of reinforcement would be positively related to maladjustment.

## INTRODUCTION

Personality theorists have long been concerned with the notion of the behavioral causation of external events and with the relationship between an individual's actual and perceived control of the environment. Piaget (1930), for example, claimed that a child's learning the concept of causality is a necessary precondition to his conception of his own causation of external events. Adler's striving for superiority construct has been interpreted as a concept of man's control of his surroundings (Ansbacher and Ansbacher, 1956). Merton (1949) used Durkheim's (1897) concept of anomie to label the generalized feeling among juvenile delinquents that their behaviors had only somewhat random, coincidental relationships with the outcomes of these behaviors. Seeman (1959, 1963), another writer concerned with juvenile delinquency focused on feelings of powerlessness among delinquents and their seemingly resultant failure to modify their behavior in order to avoid punishment.

It is generally accepted among personality theorists that an individual's expectancies (i.e., perceived control) regarding the consequences of his behavior may have an effect on that behavior. The first theorist to systematically study the effects of

expectancies of reinforcement on the behaviors leading to those reinforcements was Rotter (1954, 1966). In his social learning theory (1954), Rotter emphasized the influence of a person's expectancies of contingent reinforcement, and the value of that reinforcement, on the likelihood that the behavior would occur. For any situation, behavior, and reinforcing event, a given expectancy and reinforcement value will determine the probability of that behavior's occurrence. Rotter's behavior potential schema depends on the assumptions: (1) that the behavior actually does hold a contingent relationship with the reinforcing event, and (2) that the individual perceives that relationship. Stated in terms of the locus of control model, this would mean that an individual perceives the control of his reinforcement to lie in his behavior (internal) rather than in the environment (external).

In a recent monograph on generalized expectancies, Rotter (1966) posits a continuum of expectancy of locus of control of reinforcement and describes his I-E (internal-external) Locus of Control Scale which purports to measure individual differences in expectancies regarding the contingency between an individual's behavior and his rewards and punishments. Rotter calls individuals who score toward the internal end of the continuum "internals" and those who score on the other extreme, "externals." Internals tend to see their behavior in a causal or

contingent relationship with the consequences applied to this behavior while externals tend to perceive a chance or fortuitous relationship between their actions and the events that follow them.

There exists a wealth of studies dealing with the relationship of the I-E dimension to various other constructs and some observable responses. For example, Holden and Rotter (1962), Rotter, Liverant, and Crowne (1961), Blackman (1962), and Phares (in Lefcourt, 1966) studied predicted success following success or failure. They all found that externals tended more than internals to produce smaller increments and decrements of predicted success "following success and failure, generalized less from one task to another, and recovered less following the period of extinction . . . [Rotter, 1966, p. 9]." Gore and Rotter (1963) found that internals were more likely to take social action on issues such as civil rights activities than were externals. Phares (1965) found that internals were more successful than externals in changing the attitudes of other students. In a later study, Davis and Phares (1967) found that individuals who perceived that they were not able to control or predict events in their environments would be less accurate in their perceptions of cues and changes in cues in the environment than those whose expectations of locus of control were generally internal. The suggestion posed by the foregoing studies seems clearly

to be that internals, at least in experimental and classroom situations, more often respond adaptively to environmental cues than do externals.

Perhaps of equal clinical interest is the relationship of the I-E construct to measures of personal adjustment or maladjustment. An early study by Cromwell et al. (1961) found schizophrenics to be significantly higher in externality than normals. Attempts to correlate the internal-external construct with measures of anxiety or maladjustment have produced mixed and contradictory results. Efran (cited in Rotter, 1966), for example, found no correlation between the Rotter I-E scale and a short form of the Taylor Manifest Anxiety Scale (Taylor, 1953) while Ware (cited in Rotter, 1966) found a correlation coefficient of .24 between scores on the I-E scale and anxiety scores on the standard form of the Taylor Manifest Anxiety Scale.

Mandler and Watson (1966), in an article relating anxiety to the interruption of behavior, suggest that:

. . . In terms appropriate to interruption theory; the degree to which a person considers himself to control reinforcing events should be highly correlated with his appraised degree of control over interruption. Since a high degree of appraised control over interruption is presumably based in the individual's history of successful attempts to cope with interruption, he would presumably be rendered less anxious by any present interruption for he would have a repertory of available alternate responses and would also be more likely to search for substitute responses when confronted with interruption (pp. 285-286).

Following Mandler and Watson's (1966) suggestion, Watson (1967) measured the correlation of scores on the I-E scale with those on a short form of the Taylor Manifest Anxiety Scale and the Alpert-Haber Achievement Anxiety Test and found that externals scored consistently and significantly higher on these anxiety measures than did internals. Tolor and Reznikoff (1967), in a correlational study investigating the inter-relationships of several measures, found that "the expectation of internal locus of control reinforcement is significantly and positively related to insight . . ." and that "Ss with external expectancies have significantly greater overt death anxiety than Ss with internal expectancies [p. 426]." Viewing the foregoing studies as generally indicative that externality is more often associated with maladjustment than is externality, Tolor and Jalowiec (1968) attempted to discover the etiology of an external locus of control orientation. They asked 68 college students whose I-E scores were already available, to answer questions on the Parent Attitude Research Instrument (PARI) (Schaefer and Bell, 1958) as they felt their parents would answer them. The hypothesis, that externals would attribute higher scores to their parents than would internals on the Authoritarian Control and Hostility-Rejection factors of the PARI but not on the Democratic Attitude factor was confirmed. This finding suggests, as do most of the above cited studies,

that psychometrically-assessed favorable adjustment is inversely related to the externality and positively related to the internal pole of the I-E dimension.

Phares, Ritchie, and Davis (1968), however, hypothesized that externals would react with less anxiety than would internals when confronted with threatening "personality" profiles ostensibly belonging to them. These authors argued that because external Ss can attribute negative personal information to forces outside themselves, they will thus escape the anxiety typically expected to accompany such a confrontation. Phares and his associates found that none of their rating scales produced any differences approaching significance between externals and internals. Although negative results provide tenuous basis for generalization, these findings are not inconsistent with those cited above relating externality with anxiety.

In his monograph Rotter (1966) suggests that internality should be related to adjustment:

Theoretically, one would expect some relationship between internality and good adjustment in our culture, but such a relationship might not hold for extreme internal scores. However, there is clearly an interaction between internality and experience of success . . . . In regard to the other end of the distribution, externality may act as an adequate defense against failure, but very high scores would suggest a passivity in the face of environmental difficulties, which, at least for many subjects, would result in maladjustment in our society (pp. 16-17).

Rotter seems to suggest here, a relatively clear, positive relationship between externality and maladjustment.

It is the purpose of the present study to provide further clarification of the relationship between an external locus of control of reinforcement orientation and maladjustment by measuring correlates of the internal-external dimension with several common indices of maladjustment.

The major hypothesis of the present study is that externality of the internal-external locus of control dimension will show a significant positive relationship to various measures of maladjustment.

## METHOD

The Minnesota Multiphasic Personality Inventory (Hathaway and McKinley, 1942; Welsh and Dahlstrom, 1956) and the Rotter Internal-External Locus of Control Scale (Rotter, 1966) were administered to 319 outpatients (110 males and 209 females) at a mental health center as a part of the screening test battery given to all incoming patients. All incoming patients received the measures for two and one-half months, with no selection among admissions.

The Rotter I-E scale is scored in the external direction; the higher the numerical score, the more likely it is that an individual maintains an expectancy of external control over his reinforcing events. The MMPI was scored for the typically-used clinical scales (with scale 5 excluded; i.e., for 1, 2, 3, 4, 6, 7, 8, 9, and 10) and for the Taylor Manifest Anxiety Scale (MAS), the Welsh A (first factor) Scale and an Anxiety Proneness (AP) Scale which combines the MAS and the A Scale with overlap removed. Because of errors in the administration of the test batteries, 42 of the patients (14 males and 28 females) answered only the first 408 questions on the MMPI. With Form R of the MMPI 408 questions provide a sufficient scoring pattern to score the validity and typically-used

clinical scales, but not sufficient for scoring the MAS, A, or AP scales.

The inference of relative maladjustment was made from the three anxiety scales and a general elevation score which was an average of the T scores on the nine clinical scales of the MMPI. In each case, maladjustment was indicated by high scores on each of the four measures such that a correlation of the scores on the four MMPI measures with the externally-directed I-E scores provides a relatively clear index of the relationship of maladjustment to externality.

## RESULTS

The results of the Pearson Product Moment Correlation Coefficients run between scores on the Rotter I-E scale and MMPI Mean Elevation, the Taylor Manifest Anxiety Scale, the Welsh A Scale, and the Anxiety Proneness Scale are presented in Table 1. Because of the directional nature of the hypothesis, one-tailed tests were employed to determine the significance levels of the correlation coefficients. The hypothesis that an external locus of control of reinforcement orientation, as measured by the Rotter I-E scale, would be positively related to the four indices of maladjustment used in this study was seen as confirmed by the significant correlation coefficients ( $p < .005$ ) presented in Table 1.

As a measure of the extent to which the several indices of maladjustment were reflecting common variance the MMPI Mean Elevation Scores were correlated with the AP scale by means of Pearson Product Moment coefficients. These inter-correlations are presented in Table 2.

Since the Anxiety Proneness Scale is formed by the combination of the Taylor MAS and the Welsh A scales (with overlap removed), the comparison of the Mean MMPI Elevation scores with the AP scale was seen as a sufficient basis for the inference of similar relationships between

Table 1. Pearson Product-Moment Correlation Coefficients Between Externality and Various Indices of Maladjustment.

	Mean MMPI Elevation (a)	Taylor MAS (b)	Welsh A Scale (b)	AP Scale (b)
Males	.28*	.37*	.39*	.41*
Females	.25*	.25*	.31*	.31*
Total	.26*	.29*	.34*	.34*

\*p < .005

Note: (a) Males, N = 110; Females, N = 209; Total, N = 319.

(b) Males, N = 96; Females, N = 181; Total, N = 277.

Table 2. Pearson Product-Moment Correlations, MMPI Mean Elevation, and AP Scale.

	MMPI Mean Elevation
Males (N = 110)	.79*
AP Scale Females (N = 209)	.69*
Total (N = 319)	.72*

\*p < .001

the MMPI Mean Elevation scores and the Taylor MAS and between the MMPI Mean Elevation scores and the Welsh A scale. Indeed, Rosenthal (1966) found that the MAS and the Welsh A scales correlated on the order of .90 which was seen as a relationship of a magnitude closely approximating the limits of their separate reliabilities. The extremely high correlations between MMPI mean Elevation scores and the A scale scores suggests that, to a large extent, common variance is being measured. The nature of the common dimension assumed to be tapped by these four indices of maladjustment is discussed by Dahlstrom, Grant, and Welsh (1960) and others and will be further discussed below.

Table 3 presents the means and standard deviations of the several measures of anxiety utilized in the study, and those of the scores on the I-E scale.

Table 3. Means and Standard Deviations for the Welsh A, Anxiety Proneness, Taylor Manifest Anxiety, and Rotter Internal-External Scales; Giving Means and Standard Deviations for the Mean MMPI Elevation Scores.

	Men	Women	Combined
N	110	209	319
Welsh A Scale Mean	20.9	22.7	22.1
Welsh A Scale S.D.	8.2	6.5	7.1
Anxiety Proneness Scale Mean	39.5	45.8	43.6
Anxiety Proneness Scale S.D.	15.3	11.9	13.6
Taylor Manifest Anxiety Scale Mean	24.4	30.3	28.2
Taylor Manifest Anxiety Scale S.D.	10.6	8.4	9.6
Rotter Internal-External Scale Mean	9.1	9.4	9.3
Rotter Internal-External Scale S.D.	3.8	4.0	3.9
MMPI Mean-Elevation Mean	69.2	69.9	69.6
MMPI Mean Elevation S.D.	10.2	8.9	9.4

## DISCUSSION AND CONCLUSIONS

The present study is seen as providing further evidence of a positive relationship existing between a generalized expectancy of external locus of control and psychometrically-inferred maladjustment.

Although the concept of maladjustment has received much notice in the literature, it has been poorly defined in publicly demonstrable terms. In the present study, the term maladjustment is treated as equivalent to the notion of an individual's lack of ability to cope appropriately with his environment. To the extent that commonly used measures of anxiety or a general maladjustment tap such a lack of ability to cope, they are deemed appropriate for the purposes of the present study. The measures used herein as indices of maladjustment may warrant further consideration in the light of the above criterion.

The Taylor Manifest Anxiety Scale (Taylor, 1953) has been extensively studied, validated, and used clinically. The scale's application and validity are reviewed by Dahlstrom et al. (1960). The items included in the Taylor MAS, the Welsh A and Rosenthal's combination of them are presented in Appendix A.

The Welsh A (first factor) scale (Welsh, 1956) was developed to tap a source of personality variance isolated through factor analytic methods. As discussed by Dahlstrom et al. (1960): "This source of variance . . . appears to be personal discomfort or distress. Welsh described it as anxiety or general emotional upset. From the pervasiveness of the variance in Factor A, it appears likely that averaging out other variations in such group comparisons will leave only this source of personality variance [p. 84]."

The Anxiety Proneness Scale (Rosenthal, 1966) is a research measure combining the Taylor MAS and the Welsh A scale with the overlapping items used only once. Rosenthal (personal communication, 1969) discusses the AP measure as follows:

Its particular virtue for research purposes is to provide a longer, and thus more stable, measure than either of the separate scales alone; in other terms, it provides a more exhaustive measure of the MMPI First-Factor dimension (coordinate with Eysenck's "Neuroticism" dimension) than does either of its component scales alone.

The MMPI Mean Elevation scores were taken as an alternative rational measure of overall maladjustment and distress. Although the correlation coefficients relating the internal-external dimension to maladjustment are modest in magnitude, they are highly significant and they compare favorably with values typically found in

personality-scale research. Although higher coefficients are generally found with measures of intellectual function (e.g., I.Q.'s) or cognitive style (e.g., Witkin et al., 1954) the results are, for the most part, in accord with the work reviewed by Mischel (1969) which led him to speak of the "personality coefficient" of about  $.29 (\pm .05)$ . Mischel argues that personality scale coefficients approximate this magnitude when "virtually any personality dimension is related to other personality measures and external criteria."

Since the present sample consisted of people who were, by definition, "maladjusted" (i.e., patients) and who thus should be expected to obtain high scores on the measures of anxiety, the correlations obtained may well be attenuated because Ss were confined to the upper limits of the possible scoring range. For example, the Mean MMPI Elevation Score for the sample was  $T = 69.6$ , whereas the mean for an unselected sample would be expected to fall between  $T = 40$  and  $T = 60$ . The AP scale scores show a similar trend. Rosenthal (1966) found that on the average, college students scored between 22.2 and 29.0 on the AP scale whereas the mean scores on AP for the present sample ranged between 39.5 and 45.8. While the above considerations tend to enhance the stature of the obtained correlation coefficients, by the same token, great restraint is

required when generalizing from the present data to any populations other than to clinic samples quite similar to that studied.

## APPENDIX A

### ITEMS IN THE AP SCALE

ITEMS IN THE AP SCALE. ITEM-NUMBERS REFER TO DESIGNATION IN THE MMPI BOOKLET. T REFERS TO ITEMS FROM THE TAYLOR MAS; W REFERS TO ITEMS FROM THE WELSH "A" SCALE; TW REFERS TO ITEMS COMMON TO BOTH SCALES.

#### No.

- T 7 My hands and feet are usually warm enough.
- T 13 I work under a great deal of tension.
- T 14 I have diarrhea once a month or more.
- T 18 I am very seldom troubled by constipation.
- T 23 I am troubled by attacks of nausea and vomiting.
- T 31 I have nightmares every few nights.
- TW 32 I find it hard to keep my mind on a task or job.
- W 41 I have had periods of days, weeks, or months when I couldn't take care of things because I couldn't "get going."
- T 43 My sleep is fitful and disturbed.
- TW 67 I wish I could be as happy as others seem to be.
- W 76 Most of the time I feel blue.
- T 86 I am certainly lacking in self-confidence.
- W 94 I do many things which I regret afterwards (I regret things more or more often than others seem to).
- T 107 I am happy most of the time.
- T 125 I have a great deal of stomach trouble.

- W 138 Criticism or scolding hurts me terribly.
- T 142 I certainly feel useless at times.
- W 147 I have often lost out on things because I couldn't make up my mind soon enough.
- T 158 I cry easily.
- T 163 I do not tire quickly.
- T 186 I frequently notice my hand shakes when I try to do something.
- T 190 I have very few headaches.
- T 191 Sometimes, when embarrassed, I break out in a sweat which annoys me greatly.
- T 217 I frequently find myself worrying about something.
- T 230 I hardly ever notice my heart pounding and I am seldom short of breath.
- W 236 I brood a great deal.
- T 238 I have periods of such great restlessness that I cannot sit long in a chair.
- T 241 I dream frequently about things that are best kept to myself.
- T 242 I believe I am no more nervous than most others.
- W 259 I have difficulty in starting to do things.
- T 263 I sweat very easily even on cool days.
- T 264 I am entirely self-confident.
- W 267 When in a group of people I have trouble thinking of the right things to talk about.
- W 278 I have often felt that strangers were looking at me critically.
- T 287 I have very few fears compared to my friends.
- TW 301 Life is a strain for me much of the time.
- W 305 Even when I am with people I feel lonely much of the time.

- T 317 I am more sensitive than most other people.
- TW 321 I am easily embarrassed.
- T 322 I worry over money and business.
- T 335 I cannot keep my mind on one thing.
- TW 337 I feel anxiety about something or someone almost all the time.
- T 340 Sometimes I become so excited that I find it hard to get to sleep.
- W 343 I usually have to stop and think before I act even in trifling matters.
- W 344 Often I cross the street in order not to meet someone I see.
- W 345 I often feel as if things were not real.
- T 352 I have been afraid of things or people that I knew could not hurt me.
- W 356 I have more trouble concentrating than others seem to have..
- W 359 Sometimes some unimportant thought will run through my mind and bother me for days.
- T 361 I am inclined to take things hard.
- T 371 I am not unusually self-conscious.
- W 374 At periods my mind seems to work more slowly than usual.
- W 379 I very seldom have spells of the blues.
- W 382 I wish I could get over worrying about things I have said that may have injured other people's feelings.
- W 383 People often disappoint me.
- W 384 I often feel unable to tell anyone all about myself.
- W 389 My plans have frequently seemed so full of difficulties that I have had to give them up.

- W 396 Often, even though everything is going fine for me, I feel that I don't care about anything.
- TW 397 I have sometimes felt that difficulties were piling up so high that I could not overcome them.
- T 407 I am usually calm and not easily upset.
- W 411 It makes me feel like a failure when I hear of the success of someone I know.
- W 414 I am apt to take disappointments so keenly that I can't put them out of my mind.
- TW 418 At times I think I am no good at all.
- T 424 I feel hungry almost all the time.
- TW 431 I worry quite a bit over possible misfortunes.
- T 439 It makes me nervous to have to wait.
- T 442 I have had periods in which I lost sleep over worry.
- W 443 I am apt to pass up something I want to do because others feel that I am not going about it in the right way.
- W 465 I have several times had a change of heart about my life work.
- TW 499 I must admit that I have at times been worried beyond reason over something that really did not matter.
- T 506 I am a high-strung person.
- W 511 I have a daydream life about which I do not tell other people.
- W 518 I have often felt guilty because I have pretended to feel more sorry about something than I really was.
- T 523 I practically never blush.
- T 528 I blush no more often than others.
- T 530 I am often afraid that I am going to blush.
- W 544 I feel tired a good deal of the time.

T 549 I shrink from facing a crisis or difficulty.

TW 555 I sometimes feel that I am about to go to pieces.

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