

DIFFERENTIATING AMONG INTERNALITY, POWERFUL OTHERS, AND CHANCE

Conceptualization

Overview

The internal-external control construct was conceived as a generalized expectancy to perceive reinforcement either as contingent upon one's own behaviors (internal control) or as the result of forces beyond one's control and due to chance, fate, or powerful others (external control). Rotter's I-E Scale (1966) is the instrument that has been most widely used to measure the degree of internality versus externality. The multidimensional view of locus of control developed by this author derives from questions about the validity of combining under the rubric of external control, as Rotter did, expectancies of fate, chance, and powerful others. The multidimensional conceptualization proposed here differentiates between two types of external orientation—belief in the basic unordered and random nature of the world and belief in the basic order and predictability of the world, coupled with the expectancy that powerful others are in control. In the latter case there is a potential for control. It is quite conceivable that a person who believes in control by powerful others may also perceive enough regularity in the actions of such people as to believe that he or she can obtain reinforcements through purposeful action. Such a view of externality would be quite similar to Rotter's conceptualization of internality. Furthermore, a person who believes in chance control may be cognitively and behaviorally different from one who feels a lack of per-

sonal control. The purpose of this chapter is to present data on the validity of separating Rotter's conceptually unidimensional I-E scale into three dimensions of expectancy: Internal (I Scale), Powerful Others (P Scale), and Chance (C Scale).

Origin of the idea

Because their ideas often stem from personal, unscientific experiences, investigators rarely disclose the sources of those ideas. It was just such an experience that gave rise to my reconceptualization of Rotter's scale. When I was a graduate student I was informed that because the administration of my graduate school had changed a rule, I would have to add another year to my schooling. Initially I felt frustrated and angry at these powerful others (administrators). Then I attempted to learn more about the situation, in the hope of having the rule repealed. Thus it became clear to me that the concept of externality could confound two very different control orientations. Lack of my personal control did not result in my becoming a frustrated fatalist. Instead, I believed that events were predictable and that there were powerful others who were in control of these events. And, as fate would have it, at the time I was reading about the I-E concept and searching for a dissertation topic.

Other investigators, whether stimulated by their own personal experiences or by the logic of the empirical data, have also questioned the validity of the unidimensional I-E concept. Hersch and Scheibe (1967) were among the first investigators to raise this question, commenting that "the data . . . suggest that the previously stated theoretical formulation of I-E may be too simplistic. Individuals scoring low on the I-E Scale (internals) were more homogeneous in their test performances than were high-scoring subjects. This may suggest a diversity in the psychological meaning of externality [p. 612]." They suggested that a theoretical and empirical differentiation of externality would be helpful in understanding the relationship between personality and adjustment. And the discovery of other inconsistencies and inadequacies of the I-E scale led to a number of factor analytic studies that underscored the need for a multidimensional view of the construct (Collins, 1974; Gurin, Gurin, Lao, & Beattie, 1969; Mirreis, 1970). The differentiated dimension found in these factor analytic studies suggested the importance of some aspects of externality (e.g., system control) for facilitating social action. However, commenting on the use of factor analyses of the I-E Scale to discover other dimensions, Rotter (1975),

cautioned that factor analyses may be useful only as a first step. What is needed, he said, is to demonstrate "that reliable and logical predictions can be made from the subscales [p. 63]."

The I, P, and C Scales were developed out of the conceptualization that those who believe in powerful others (one external orientation) will behave and think differently from those who feel the world is unordered and unpredictable (a second external dimension). In the former case, a potential for control exists. The major implication of this formulation was that to be "external" was not always undesirable, maladjusted or "bad." It was from this basic idea that the scale items were developed. Thus the I, P, and C Scales, unlike many other such multidimensional approaches, were theoretically and not empirically derived.

Measurement

Construction, Description, and Scoring

Since the I, P, and C Scales were originally designed as a reconceptualization of Rotter's I-E Scale, they are composed of both items adapted from Rotter's scale and a set of statements written specifically to tap beliefs about the operation of the three dimensions of control—beliefs in personal control (Internal Scale), powerful others (Powerful Others Scale), and chance or fate (Chance Scale). Pretesting on 36 items included item analyses and correlations with the Marlowe-Crowne Social Desirability Scale (Crowne & Marlowe, 1964). The final I, P, and C Scales comprise three 8-item subscales with a 7-point Likert format (0-6), which are presented to the subject as a unified scale of 24 items.

The I Scale measures the extent to which people believe that they have control over their own lives (e.g., "When I make plans, I am almost certain to make them work"); the P Scale deals with powerful others (e.g., "In order to have my plans work, I make sure that they fit in with the desires of people who have power over me"); and the C Scale is concerned with perceptions of chance control (e.g., "It's not wise for me to plan too far ahead because many things turn out to be a matter of good or bad luck"). The I, P, and C Scales, together with directions and scoring and interpretation instructions, can be found at Appendix A.

The I, P, and C Scales were designed to differ from Rotter's I-E Scale in five important ways:

1. They are presented as a Likert Scale, instead of in a forced-choice format, so that their three dimensions are more statistically independent of one another than are the two dimensions of Rotter's scale.
2. The I, P, and C Scales make a personal-ideological distinction. All statements are phrased so as to pertain only to the person answering. They measure the degree to which an individual feels he or she has control over what happens, not what the person feels is the case for "people in general."
3. The items in the scales contain no wording that might imply modifiability of the specific issues. Both the factors of personal versus ideological control and system modifiability were found by Gurin et al. (1969) to be contaminating factors in Rotter's I-E Scale.
4. The I, P, and C Scales are constructed in such a way that there is a high degree of parallelism in every 3-item set.
5. Correlations between items on the new scales and the Marlowe-Crowne Social Desirability Scale are negligible and nonsignificant.

To score the scales, we add the subject's responses to each item—from strongly disagree to strongly agree (from -3 to +3, including a mid point of 0)—and add a constant of 24 to the total to eliminate negative values. The range on each scale is from 0-48.

A word of caution about interpretation is necessary. High scores on each subscale are interpreted as indicating high expectations of control by the source designated. Low scores reflect tendencies not to believe in that locus of control. We cannot interpret a low I Scale score as indicating that a subject believes in chance; we can say only that this subject does not perceive him- or herself as determining outcomes. Empirically, one could score high or low on all three scales; that is, a person could say he or she was personally in control yet also say that life is a random series of events controlled by powerful others. Rarely has such a profile been obtained. Before one could interpret such a seemingly inconsistent profile one would have to give serious consideration to the presence of confounding factors (e.g., acquiescence response set or random responding).

Table 2.1 contains the means and standard deviations found in various studies using the I, P, and C Scales. (Detail findings of these studies are discussed in later sections.) Inspection of the means in Table 2.1 reveals that for most samples, scores on the Internal Scale are consistently higher than those on the Powerful Others or Chance Scales. Such a finding is as expected, for two reasons: (a) For most Western

TABLE 2.1
Means and Standard Deviations on the I, P, and C Scales

Study	Group	Sample	N	Sex	I		P		C	
					M	SD	M	SD	M	SD
Achterberg, 1979	orally	adults	23	MF	37.52	(6.89)	17.52	(9.08)	18.78	(8.71)
	written	adults	42	MF	34.98	(6.94)	17.95	(8.24)	17.64	(9.31)
Beck, 1979		undergrads	178	MF	35.55	(7.33)	19.37	(8.93)	19.28	(9.25)
Borrero- Hernandez, 1979		undergrads	150	MF	36.07	(5.55)	20.59	(8.40)	17.73	(8.31)
Caster & Parsons, 1977a	alcoholics	adults	27	M	41.2	(4.17)	20.2	(7.80)	23.8	(6.27)
Caster & Parsons, 1977b	alcoholics	controls	27	M	38.6	(5.3)	20.4	(7.4)	20.6	(6.8)
		recidivists	31	M	39.3	(3.8)	23.1	(7.8)	25.2	(6.5)
Garcia & Levenson, 1975	blacks	undergrads	110	MF	35.33		21.47		22.95	
	whites		84	MF	34.75		18.68		17.44	
Krampen & Nispel, 1978	alcoholics	adults	50	MF	35.32	(4.43)	26.72	(5.98)	29.22	(6.59)
	control	adults	56	MF	36.55	(4.32)	23.07	(4.67)	23.77	(5.60)
Lee, 1976		undergrads	55	M	33.78	(5.70)	18.89	(7.88)	18.04	(8.08)
		undergrads	49	F	34.57	(6.09)	17.12	(7.23)	16.47	(7.82)
Levenson, 1972		adults	45	M	36.37	(4.56)	18.85	(7.61)	14.54	(7.70)
		adults	51	F	35.46	(7.41)	14.64	(6.87)	13.38	(9.05)

(cont.)

TABLE 2.1 (cont.)

Study	Group	Sample	N	Sex	I		P		C	
					M	SD	M	SD	M	SD
Levenson, 1973b	predictable standards unpredictable standards	undergrads	92	MF	34.08		17.29		15.52	
		undergrads	92	MF	33.21		18.60		18.73	
Levenson, 1975b	less than 6 months more than 5 years	prisoners	30	M	40.6	(6.5)	14.2	(8.4)	18.7	(9.6)
		prisoners	30	M	39.1	(6.9)	21.5	(13.1)	17.4	(10.7)
Levenson, unpubl. Levenson, 1973a	pain patients schizophrenic paranoid depressed neurotic	adults	126	MF	36.21	(7.44)	16.63	(9.60)	16.82	(9.54)
psychiatric patients		31	MF	32.7	(9.7)	25.6	(12.6)	24.8	(11.3)	
		53	MF	37.1	(8.9)	26.1	(11.5)	21.3	(12.1)	
		15	MF	36.9	(6.8)	21.3	(8.9)	19.9	(12.0)	
Mahler, 1974	Japanese	undergrads	85	M	26.98		17.18		22.94	
			109	F	26.41		19.01		25.18	
	U.S.	undergrads	59	M	33.42		16.47		18.58	
			61	F	32.98		16.72		17.51	
Marshall, 1979	semi-rural	adults	124	F	35.31	(7.25)	21.52	(8.59)	16.91	(8.77)
Martin, 1979	paranoid schizophrenic undifferentiated control	psychiatric patients	8	MF	33.25	(7.25)	35.13	(8.90)	31.88	(9.82)
			5	MF	35.40	(3.78)	18.00	(7.38)	16.40	(9.37)
			14	MF	36.07	(8.97)	28.64	(9.01)	25.79	(13.76)
		adults	84	MF	36.12	(6.39)	19.14	(8.07)	18.00	(7.56)
Molinari, 1979		undergrads	99	M	33.93	(7.06)	20.09	(8.74)	18.17	(8.13)
			205	F	34.89	(7.06)	21.24	(8.46)	18.09	(8.12)
Morelli & Morelli, 1979		undergrads	132	MF	35.00	(5.3)	24.00	(5.7)	23.00	(6.2)
Roueche & Mink, 1976	blacks	students	121	M	35.59		22.07		21.16	
		students	113	F	31.09		18.47		20.99	
	whites	students	347	M	36.11		20.33		17.33	
		students	198	F	34.80		20.19		18.56	
	hispanics	students	165	M	35.72		19.99		20.16	
		students	228	F	34.08		18.28		20.05	
Rupkey, 1978	entrepreneurs	adults	13	M	43.8	(3.11)	19.1	(9.58)	12.2	(8.26)
	controls	adults	70	M	40.4	(4.85)	17.7	(9.46)	12.0	(8.30)
Scanlan, 1979	craft opportunity	adults	33	M	39.63	(4.98)	18.76	(10.05)	16.88	(8.33)
Shadish <i>et al.</i> , 1979	spinal cord injuries	adults	31	M	38.68	(5.23)	15.97	(7.01)	11.87	(7.62)
		adults	136	M	36.72	(7.33)	17.98	(10.13)	20.15	(9.01)
Shearer & Moore, 1978	blacks	probationers	93	MF	33.05	(6.72)	24.05	(9.72)	24.96	(9.29)
	whites	probationers	213	MF	34.60	(7.14)	19.48	(8.43)	18.62	(8.25)
	hispanics	probationers	113	MF	30.99	(9.41)	22.09	(7.76)	25.60	(8.97)
Wallston & Wallston, 1978		adults	115	MF	37.01	(4.53)	20.78	(6.82)	20.61	(6.32)
Walters, 1977		ninth graders	20	MF	34.95		26.10		25.40	
Zukotynski & Levenson, 1976		elderly	50	MF	39.86	(6.89)	29.28	(8.69)	31.18	(9.08)

societies belief in personal control is a given cultural perception, and (b) a certain degree of personal means-end connection is basic to survival and coping in the world.

Because each subject receives three scores on the scales (instead of one), studies using the scales frequently use scores as dependent instead of independent variables (e.g., effects of an experimental manipulation on the three dependent variables of internal, powerful others, and chance orientations). Multivariate analyses are most appropriate for such studies. The Scales can also be used as independent variables by forming criterion groups from median (or upper or lower third) splits on each scale resulting in three pairs of groups (i.e., high and low Internal, high and low Powerful Others, and high and low Chance Scale scorers). Three separate analyses can then be computed on the dependent variable, one with each set of criterion groups. Conservative probability levels should be set in such cases because multiple analyses on the same set of data increase the likelihood of obtaining significance by chance alone.

As Rotter (1975) has pointed out in reference to his own scale, "There is no justification for thinking in terms of a typology [p. 62]." Although people do speak of "internals" and "externals," researchers should remember that these scores distribute themselves along a continuum, and what is taken as "internal" in one sample may be in the middle of the distribution in another. Multiple regression equations are the most effective and appropriate ways of analyzing scores on the three scales, since they utilize the full multidimensional complexity of the instruments and therefore help investigators to avoid typological thinking. Using the three locus of control scores in a regression equation, each with its own different beta weight, can make findings more meaningful and interpretable, especially in relation to moderator variables.

Reliability

Internal consistency estimates are only moderately high, but since the items sample from a variety of situations, this is to be expected. These correlations compare favorably with those obtained by Rotter (1966) and other researchers. For a student sample ($N = 152$) Kuder-Richardson reliabilities yielded .64 for the I Scale, .77 for the P Scale, and .78 for the C Scale (Levenson, 1974). Wallston, Wallston, and DeVellis (1978) found similar estimates for their adult sample ($N = 115$) (.51, .72, and .73, respectively) as did Levenson (1973a) for a hospitalized psychiatric sample (.67, .82, and .79).

Split-half reliabilities (Spearman-Brown) are .62, .66, and .64 for the I, P, and C Scales. Test-retest reliabilities for a 1-week period are in the .60-.79 range (Levenson, 1973a), and Lee (1976) found comparable correlations with a 7-week test-retest interval (.66, .62, and .73). Zukolynski and Levenson (1976), using simplified versions of the scales with an elderly sample, found test-retest reliabilities of .85, .91, and .65.

Validity

The validity of the I, P, and C Scales has been demonstrated chiefly through convergent and discriminant methods (Campbell & Fiske, 1959) that are designed to show significant low-order correlations with other measures of the general construct as well as a pattern of theoretically expected positive and negative relationships with other variables.

RELATIONSHIPS AMONG THE I, P, AND C SCALES

In various studies the P and C Scales are usually correlated significantly, albeit only slightly to moderately, with each other and they are usually unrelated to the I Scale. For example, the P and C Scales have been found to correlate with each other .41 (Scanlan, 1979), .46 (Caster and Parsons, 1977a), .54 (Levenson, 1973a), and .60 (Wallston et al., 1978), whereas correlations of the P and C Scales with the I Scale have been minimal (ranging from -.25 to .19). Such findings support the work of several investigators (e.g., Collins, 1974) who have found a lack of empirical bipolarity in the items paired on Rotter's I-E Scale. That is, items scored in an external direction are only minimally correlated with items scored in an internal direction. We would expect to find that the P and C Scales are related in most samples since both orientations reflect a belief in a source of control external to the self.

RELATIONSHIP TO ROTTER'S SCALE

In a college sample ($N = 75$), Rotter's I-E scale correlates positively (.25, .56) with both the P and C Scales and negatively (-.41) with the I scale (Levenson, 1972). A similar pattern (.24, .44, -.15) has been found by Donovan and O'Leary (1978) in an alcoholic sample and by Hall, Joesting, and Woods (1977) in a group of northern white and southern black college students (.22, .43, -.32). These findings add to the convergent validity of the P and C Scales as measures of external orientations, but correlations with the P Scale are of a very low

magnitude. Furthermore, Hall *et al.* (1977) computed a step-wise multiple regression analysis in an effort to predict the Rotter I-E Scale scores from the multidimensional I, P, and C Scales. The Chance Scale was the first to be entered in the multiple regression with a correlation of .43; the addition of the I Scale brought the multiple R to .53. Interestingly, the P Scale did not contribute significantly to the equation.

RELATIONSHIP WITH OTHER PSYCHOMETRIC TESTS

Several investigators (e.g., Hiele, 1971) have pointed to the finding that Rotter's I-E Scale is contaminated by social desirability, which affects validity. Levenson (1972) found correlations of the I, P, and C Scales with the Marlowe-Crowne Social Desirability Scale of .09, .04, and -.10, respectively. Wallston *et al.* (1978) found similarly negligible correlations with the same measures (.04, .11, and .08). Therefore, the attempt to eliminate the influence of a social desirability response set on self-report control orientations appears to have been successful.

Borrero-Hernandez (1979) investigated the relationship between the I, P, and C Scales and the personality variables defined by the California Personality Inventory (CPI) and Sixteen Personality Factor Questionnaire (16 PF). On the CPI it is interesting that the I Scale is consistently positively related to measures of sociability, while the C Scale is negatively related to the sense of well being and responsibility. On the 16 PF the P Scale is related positively to suspiciousness, while the C Scale is correlated significantly with guilt proneness. Borrero-Hernandez (1979) is helpful also in illuminating the relationship between the I, P, and C Scales and the I-E scale:

Levenson's (1972) multidimensional and Rotter's (1968) unidimensional approaches to locus of control measures were found to contribute to the prediction of several personality variables. They converged on most of the measures of several personality constructs defined by the CPI and 16 PF. They diverged in the qualitative aspects of their relationship. This difference does not constitute enough evidence to consider that in general one locus of control approach is better than the other, but that the choice of either . . . may depend upon the specific personality variables involved in a particular research (p. 51).

FACTOR ANALYSES

Although the I, P, and C Scales were developed from a theoretical rationale, it was considered important to test the assumption that the three dimensions cluster empirically into the orientations of personal, powerful others, and chance control. The three scales were administered to 329 undergraduates (Levenson, 1974). Responses to the 24 items were subjected to a principle component factor analysis, using

Kaiser's Varimax method. The rotation yielded seven factors accounting for a total of 52% of the variance. The first factor (P) is composed entirely of P Scale items. The second factor (I) is composed entirely of I Scale items, and the third factor (C) contains entirely C Scale items. Of the 24 items, 17 load on the first three factors. Since there is no overlap of the items on the I, P, and C factors, it appears that there is a strong correspondence between the three orientations as they were developed theoretically and as they emerge empirically. Furthermore, the same three factors were obtained in a factor analysis with a psychiatric sample (Levenson, 1973a).

Influence of Demographic Factors

In the initial validating study (Levenson, 1972), male adults had significantly higher P Scale scores than did female adults. There were no differences on the I or C Scales. Freischlag (*n.d.*) also found significantly higher perception of control by powerful others among male high school and college students than among their female counterparts. In a number of other studies (e.g., Hall, Joesting & Woods, 1977; Krampen & Nispel, 1978; Zukotyński & Levenson, 1976) no significant gender differences were found but Mahler (1974) discovered that Japanese females scored significantly higher than Japanese males on the perception that their lives were controlled by powerful other people.

Platt, Pomeranz, Eisenman, and Delisser (1970) emphasized the importance of considering gender differences in examining relationships between locus of control and other personality variables. Data in the next major section indicate that gender is a powerful moderating variable in understanding the development of locus of control orientations. Expectancies of control by self, others, and chance appear to have differential causes and effects depending upon one's sex.

Garcia and Levenson (1975) examined the relationship between the multidimensional measures of locus of control and two demographic variables—socioeconomic status and ethnicity. Students (84 whites and 110 blacks) from low-income families had stronger perceptions of control by chance than did wealthier students but did not differ significantly from the latter on the I or P Scales. Analyses of covariance controlling for socioeconomic status showed that blacks score significantly higher than whites on the perceptions of control by powerful others and by chance forces. Shearer and Moore (1978) found significant racial differences on all three scales with an adult felon sample. White prisoners ($N = 93$) had higher expectations of personal control than did hispanic prisoners ($N = 113$), and black and hispanic

prisoners had more perceptions of control by powerful others and by chance forces than did white felons. However, Hall (personal communication, 1979) found no significant differences between black and white students on any of the multidimensional scales. Thus it appears that although predictable and understandable differences may emerge on the locus of control scales based on sex, race, and socioeconomic status for specific samples, these differences are not found consistently.

Cross-Cultural Effects

The I, P, and C Scales have been translated into Portuguese (Bouquet, personal communication, 1979), Japanese (Mahler, 1974), French (Thibaut, personal communication, 1979), and German (Krampen & Nispel, 1978). Table 2.1 contains data from two studies in foreign countries. Mahler (1974) found that, as predicted, Japanese students scored significantly lower than did an American sample on internality. Further analyses indicated that Japanese women were more likely than men to view their lives as controlled by powerful others; this finding is consistent with the lower status of women in Japan. In addition, Japanese students perceived chance as directing their lives significantly more frequently than did American students. Mahler concluded that his results were consistent with those obtained by other investigators and suggested the usefulness of the Japanese version of the I, P, and C Scales.

Krampen and Nispel (1978) found a similar pattern of results. Germans scored higher on the external dimensions and lower on internality than did most Americans. These investigators' research also indicated that the German adaptation of the Scales has satisfactory reliabilities and construct validity.

Work with Brazilian and French Canadian samples is in progress. In general, it seems that the American traditional values of self-reliance and success through hard work are reflected in stronger perceptions of personal control and diminished expectations of control by powerful others and by chance forces on the multidimensional scales.

Empirical Work

Developmental Aspects

ANTECEDENTS

With regard to the development of control expectations, Rotter (1966) had reasoned that consistent and nurturant child-rearing practices should be related to the development of an internal locus of con-

trol orientation. Although MacDonald (1971) and Reimanis (1971) found a relationship between consistent home environment and internality among males, no such finding has been reported for females. In fact, investigators have found that women whose fathers were nurturant scored higher in externality (Katovsky, Crandall, & Good, 1967) whereas women who felt that their mothers did not care about them scored higher in internality (Reimanis, 1971). In summary, results from past research with Rotter's I-E Scale have resulted in some intriguing but inconclusive results in four main areas: (a) the degree to which a consistent upbringing is related to internality, (b) the relationship of parental overprotectiveness to locus of control (c) sex differences in internal control-home environment relationships, and (d) the relative influence of mothers' and fathers' behaviors on the control expectancies of children.

Levenson (1973b) used the I, P, and C Scales in an attempt to clarify past findings and to elaborate on general patterns of agreement in earlier research. In addition, an effort was made to provide further evidence to support the construct validity of the multidimensional scales. The subjects (193 male and 83 female undergraduate students) were administered the I, P, and C Scales and the Perceived Parenting Questionnaire as modified by MacDonald (1971). For the latter measure, subjects indicated the frequency with which a certain behavior (e.g., discipline or achievement pressure) occurred in their homes. As expected, the results showed that parental behavior associated with internality was perceived differently depending on the sex of the child. Males who were helped and taught by their mothers had higher I Scale scores, whereas girls who saw their mothers as protective scored lower in internality. These results support those of Reimanis (1971), who speculated that when the home environment is somewhat rejecting, the daughter may be forced to be more independent to satisfy her needs.

In general, less perceived parental nurturance was not found to be related significantly to less internality, but rather to more powerful others and chance expectancies. It may be that the absence of such fundamental supporting behaviors fosters expectancies of an oppressive or unordered environment. Parental demanding, punishing, protective, and controlling behaviors are all related positively to scores on the Powerful Others Scale. And, as predicted, subjects who had problems discerning what to expect from their parents had significantly more perceptions of the world as unordered—as controlled by fate or chance.

In a paper by Freischlag (n.d.) birth order and familial size were examined as antecedents of locus of control. The sample ($N = 397$) consisted of male and female high school and college athletic groups. Subjects completed the I, P, and C Scales and a personal infor-

mation form. Internality was found to have been fostered by small family size and by first-born status. The powerful others orientation was also related to earlier birth order but to large family size. For all athletes, overcontrol by mothers was shown to be significantly related to increases in Powerful Others Scale scores; however, the father's influence was noncontributory.

These two studies add empirical evidence to support the theoretical separation of externality into the two dimensions of powerful others and chance control. Different patterns of parental behavior and family size were related to each of the orientations: Punishing and controlling behaviors combined with large family size to produce a powerful others orientation; inconsistent and depriving behaviors to lead to a chance orientation.

LIFE CYCLE CHANGES

Personality changes over time have been studied extensively in the early developmental years. However, changes that occur in the adult years are less well documented or investigated. As Levinson, in his popular book, *The Seasons of a Man's Life* (1978), points out, "Adults hope that life begins at 40—but the great anxiety is that it ends there. The result of this pervasive dread about middle age is almost complete silence about the experience of being an adult [p. ix]." Fears of diminishing power and of the decline of abilities with aging make examination of individuals' notions of control during this period of time quite pertinent. To what extent do such expectations change as one matures and enters middle and old age?

Using Rotter's scale, Lao (1974) found that there is an increasing sense of personal efficacy from youth to adulthood and that this does not decrease significantly in middle or old age. Ryckman and Malkinowski (1975) conducted a study to extend the Lao's findings by using the multidimensional scales. They had 100 college students and 383 adults (ages 21-79) complete the I, P, and C Scales. The pattern of results is similar to that found by Lao. College students were less internal than all of the participants, although this difference did not reach significance levels for the oldest (70-79) age group. Analyses of variance indicate a significant relationship between age and scores on the P and C Scales. People in their fifties were most likely to believe that powerful others were in control of their lives, while those in the oldest age group were most convinced that others had a minimal effect. With regard to chance control orientations, people in their thirties felt their lives were more predictable than people who were younger or older. Also, people in their forties felt less controlled by random forces

than those who were younger or older. The authors hypothesized that perceptions of stability in middle age (thirties and forties) are a function of higher security in family and career life at this time. It should be noted that in this study people in their seventies believed that they had personal control and did not feel controlled by external forces. This study raises questions about the negative stereotypes of the elderly as helpless, passive, and fatalistic people.

Reinsch (1979) asked even older subjects (ages 80-99) to complete the multidimensional scales. She also found that there is no decrease in internality nor increase in externality with age. Reinsch performed a multiple linear regression analysis using the variables of age, sex, and scores on the I, P, and C Scales to predict life satisfaction. The results revealed internality to be positively correlated with life satisfaction for this elderly sample; scores on the P and C Scales were noncontributory.

Zukotynski and Levenson (1976) were also interested in locus of control and life satisfaction in the elderly. The authors reasoned that an elderly person's perception of personal control may be an important factor in ameliorating or exacerbating the stress of relocation to a nursing home. For example, Ferrari (1963) found that those elderly persons who had no choice in their relocation to an institution had higher mortality rates relative to a group who had chosen to enter the institution. Zukotynski and Levenson predicted that involuntary relocatees would score higher on perception of control by powerful others, since institutionalization was not their own decision. It was also predicted that poor levels of adjustment would be associated with more perception of control by others and by chance forces. Fifty elderly people (60-90 years old) who moved to a nursing home within a 1-year period and who were judged to be alert and lucid completed a modification of the I, P, and C Scales. (An early pilot study had revealed that the original scales were too complex for this sample.) The investigators developed a modified instrument that reworded the items into simpler language. Test-retest reliabilities for a 2-week interval with the modified scales were in the acceptable range for an elderly sample (.85; .91; .65). Subjects also completed a questionnaire designed to assess health, activity, and life satisfaction both before and after institutionalization.

Consistent with other studies, the internal locus of control orientations of the elderly sample did not differ significantly from those of noninstitutionalized, younger normative groups. However, these institutionalized people reported more expectations of control by others and random forces. As predicted, the involuntary relocatees scored significantly higher on the P Scale than those who had chosen to move. They also were significantly less internal and more chance oriented.

Levels of adjustment in the nursing home were significantly correlated with expectations of control by others. The less an individual felt controlled by others the more activity he or she engaged in after institutionalization. And the less an individual expected to be controlled by others and by chance forces, the better his or her health was after entering the institution. Scores on the I Scale were unaffected. Thus the profile of control expectations suggests that institutionalized elderly persons cannot be characterized simply as "externals." For this sample, the perception of personal control was not affected by relocation, poor health, or limited activity. Instead, the role of others seemed to be most implicated.

Psychological Adjustment

PSYCHOPATHOLOGY

Rotter hypothesized that people who view reinforcements as contingent on their own behavior (internals) are better adjusted than those who see reinforcement as determined by fate, chance, or powerful others (externals). However, he did theorize that there might be a curvilinear relationship between adjustment and the I-E dimension such that individuals at either end of the dimension might be more maladjusted than those in the middle range. Although some investigators have corroborated this hypothesis (e.g., Cromwell, Rosenthal, Shakow, & Zahn, 1961; Shybut, 1968), others have found inconsistent or nonexistent relationships between internality and adjustment (Fontana & Gessner, 1969; Harrow & Ferrante, 1969).

Levenson (1973a) sought to study the applicability of the multidimensional reconceptualization for psychiatric inpatients. She tested 165 consecutive admissions to a state mental hospital within 5 days of their arrival and then retested these patients at monthly intervals. Comparing the psychiatric sample with a nonpsychiatric group, there were no differences on the I Scale, but differences were large and highly significant on the P and C Scales. As predicted, the patients' responses to the locus of control scales were consistent with their clinical diagnoses. Neurotic patients' scores were much closer to those of the normal sample than to those of the psychotics. Paranoid and undifferentiated types of schizophrenics were more likely than neurotics to believe that powerful others were in control of their lives; they also perceived more often than they were affected by chance forces than did those who were clinically less maladjusted.

In making predictions regarding clinical improvement from intake locus of control scale scores it was found that patients who stayed less

than 10 days believed significantly less in chance forces than those who remained longer. Changes over time indicate that during the first month of hospitalization patients increased their belief in personal control. Factor analyses revealed that the two dimensions of control by others and chance forces emerged as consistent factors for these psychiatric samples, while only one-half of the internal items were responded to as a single factor.

Martin (1979) replicated the Levenson study with a small sample ($N = 29$) of hospitalized psychiatric patients. She had hypothesized that the patients, overwhelmed by external forces in their lives, would initially be more externally oriented but would show a significant decline in externality over a 4-week hospitalization period. Her results pertaining to locus of control and clinical diagnoses are consistent with Levenson's findings: Paranoid schizophrenics had significantly higher perceptions of control by powerful others than schizoaffective types. Furthermore, Martin found a significant decline in expectations of control by others and by chance after 1 month of hospitalization, with a concomitant increase in internality. It is intriguing that Martin found decreased external perceptions with time, whereas Levenson found only an increase in personal control. It should be noted that Martin's sample was initially more externally oriented; thus their higher scores may have permitted significant decreases.

In an effort to explore locus of control and adjustment in a non-psychiatric setting, Morelli, Krottinger, and Moore (1979) administered Eysenck's Personality Inventory and the I, P, and C Scales to 67 college students. The investigators hypothesized that the Neuroticism dimension of the Eysenck Inventory would be related to external control orientations. As expected, the Extraversion dimension of the Inventory correlated poorly with the three multidimensional measures, but the Neuroticism dimension correlated significantly with both internal and chance control. There was no significant relationship with the powerful others dimension. The investigators concluded that subjects predisposed to neurotic breakdown are more likely to believe that they are not in control of reinforcement contingencies and that consequences are determined quite randomly. Although the researchers did not predict and did not comment on the absence of a relationship between neuroticism and the powerful others dimension, this finding underlines the possibility that some aspects of externality may not be indications of an unhealthy, maladjusted orientation. As will be pointed out in a later section on social-political involvement, a powerful other orientation may, under some conditions, involve realistic perceptions that are associated with purposeful action.

In a dissertation dealing with the relationship between locus of control and psychopathology, Molinari (1979) employed the concept of *defensive externality*. He reasoned that defensive externals—those who adopt external beliefs as a defense against feelings of personal failure—should be prone to anxiety. On the other hand, congruent externals—those who do not expect reinforcement to be contingent on their own behavior—should be depressed because of their "learned helplessness." Molinari (1979) used the P and C Scales to measure defensive and congruent externality, respectively. Scores on the C Scale were found to have a low but significant correlation with scores on Zung's Depression Scale. In addition, belief in powerful others was correlated with debilitating anxiety, but this correlation was even greater for belief in chance forces. Internality, as measured by the I Scale, was significantly and negatively related to depression and anxiety.

Marshall (1979) studied the relationship between locus of control and psychological adjustment for semirural women ($N = 148$). Using multiple regression analyses, Marshall found that P Scale scores are positively related to psychological distress, but that the scores do not account for a significant amount of a variance once the effects of chance orientations are partialled out. Belief in chance control is positively related to maladjustment, while internality is noncontributory. Marshall concluded that the multidimensional scales permitted a more sophisticated analysis in which personal control may not be as major a factor in understanding adjustment as belief in the unpredictable nature of the environment.

GROUP DIFFERENCES

Alcoholism. As pointed out by many researchers, the basic concepts of social learning theory and perceived locus of control are particularly relevant to alcoholism. Donovan and O'Leary (1978) outlined at least five factors that appear to account for the recent increase in research on the control orientations of alcoholics: (a) The existence of several different theoretical approaches to the cognitive or physiological reinforcements provided by alcohol, (b) the belief that alcoholics are helpless to control their drinking, (c) a body of research that suggests that alcohol may increase one's perception of personal control, (d) the common therapeutic goal of gaining control over drinking, and (e) the parallels in behavior and personality between alcoholics and nonalcoholics who have an external locus of control. However, empirical results of studies that used unidimensional locus of control scales to examine alcoholism and expectancies of control have

been quite contradictory. Some investigations have found alcoholics to be more internal (e.g. Goss & Morosko, 1970; Gozali & Sloan, 1971) than nonalcoholics. These results are consistent with the theory that alcoholics control a powerful reinforcer in their life space; however, other authors (e.g., Butts & Choltos, 1973; Nowicki & Hopper, 1974) have suggested that alcoholics are more external because they feel powerless to control their drinking behavior. And still other researchers have found no differences in locus of control between alcoholics and nonalcoholics (e.g., Donovan & O'Leary, 1975).

Several factors may account for these seeming contradictions. However, recent critiques in this research area suggest that deficiencies in the I-E Scale may be responsible for a significant portion of the variability. Therefore, it made conceptual and empirical sense to see if a multidimensional approach would be helpful. Caster and Parsons (1977b), using the I, P, and C Scales, found that three groups of male alcoholics scored higher on chance expectancies than did a nonalcoholic control group. There are no significant differences between alcoholics and nonalcoholics with regard to perceptions of control by self or powerful others. Followup data on 23 recidivists who had 4-6 months of outpatient treatment were also collected. On locus of control measures taken at the time of entry into the treatment program, the drinking recidivists had significantly higher Chance Scale scores than the sober recidivists (28.6 versus 23.6), but these two groups did not differ in their Internal or Powerful Others Scale scores. Thus, from the Caster and Parsons study, the chance dimension of externality seems to be pertinent to drinking behavior while the powerful others dimension is noncontributory.

Krampen and Nispel (1978) used a German translation of the multidimensional scales with 56 nonalcoholic and 50 alcoholic males and females in Germany. These subjects were younger than Caster and Parsons's subjects and had not been drinking as long as the latter. Results from a multivariate analysis of variance revealed that the German alcoholics, compared to nonalcoholics, had significantly higher scores on both the P and C Scales. Differences on the I Scale were not significant. Krampen and Nispel also found that their alcoholics were more hopeless concerning their personal future and more Machiavellian than were the nonalcoholics.

Donovan and O'Leary (1978) developed a specific drinking-related locus of control scale with the goal of achieving greater predictive power as well as less ambiguous results. They found that their specific drinking scale significantly differentiated between alcoholics and nonalcoholics, whereas Rotter's generalized expectancy scale did not.

Although the authors did not examine the power of their scale to differentiate compared to that of the I, P, and C Scales, they did relate the new measure to the multidimensional scales in an attempt to assess their scale's concurrent validity. The scores on the drinking-specific locus of control scale correlate significantly only with the scores on the Chance Scale—individuals with an external locus of drinking control believed that their lives were governed chiefly by unpredictable forces.

There have been relatively few studies of the effect of treatment on alcoholics' expectancies of control. Costello and Manders (1974) found a rather stable unidimensional locus of control scores throughout a 30-day treatment with an increase in externality in successfully treated alcoholics. However, in a study by Oziel and Obitz (1975), alcoholics increased their internality with continued contact with helping facilities. Again, there has been speculation that one reason for the conflicting findings is the unidimensional nature of the Rotter Scale (Caster & Parsons, 1977b).

Other researchers (e.g., Lefcourt, 1976) have suggested that a multidimensional approach to locus of control is particularly appropriate when examining factors affecting treatment outcome. Caster and Parsons therefore used the I, P, and C Scales in order to (a) assess the impact of treatment on the locus of control orientations of alcoholics, (b) determine whether the I, P, and C Scale scores are different for the treatment successes and failures, and (c) investigate whether the multidimensional scale scores correlate differentially with depression, hopelessness, and sociopathy. In one study (1977a) the investigators administered the I, P, and C Scales to 40 consecutive admissions to an inpatient rehabilitation program. After treatment, it was found that there was a trend toward increasing internality but no change in powerful others or chance orientations. In a second phase of the same study, subjects were 38 outpatient recidivists who had been in an average of two previous treatment programs. People who had successfully completed their most recent treatment were compared with those who had dropped out of treatment and who drank continually. The failures were significantly more chance oriented than were the successes (27.8 versus 22.8). There were no significant differences on the I or P Scales. The authors concluded that perhaps after several unsuccessful treatment experiences, the failures in the recidivist group had a stronger belief that chance forces controlled their lives. "In any event, alcoholics who have been in several previous treatment programs and who have strong beliefs that chance controls their lives appear to be poor therapeutic risks [p. 2093]."

In another related study, Caster and Parsons (1977b) reasoned that

from empirical and psychoanalytic points of view, depressed individuals would be likely to perceive that others are in control whereas individuals with strong sociopathic tendencies should be more likely to believe that life events occur randomly. Using the multidimensional locus of control scales with four groups of alcoholics, they found that, as predicted, there were significant correlations between depression, as measured by the Beck Depression Inventory, and the Powerful Others Scale scores (.34) and between sociopathy and chance control (.38). It was also found that some correlations differed as a function of treatment outcome. Depression and expectations of control by powerful others were significantly correlated in "program completers," but depression was correlated with chance orientations in the treatment failure groups. Sociopathy was significantly correlated with Chance Scale scores, but only for treatment failures. In discussing these intriguing results, Caster and Parsons (1977b) suggest that

Those alcoholics who are depressed but who relate their depression to interpersonal (powerful others) control may respond to treatment better than those in whom depression is psychologically related to fate or chance. Further, alcoholics in whom sociopathic tendencies are linked psychologically to a chance control orientation would seem to have a poorer prognosis . . . The findings are complex, but so is the disorder [p. 755].

There appears to be some consistency, then, among the results of the studies using the multidimensional scales with alcoholic samples. Scores on the Chance Scale are most helpful in understanding the phenomenology of alcoholism: scores on the Internal Scale are the least relevant. However, whereas alcoholics may in general tend to feel that the world is unpredictable, their view of powerful others appears to be related to their progress and response to treatment. In their studies of the relationship of depression, sociopathy, and locus of control to treatment outcome, Caster and Parsons have investigated these more subtle relationships among variables. Their sophisticated conceptual approach has permitted a better understanding of how expectancies of control are related to processes that regulate drinking behavior.

Prisoners. Expectancies of control by powerful others would seem to have particular relevance for understanding the phenomenological world of incarcerated individuals. Levenson (1975) conducted a study to examine public offenders' generalized expectancies of control as they relate to length of time in prison and behavior within the institution. The goal of the study was to demonstrate the convergent and discriminant validity of the multidimensional scales. Using a unidimen-

sional measure, some investigators had found that black prisoners were significantly more external than noninstitutionalized people (Lefcourt & Ladwig, 1966), but others had found no relationship between locus of control and imprisonment (Le Blanc & Tolor, 1972). Levenson reasoned that imprisonment may not lead to feelings of personal impotence nor to feelings of control by unpredictable nonpersonal forces (chance, fate), but that confinement and daily regimentation may foster perceptions of a predictable and powerful authority structure. She hypothesized that expectations of control by powerful others would be related positively to the length of time in prison and to punishment for trouble-making behavior within the correctional institution.

In order to test these hypotheses, Levenson administered the I, P, and C Scales to 200 inmates at a large state prison. The prisoners had already served an average of 3½ years of their sentence. Results revealed that inmates who had been imprisoned a long time (5 years or more) were significantly more likely to believe that they were controlled by powerful others than were those who had been imprisoned recently (within the past 6 months). There were no significant differences in perceptions of personal control or chance orientations. Similarly, inmates who had served more than half of their sentences had significantly higher powerful others expectancies than prisoners who had served less than 10% of their terms.

In order to control for possible confounding variables, Levenson ascertained that prisoners' expectancies of control were not related to the length of their originally imposed sentences. In addition, she found that subjects scoring high on the Powerful Others Scale had been disciplined by solitary confinement six times more often than had inmates with fewer expectations of control by others. An analysis of covariation, controlling for length of time served, indicates that the observed relationship between belief in powerful others and solitary confinement remains highly significant. Consistently, Internal and Chance Scale scores were irrelevant to prison behavior.

The results from this study indicated that prisoners do not lose their feelings of personal control nor do they feel that their lives are increasingly controlled by chance. Rather, they appear to develop realistic expectations that they are subject to the demands of others. Therefore, differentiating between a powerful others external dimension and a chance external dimension seems critical for understanding the cognitive expectancies of people who are subjected to highly predictable, authoritarian environments.

Because most psychological measures that support the stereotyped view of the "criminal personality" have used incarcerated felons

for the establishment of norms, Shearer and Moore (1978) administered several personality measures to 441 adult felons on probation. They reasoned that the situation in which the probationers find themselves, rather than intrinsic personality differences, may be the primary determinant of differences in personality measures. And, in fact, the Levenson study reported above gives support to the reasoning that it is the situation (e.g., length of imprisonment and solitary confinement) that affects expectancies of control. Shearer and Moore's study was prompted by their desire to offer concrete suggestions to probation officers.

Felons who were on probation and who differed in gender, race, and type of crime were sampled. Scores on the I, P, and C Scales for these felons indicated that their orientation was significantly less internal than that of prison felons. However, they manifested the same inflated expectation of control by powerful others that the prison sample had shown and felt that their reinforcements occurred more randomly than did a normative group. Study of the sex variable revealed that female probationers were less internal than males. With respect to type of crime it was found that people who had committed property crimes expected more control by chance or fate than did those who had committed drug offenses. The investigators also found a significant difference between these two crime-type categories on a measure of overt symptomatic anxiety.

Shearer and Moore concluded that felons on probation feel more controlled by the external environment than do imprisoned felons. They recommended that probation officers assume an authoritarian posture and direct their efforts toward enhancing the probationers' self-direction and their ability to inhibit their responses to transient situational circumstances. They noted that such an approach might be more effective for properly crime offenders than for drug-related offenders.

Health

SPECIFIC HEALTH PROBLEMS AND TREATMENTS

The concept of locus of control in social learning theory is particularly pertinent to health behaviors and perceptions such as the adoption of sick role behaviors, use of preventive measures, development of addictions or habits, receptivity to medical regimens, and recovery from disease processes or accidents. There is evidence to suggest that people who feel that reinforcements are contingent upon their own behaviors are more likely to use preventive and ameliorative measures to facilitate health and recovery (Strickland, 1973). The Rot-

ter I-E Scale is being used in a growing number of health-related studies. Theoretically, however, it would seem that scales that differentiate between the powerful others and chance orientations would be particularly useful in investigating health behaviors. In medical practice the physician is usually seen as a powerful other who will "cure" the "passive patient." Such a perception is often fostered by the medical profession as a necessary precondition to patient trust and dependence which are seen as facilitating compliance with medical regimens. On the other hand, it has long been a part of traditional medical knowledge that the patient's own motivation and positive expectations (hope) are often pivotal factors in determining outcome. Moreover, there is today a growing health movement that emphasizes patient participation in disease management and preventive action. How does one's locus of control, then, affect the course of illness and health?

Cancer has frequently been seen as an all-encompassing, all-invasive disease process against which the individual is helpless and feels hopeless. To what extent are expectancies of control relevant to the diagnosis and treatment of this disease complex? Greber (personal communication, 1979) explored personality variables as factors in carcinogenesis. She administered the I, P, and C Scales and other psychological instruments to 35 female cancer patients and to a control group of 35 women matched for race, education, and socioeconomic background. The results showed that the groups differed significantly on the I Scale (patients' scores = 32.7 average versus normals' scores = 37.5 average). No differences were observed on the P or C Scales. As Greber points out, these data do not prove that cancer patients are "externalists," nor do they prove that externally causes cancer. However, she does feel that the data lend support to her hypothesis that there is a premorbid personality profile associated with individuals who develop cancer.

The Simontons and co-workers have been involved in a nontraditional relaxation treatment for cancer patients that uses visual imagery. The rationale behind their technique is that cognitive processes may reduce anxiety and fear that inhibit the body's immune mechanisms. For their treatment program the Simontons have chosen people who have widely metastatic cancer but who are willing to accept an active role in their medical treatment as well as to assume some responsibility for their recovery. In order to understand the psychological characteristics of patients who outlived their predicted life expectancies, Achterberg, Matthews-Simonton and Simonton (1977) administered a series of psychodiagnostic tests to two groups of cancer pa-

tients. The results showed that in general all patients scored higher on internal control than did a disease-free normative group. This finding is consistent with the expectations of Achterberg *et al.*, who had selected people for their imagery program who had already indicated that they assumed personal responsibility for the outcome of their illness. Differences between groups of patients indicated that there was no significant difference in internality between those who had outlived their life expectancies and those who had not. However, there were significant differences on the P Scale: longer surviving patients were less likely to expect powerful others to control outcomes. In the medical setting it is quite usual for "good" patients to have a strong belief in the power of others (e.g., doctors) to "cure" them. The results from this study make one question the "goodness" of such beliefs. Unfortunately the authors do not comment on results obtained with the C Scale, nor do they provide means for the three scales. Achterberg, Lawlis, Simonton, and Matthews-Simonton (1977) studied the relationship between psychological factors and blood chemistries as disease outcome predictors for cancer patients. As part of an extensive battery of instruments, the I, P, and C Scales were administered to 126 patients, the majority of whom had incurable cancer. It was found that the psychological factors did predict follow-up disease status whereas blood chemistries did not. Of the 11 psychological factors, 4 were found to be significant predictors and 2 of these involved the I, P, and C Scales. It appears that if patients use denial, view their bodies as unable to fight the disease, and are dependent upon others, they are more likely to have a poor disease prognosis. Results comparing blood chemistries with psychological factors suggest that monocytic reactions are related to lowered feelings of control by chance factors. The investigators suggest that a more restricted approach to life (e.g., seeing life as quite ordered) may restrict one's available resources to combat disease. Speculations based on this unusual finding are tantalizing. Here is an indication of the positive value of having more chance-oriented perceptions.

In another study Achterberg and Lawlis (1979) undertook further examination of the relationships between blood chemistry variables and locus of control. Through canonical analyses, they found three different psychological profiles that appear to be on a continuum from resignation or nondirected struggle to purposeful action. On the nondirected struggle factor, the C Scale loads negatively while the P Scale loads positively. We need further information on these relationships before we can interpret all of the recent findings. Nevertheless, the multidimensional concept of locus of control seems relevant to this important area. Other investigations that are currently underway—for

example, at the Midwest Oncology Center (Edwards, personal communication, 1979) and at Cancer Self-Help (Pearse, personal communication, 1979)—are using the multidimensional scales to obtain information about the cancer patient's belief system.

Some of the same devastating medical effects seen in cancer can be seen in cases of spinal cord injury. Shadish, Arrick, and Hickman (1979) administered the I, P, and C Scales to 66 male veterans on an inpatient spinal cord injury unit. Patients were hospitalized for reasons ranging from recent injury to routine checkups. There were no significant differences between the veterans and a normative group on expectations of control by self or others, but the spinal cord injury patients were much more likely to perceive chance forces as controlling their lives than were noninjured adult males. The investigators reasoned that the patients may have adopted a more randomly ordered view of the world in an attempt to rationalize the causes for their injuries. Multiple regression analyses suggested that of all of the objective and psychosocial variables considered, the best predictor of poor psychological adjustment to the injury was the perception that powerful others controlled one's life. This relationship held whether adjustment was measured by acute distress, isolation, poor coping, or suicidal ideation. In addition, internality was found to be significantly related to coping.

Results with patients suffering from serious disease (cancer) or injury (spinal cord) appear to have one major consistency. Longer survival and better adjustment are related to lower perceptions of the role of powerful others in controlling outcomes. Although internality also appears to be a factor in some studies, it seems that teaching internality alone to patients may not be a particularly effective technique for increasing a patient's well-being and recovery. Exploring the doctor-patient relationship and the doctor's presumed role as "healer" may be more beneficial.

HEALTH-RELATED MODIFICATIONS OF THE I, P, AND C SCALES

Multidimensional Health Locus of Control Scales (MHLC). Wallston and Wallston (1978), disappointed in their Unidimensional Health Locus of Control Scale, constructed a three-factor multidimensional health measure:

We modeled the MHLC Scales after Hanna Levenson's more generalized IPC Scales because we agreed with her contention that externality consists of at least two separate dimensions: chance and powerful others. Furthermore, we were impressed with the differential predictability Levenson had obtained with her three separate scales.

Wallston, Wallston, and DeVellis (1978) found low positive correlations between their three specific health scales and the global I, P, and C Scale counterparts. They interpreted these correlations as indicating initial construct validity for the new instruments. Unfortunately, they did not compare the predictive accuracy of their specific Health Locus of Control Scales with the global I, P, and C Scale measures. In Chapter 6 (this volume), the Wallstons present a full description of their scales and related empirical work, illustrating the usefulness of measuring a powerful others orientation as distinct from a chance orientation within health settings.

Health Attribution Test (HAT). The Health Attribution Test (Achterberg, personal communication, 1979) was designed to measure individuals' predominant attributions of health and illness because the investigator found available health locus of control measures inadequate in assessing people who actually had a disease. The HAT was developed through factor analyses based on Levenson's conceptual tripartite division of locus of control. The three identified factors in the new instrument are Internal, Chance, and Punitive. High scores on the Internal Scale indicate that a person assumes responsibility for his or her own health whereas high scores on the Chance Scale indicate that an individual perceives health and illness as randomly controlled.

The third factor has been tentatively labeled "punitive" because items loading on this factor emphasize the perception of illness as punishment. This new measure is currently being standardized on a sample of burn patients. Because these burn patients are often unable to read or write, the investigators compared oral versus written administration of the HAT and the I, P, and C Scales. While the HAT did show some significant differences, oral administration did not influence scores on the I, P, or C Scales. Preliminary data analyses reveal that the external dimensions of the HAT correspond to the P and C Scales, but the internal dimensions are not correlated. "That makes sense to us in terms of what we observe here clinically. People will be 'internal' in every aspect of their lives, yet continue to abdicate the responsibility for their health to the medical profession [Achterberg, personal communication, 1979]."

Multidimensional Pain Locus of Control Scales. Levenson found that the response of chronic pain patients to the I, P, and C Scales was not significantly different from that of normal samples. Although these patients had been suffering from pain, often for years, they felt that they generally had control over their lives. Levenson and co-workers,

therefore, are developing locus of control scales specifically related to pain control in order to ascertain if pain-related measures will be more successful in delineating the relationship between control expectancies and chronic pain than the generalized measures. Six triads of items have been written concerning expectations of alleviating or worsening pain (e.g., "If I take care of myself, I can avoid more pain—Internal Pain Scale item; "Following doctor's orders exactly is the best way for me to avoid pain"—Powerful Others Pain Scale item; "The best thing for my pain is to let nature run its course"—Chance Pain Scale item).

These new scales use the same Likert format that the generalized scales use and are scored as three separate scales. Preliminary results with the Pain Locus of Control Scales reveal that chronic pain patients believe that others are more in control of their pain than they are themselves. This finding is consistent with those obtained with other health-specific measures. Patients perceive that significant others have responsibility for the patients' well-being. For chronic pain patients, scores on the pain measures correlate most highly with scores on the analogous I, P, and C Scales, but these correlations are low to moderate. For example, items on the I Scale correlate with items that measure the expectation of being personally able to alleviate or worsen pain (Internal Pain Scale), although the correlation is only +.22. Further work is needed to determine whether the specialized scales increase the predictive power of the generalized measures.

BIOFEEDBACK AND PHYSIOLOGICAL CORRELATES

Much attention has been focused recently on biofeedback as an effective therapeutic modality. Biofeedback refers to any technique (usually involving instrumentation) that provides a person with instantaneous information on one of his or her physiological functions. Since the attempt at controlling bodily processes through biofeedback can be seen as seeking reinforcement (in this case, information about oneself) through behavior, it is directly related to the concept of expectancies of control. Wagner, Bourgeois, and Levenson (1974) predicted that only Internal Scale scores would be significantly related to the ability to use biofeedback. Male and female undergraduates responded to the I, P, and C Scales and were instructed to lower their GSR responses over a 2-minute interval repeated five times. As expected, subjects who were successful at reducing their GSRs had significantly higher I Scale scores ($M = 38.4$) than those who could not make use of the biofeedback ($M = 32.3$). P and C Scale scores were unrelated to performance.

In a more sophisticated research effort in the same area, Logsdon, Bourgeois, and Levenson (1978) examined the effect of locus of control

and learned helplessness on control of heart rate using biofeedback. This study sought to support the idea that locus of control perceptions differentially affect subjects' responses to situations of success or failure (the person-by-situation paradigm). By supplying false feedback on a preliminary task, the investigators gave subjects the impression of success or failure. Authentic feedback was then provided for control of heart rate. Subjects were administered the multidimensional scales before and after the biofeedback tasks. Hypotheses were made regarding both the Internal and Chance scales since the task involved mainly noncontingent reinforcement. Neither the I nor the P Scale scores were significantly related to the ability to control heart rate. However, as hypothesized, in the success condition, the low chance scorers decreased their heart rates significantly better than the high chance group; in the failure condition, the findings were reversed, with the high chance group outperforming the low chance scorers. Each group, therefore, did best when its recent experience (of bogus feedback) was most consistent with its predominant locus of control orientation—success for the non-chance-oriented subjects and failure for the chance-oriented subjects.

Cognitive Activity

There have been several studies relating cognitive style, abilities, and characteristics to the multidimensional locus of control scales. The I-E control dimension was initially validated by how well it related to information assimilation among patients in a hospital setting (Seeman & Evans, 1962). The more externally oriented patients were, the lower they scored on an objective test about their illnesses. A similar validation procedure was used with the multidimensional scales. Members of an environmental action group completed the I, P, and C Scales and an objective information test (Levenson, 1972). Adult males who believed that chance or fate controlled their lives had significantly less information on matters of pollution than did those who felt chance did not control their lives. Expectancies of control by self (I) and others (P) were not significantly related to amounts of information.

In a dissertation dealing with concept formation and locus of control, Beck (1979) administered the I, P, and C Scales to 178 undergraduates in order to study the effects of task instructions on creative problem-solving skills. The major premise of her study was that locus of control orientations and creative problem-solving should be studied within a person-by-situation framework. Beck predicted that task instructions would moderate the effects of locus of control on conceptual

foresight and ideational fluency. In general, internals performed significantly better than chance-oriented subjects. However, significant interactions were found. With the threat of external evaluation, those with a powerful others orientation did less well in creative problem solving than those who received nonevaluative instructions.

Also examining person-by-situation effects, Burger (1979) investigated locus of control and hypnotic susceptibility. Reasoning that the question of who is controlling the subjects' behavior is an important feature of the hypnotic setting, Burger administered the I, P, and C Scales and the Harvard Group Scale of Hypnotic Susceptibility to 63 undergraduates. Burger then told subjects either that hypnosis depended on the subject (personally determined) or on the hypnotist (situationally determined). In summary, the general pattern that emerged indicated that individuals are more responsive to hypnotic suggestions when they perceive that the hypnotic situation is consistent with their locus of control orientation. Specifically, subjects who saw themselves as internal were more hypnotically susceptible when they believed they themselves were responsible for what occurred in the hypnotic situation. Those who were more likely to believe powerful others controlled their lives increased in susceptibility when they expected the hypnotist to control their responsiveness.

The role of locus of control in understanding style of evaluative perception has been studied in three investigations. Christensen, Lee, and Brigg (1979) attempted to study locus of control and self-appraisals among nurse practitioners. They found a small but significantly negative correlation between evaluation of one's own clinical abilities and perceptions of chance control.

Morelli and Morelli (1979) also obtained small but significant correlations in their investigation of the relations between irrational beliefs and locus of control in 132 undergraduates. Irrationality was found most consistently to relate to the belief that powerful others are in control of one's life. The pattern of the correlations was in keeping with discriminant validity predictions. For example, a belief in happiness through passivity was most highly correlated with perceptions of chance control; blame proneness with a belief in powerful others; and internal causation with an internal orientation.

The third study in this area relates locus of control to dogmatism. Earlier researchers had found small but positive correlations between the Dogmatism Scale and Rotter's I-E Scale, and had concluded that external individuals have a more closed system than internals. Sherman, Pelletier, and Ryckman (1973) hypothesized that people who believe that reinforcers are beyond their personal control or who ex-

pected powerful others or chance forces to be in control would be "unconcerned with expending the efforts necessary to make discerning and cognitively differentiated judgments [p. 749]." As predicted, all three multidimensional scale scores were found to be related to dogmatism. With the exception of this last study, it appears that the differentiated view of locus of control has been helpful in understanding the relationship between expectancies of control and cognitive activity. In this area, it appears that studies that have employed the person-by-situation paradigm are the most promising.

Achievement

The early work with the locus of control construct focused on achievement behavior and was based on the premise that internals would show more effort and persistence in attempting to achieve than externals because the latter group would see no connection between their behaviors and outcomes. However, studies designed to examine locus of control and academic performance and to use unidimensional measures have often produced nonsignificant or inconclusive results (Warehime, 1972).

Prociuk and Breen (1974) decided to use the multidimensional scales to examine the relationship between control and two academically related variables: study habits/attitudes and college academic performance. Subjects (89 psychology undergraduates) were administered the I, P, and C Scales and a survey of study habits and attitudes. Their grade point averages were used as a measure of academic performance. Results using correlational analyses supported the prediction that study habits and academic performance are related positively to perceived internal control and negatively to chance control. Although the P and C Scales are positively correlated (.68), achievement and study habits were more related to chance expectations than to powerful others orientations. The researchers concluded,

Results of the present investigation support Levenson's differentiation of control into powerful others and chance dimensions and provide a possible explanation for the lack of significant findings in earlier research on locus of control and academic achievement. [With Rotter's I-E Scale] any potential grade point average differences between internals and externals may have been attenuated as a result of the differential levels of academic performance of individuals who perceive reinforcements to be controlled by powerful others as opposed to chance, luck or fate (Prociuk & Breen, 1974, p. 94).

Prociuk and Breen (1975) employed the concept of defensive externality in another study relating locus of control to academic perform-

ance. Defensive externality means adopting an external locus of control as a way of (defensively) avoiding responsibility for expected negative outcomes (Rotter, 1966). "Defensive externals" in the academic world might be highly achievement oriented but would rationalize failures by blaming external circumstances. Theoretically, such externals would be more successful academically than "congruent externals." However, as Prociuk and Breen pointed out, differences between congruent and defensive externals can not be investigated with Rotter's I-E Scale. These investigators, therefore, administered the I, P, and C Scales to 66 male and female college students. Their results revealed that internals were more successful academically than were defensive externals (powerful others orientation) who, in turn, were more successful than congruent externals (chance orientation). In addition, as they had predicted, female defensive externals were more successful academically than their male counterparts. In fact, the more these female students expected to be controlled by powerful others, the more they succeeded. The investigators felt this finding supported the idea that defensive externality may serve to lessen the independence-dependence conflict for women. This finding is consistent with the work of Zimmermann, Goldston, and Gadzella (1977) who found that teacher approval and a belief in the power of others were the most potent predictors of academic success for white females: "These data indicate that for the white female student, the relationship with the teacher was the most important determinant of their academic achievement [p. 1186]."

Intiguing gender differences were also found in a study examining the relationship between locus of control and achievement in a non-academic setting (Lee, 1976). Students in beginning tennis classes responded to the I, P, and C Scales. Expectancy for success and actual performance measures in tennis were obtained. No significant relationship was found between control orientations and expectancies for success. What did emerge, however, was an interesting pattern that related control orientation to actual tennis achievement as moderated by gender. The more chance-oriented males felt, the less well they performed; the more internal females felt, the less well they performed. Furthermore, only for females was there a positive correlation between expectations of control by others and achievement. Again, it seems as though for females, some aspects of externality are facilitative.

Locus of control can be studied not only as predictive of academic success. Some researchers are also interested in changes in expectancies of control as a result of certain educational methods. Walters

(1977) undertook a study to determine if there was a difference in classroom achievement, attitude, and locus of control depending upon the method of instruction. This study was atypical in that its subjects were high school students. On posttest, Walters found that a dynamic learning group felt more in control of their own destiny than a group who received traditional instruction. P or C Scale scores were not related to the instructional manipulation. Inspection of the scale means for these ninth-graders reveals that they felt more control by powerful others and chance forces than did a normative group of adults. Walters did not comment on this finding.

Roueche and Mink (1976) were also interested in determining the extent to which classroom interventions might affect students' locus of control. These investigators studied the effects of counseling for internality and individual instruction and compared them with more traditional techniques on the perceptions of control of disadvantaged students. The internality counseling consisted of a number of techniques, including reality therapy, designed to foster perceptions of control over one's life. The reason for using internality counseling was based on the researchers' observations and empirical literature, which suggest that external orientations are a handicap, especially for minority students.

The sample included 1310 community college students (54% males) with 43% whites, 20% blacks and 31% hispanics. Analyses of covariance were carried out to examine if the factors of type of instruction, counseling and gender affected locus of control scale scores over one- and two-semester periods. Results indicate that there is a significant gender difference. On the Internal Scale, females were not only less internal to begin with, but were also less likely to increase in internality over time. On the Powerful Others Scale, sex differences are again significant. Females were more likely to have decreased over time in their reported beliefs in the power of others regardless of type of counseling or instruction. Males, on the other hand, were more likely to have increased in their expectations of being controlled by others. On the Chance Scale, no main effects were found, although there is a tendency for students receiving individual instruction to decrease in their chance expectations. The investigators concluded that a period of one or two semesters was not a long enough time to improve students' locus of control. Furthermore, they noted that their results clearly show that female students are more external and anxious than males to begin with and are therefore much harder to change. Given some of the recent literature that suggests that a more external orientation may be

beneficial for females' achievement, it would be interesting to see how "counseling for internality" affected the achievement of the female college students in this study.

Occupation

Since the I, P, and C Scales have been useful in understanding the process of academic success, other investigators have sought to extend their utility to the area of occupational choice. Ryckman and Malkoski (1974) studied differences in locus of control among college students, workers, and professionals in an attempt to relate expectations to broad occupational groupings and to gather data on adult populations (which are usually underrepresented in I-E research). Reasoning that those in professional occupations need independence, competence, and the ability to see connections between actions and outcome, these investigators predicted that professionals would score highest on the I Scale. Their results confirmed this prediction. Professionals (N = 177) scored significantly higher on personal control than did either the college students (N = 100) or the blue collar workers (N = 67). However, contrary to expectation, professionals were not less likely than the other groups to believe that powerful others influenced their lives.

Rupkey's research (1978) was designed to assess differences between individuals (chiefly males) who had started their own businesses and groups of nonentrepreneurs. This study is atypical in that it utilized two types of locus of control measures—both Rotter's I-E Scale and the I, P, and C Scales were administered—and related these measures to a wide variety of factors (from height to favorite color). However, the manner in which the contrasting groups were selected made generalizability questionable. The results indicated that on the Rotter I-E Scale, the entrepreneurial group was significantly more internal than the nonentrepreneurs (5.54 versus 6.77). This finding was replicated on the Levenson I Scale. But on the P Scale, entrepreneurs were also significantly higher in their expectations of control by others. There were no significant differences on the C Scale. Thus, data from the multidimensional scales resulted in a more complex picture of people who start their own businesses—apparently they feel in control of their own lives but they also have an appreciation of the fact that others exercise authority. This orientation may be related to a more realistic understanding of the forces with which entrepreneurs have to contend.

Scanlan (1979) was interested in studying different types of en-

trepreneurs—those who were small-business owners as compared with those who were interested in growth and in organization building. Both groups of entrepreneurs had strong beliefs in internal control as compared to normative samples. The small-business people scored significantly higher on the C Scale than did the growth-oriented individuals. Scanlan reasoned that the small businessmen may keep their businesses small in order to reduce the element of chance and to permit personal supervision of all facets of work.

Most of the research on entrepreneurship has been conducted with male samples. Knudson (1979) has proposed to study assertiveness and attribution of success in women executives. Using attribution theory, Knudson hypothesizes that if management women attribute success to luck or effort, rather than to ability, they will inhibit their ability to take risks, act assertively, and advance within their organizations.

Social-Political Involvement

Perhaps no area of study using the I-E construct has led to more confusing results with conflicting interpretations than that of social and political activism. For example, according to Rotter's theory, internals should be more likely to participate in social action because they believe their behavior can bring about desired goals. Externals, on the other hand, should not become involved, because they perceive little connection between their efforts and a desired outcome. Studies conducted during the early 1960s supported this reasoning. Gore and Rotter (1963) and Strickland (1965) found that black youths who were willing to participate in, or who had actually engaged in, civil rights activity held more internal control expectancies than did their less active black peers.

Some researchers, however, have found that the I-E scale scores are not significantly related to activism (Blanchard & Scarborough, 1972; Evans & Alexander, 1970; Gootnick, 1974). In addition, other investigators have found that externals are more politically active than internals. For example, a relationship between black activism and externality was shown in a study by Ransford (1968), and Sanger and Alker (1972) found that feminist activists scored more externally on a dimension of Protestant ethic ideology than did a control group. Why should people become involved if they feel they have no mastery over a situation?

When activists score in an external direction, they are often seen as alienated individuals whose rioting and protesting behaviors are noninstrumental expressions of hostility (e.g., Rotter, 1971). However,

to what extent does the global definition of externality (which confounds powerful others with chance control) obscure the importance of perceptions of powerful others for understanding the instrumentality of protest behavior?

Levenson and Miller (1976) studied the relationship between locus of control and activism, using the I, P, and C Scales. In addition, they controlled for the effects of political ideology. These investigators hypothesized that the locus of control dimension of powerful others would be differentially related to activism depending upon one's political ideology. In their first study, as they had predicted, Levenson and Miller found that the more the politically liberal males perceived that powerful others played a major role in controlling their lives the more activist they became. It may be that liberals perceive that others hinder the realization of desired effects and therefore protest this situation. On the other hand, also as expected, the more conservative males expected powerful others to be in control the less involved they became. It may be that conservatives are more likely to see power as legitimate. Conservatives in general tended to score higher on the I Scale and lower on the C Scale than did liberal students.

Levenson's and Miller's second and third studies (1976) were designed to assess further the relationship between powerful others and activism in liberal female college students. As predicted, members of a politically liberal organization expected significantly more control by others than did nonmembers (27.11 versus 19.00). No differences appeared on the I and C Scales. Similarly, students in an activist lesbian group scored extremely high on the Powerful Others Scale as compared to members of a feminist organization (39.75 versus 15.89). Also, members of the lesbian group felt that they had less personal control over their lives than the feminist group members (21.67 versus 37.39). One might speculate that there is an interplay between the three locus of control orientations as a function of the success or failure in achieving goals. The lesbian group members perceived that they had had little success in changing attitudes and laws. Thus, their low I Scale scores could be a reflection of their past reinforcement history. The lesbians scored higher in expectancies of control by others than any other previously tested sample. For these activist Texan women who presumably had encountered much prejudice, misunderstanding, and unfair treatment, the saliency of powerful others would be expected to be quite predominant.

Other researchers have commented on the perceptions of system blame by people who are the victims of discrimination. The high powerful others orientation of the activists in the Levenson and Miller study offers support for Caplan and Paige's (1968) idea that blocked op-

portunity functions to stimulate involvement in militant political activity. Although the present study does not offer direct evidence of whether activism promoted a specific locus of control orientation or was the result of one, the reasoning of Sanger and Alker (1972) seems relevant:

Common sense suggests that a woman must feel some degree of externality in terms of what she perceives as the female status in our society before she would join a movement which espouses the goals of women's liberation. Yet she must have previously experienced a contingency between her own efforts and desired rewards, or she would not expect anything to be accomplished [p. 127].

In addition to student activism studies, adult involvement in environmentalism has been studied by means of the I, P, and C Scales. Levenson (1972) administered these scales and measures of perceived importance of anti-pollution measures to 96 adults (some of whom were members of an environmental action group). There were no significant relationships between the I and P Scale scores and involvement. Males were involved in more activities only when they felt that the issues were of some importance to them and when they perceived that they were not controlled by chance. It was concluded that expectations of control by others or low expectations regarding personal control do not diminish involvement, because the potential for control still exists. For the high chance believer, however, there is no such hope of control. Since the primary concerns of the environmental organization did not include either personal discrimination or blocked opportunity, powerful other expectancies were not particularly salient for the members of this antipollution group.

Trigg, Perlman, Perry, and Janisse (1976) used the I, P, and C Scales to study the relationship between locus of control and antipollution behavior as moderated by the effects of perceived outcome (pessimism versus optimism). Interviews were conducted with 433 adults. As predicted, optimistic internals were more likely to be involved in antipollution activities than were optimistic externals. Among pessimistic respondents, there was virtually no relationship between locus of control and social action. In this study it was only when people had favorable expectations about future levels of pollution that belief in personal control was associated positively with greater involvement in conventional forms of social action.

A third study (Huebner & Lipsey, 1979) focused on activism in support of an environmental issue where the "powerful others" were more clearly defined than in the two studies described earlier. In the 1977 California elections the ballot carried a referendum, known as the California Nuclear Power Initiative, which was concerned with the in-

situation of strict safety standards in programs for the development of nuclear power plants. Since previous studies had demonstrated that specific environmental attitude measures predict better than global ones, Huebner and Lipsey constructed locus of control scales that were situation-specific. The scales were designed to parallel Levenson's tripartite distinction, but with item content relevant to the environmental issue being studied. These specific scales, along with Rotter's I-E Scale and the I, P, and C Scales, were administered to 50 activists and 51 nonactivists before and after the failure of the state-wide referendum. The results indicated that the activists differed from the comparison group on the P Scale and on all three of the situation-specific scales. However, when years of education was used as a covariant, the P Scale failed to discriminate between groups.

In a second set of analyses, the relationship among the various locus of control scales and reported willingness to engage in ecologically responsible activities was studied by means of a multiple regression analysis. The hierarchical analysis revealed a nonsignificant relationship between the Rotter Scale and willingness to act, but when the Levenson I, P, and C Scales were added, a significant correlation resulted. The Levenson set contributed unique variance over and above the Rotter Scale. Pretest/posttest differences occurred only with the environmentally worded scales—the activist group did show a shift toward more chance and powerful others orientations on the specific locus of control scales. The results of the study are informative with regard to the stability of the generalized multidimensional scales. Although there were no differences on the I, P, and C Scales either pretest or posttest, the situation-specific locus of control measures were affected and revealed changes. Thus, the generalized measures may assess more stable personality traits and the specific items may be closer to attitudinal measures. Huebner and Lipsey (1979) concluded that the multidimensional innovation in the Levenson approach is an improvement over the unidimensional Rotter Scale:

When environmental action is the practical issue of interest, a distinction between the role of chance and that of powerful outside interests is quite sensible and undoubtedly more useful in the environmental context than other multidimensional distinctions might be [p. 13].

Interpersonal Perception and Behavior

The purpose of two studies by Levenson and Mahler (1975) was to add to the convergent and discriminant validity of the I, P, and C Scales. In the first study, the multidimensional scales and the Altruism

and Cynicism Subscales from Wrightsman's Philosophies of Human Nature Scale were administered to 75 undergraduates. As predicted, the more people felt they were controlled by powerful others, the more they perceived others as untrustworthy and the less they saw them as altruistic. Internality and chance were unrelated to attitudes toward others. While the items on the Powerful Others Scale do not explicitly imply the malevolence (or benevolence) of the "others," this group responded in such a way as to indicate that when others were expected to be in control they were more apt to be seen as malevolent.

The second study, which examined the relationship between locus of control and Machiavellianism, revealed gender differences: for males, feelings of powerlessness due to a belief in random events were related to a desire to manipulate others; for females, powerlessness due to a lack of personal control was the more important variable. Interestingly, expectations of control by others were unrelated to Machiavellianism, suggesting that it is disorganization or powerlessness that is most pertinent to manipulative behaviors and attitudes.

Ubbink and Sadava (1974), in an all too brief article, have described a study of locus of control and helping behavior. They found that the locus of control dimension (Rotter's and Levenson's scales) showed a tendency for helpers to be more internally controlled.

Implications and Future Directions

Wisdom of Training for Internality

Rotter's definition of locus of control is a dichotomous one—either one is internally controlled or one is externally controlled. The research discussed in this chapter indicates that this dichotomy is an oversimplification. The multidimensional I, P, and C Scales were developed because of theoretical and empirical inconsistencies in the unidimensional approach. It was considered crucial to differentiate between two types of external control—belief in powerful others and in chance forces—to enhance the predictability of control-related criteria. In this chapter, we have seen that research findings in many areas—development, health, cognition, psychological adjustment, achievement, and interpersonal behavior—support the usefulness of the tripartite differentiation.

Perhaps the major implication of this work is that externality is not always "bad." To see reinforcements as not contingent upon one's own actions is not necessarily maladjusted or "anti-American." Such a view not only contradicts Protestant ethic ideology, which states that only

through hard work and skill can one be successful, but it also questions the American ideal of "liberty and justice for all." For people whose perceptions of control by powerful others are realistic because of the nature of specific situations or cultural sanctions (e.g., blacks, prisoners, women), belief in personal responsibility for outcomes may be quite dysfunctional; the perception that powerful others are in control may allow for more effective and innovative behaviors. Gender differences are particularly important in this regard. Women seem to achieve more success when they are raised in hostile home environments and when they view powerful others as playing a major role in their lives. Focusing on the positive aspects of "externality" has implications not only for interaction among individuals but for the functioning of society. People who see the "system" or other individuals as controlling outcomes may attempt to change the system into one that would permit more individual, or personal, control.

If aspects of externality can facilitate purposeful behavior and increase self-esteem we may question the wisdom of teaching people to become more internal. With the publication of the Coleman Report's (Coleman *et al.*, 1966) finding that internality was a better predictor of school achievement among minority group children than any of the other variables studied, a number of programs to teach internality blossomed. What are the implications of teaching personal responsibility to members of groups who have had numerous failure experiences because of their race, gender, or socioeconomic status? With a more differentiated view of locus of control, one might devise training programs that could focus on teaching behavioral contingencies geared to the person's present expectation orientation. For example, in the case of a woman who is unsuccessfully seeking a job, who perceives that the world is totally unpredictable, and who believes that she has no personal control, one might wish to educate her regarding those societal forces that operate in predictable ways. Women's consciousness-raising groups appear to function initially in this educative role. By first teaching that there is a predictable order, the opportunity for learning that systematic effects are operating and how to manipulate them becomes possible.

However, in the area of health, work with the locus of control construct suggests that beliefs in powerful others inhibit effective coping and recovery. Are these results inconsistent with those reviewed previously, which indicate the possibly positive effects of a powerful others orientation? I think not. The powers of physicians to cure have probably been overestimated in our society, as has been the personal

power of individuals to achieve based solely on motivation. It seems that in both situations more "accurate" expectations are facilitative—that is, more personal responsibility in the health area, and more recognition of the role of external factors in sociopolitical and achievement areas.

Future Directions

The psychological meaning of the powerful others dimension needs to be explored further. It seems from most tested groups that powerful others are seen as thwarting attempts at mastery and control. However, some samples (e.g., conservative activists, chronic pain patients) view powerful others as facilitative or even as benevolent. Under what conditions are powerful others seen positively or negatively? Data on how people interpret these others would provide information about the likelihood of changing a person's orientation. How time-limited or pervasive is the control thought to be exercised by these others (e.g., parental control versus society's sanctions and controls)? Furthermore, additional work must be done to ascertain more precisely what the Internal Scale is measuring. Does it measure perceptions of cultural values, a basic minimum ability to make means-end connections, or feelings of mastery? Similarly, with the Chance Scale, we need to investigate possibly positive aspects of perceiving random fluctuations between actions and outcomes.

Research that takes into account the importance (valence) of the desired goal will produce more interpretable results. According to social learning theory, behavior is a function not only of the expectancy that a reinforcement will be forthcoming, but also of the value of the reinforcement. Work done on involvement in antipollution groups, which has assessed the importance of issues as well as expectancies of control, is illustrative of this approach. The person-by-situation paradigm and the multitrait-multimethod matrix are particularly well suited for designing studies using multidimensional locus of control scales. Results using such designs indicate that it is the consistency between situations and expectancies that is most predictive.

In summary, the multidimensional scales described in this chapter have provided increased understanding of the locus of control construct. It may be that other assessment procedures or scales—general or specific, with these three dimensions or others—will be needed. It is this researcher's hope that such work will be guided by theory and rationale.

Appendix A: I, P, and C Scales

Directions

On the next page is a series of attitude statements. Each represents a commonly held opinion. There are no right or wrong answers. You will probably agree with some items and disagree with others. We are interested in the extent to which you agree or disagree with such matters of opinion.

Read each statement carefully. Then indicate the extent to which you agree or disagree by circling the number following each statement. The numbers and their meanings are indicated below:

- If you agree strongly: circle +3
- If you agree somewhat: circle +2
- If you agree slightly: circle +1
- If you disagree slightly: circle -1
- If you disagree somewhat: circle -2
- If you disagree strongly: circle -3

First impressions are usually best. Read each statement, decide if you agree or disagree and the strength of your opinion, and then circle the appropriate number.

GIVE YOUR OPINION ON EVERY STATEMENT

If you find that the numbers to be used in answering do not adequately reflect your own opinion, use the one that is closest to the way you feel. Thank you.

Scoring and Interpretation for the I, P, and C Scales

There are three separate scales used to measure one's locus of control: Internal Scale, Powerful Others Scale, and Chance Scale. There are eight items on each of the three scales, which are presented to the subject as one unified attitude scale of 24 items. The specific content areas mentioned in the items are counterbalanced so as to appear equally often for all three dimensions.

To score each scale add up the points of the circled answers for the items appropriate for that scale. (These items are listed on p. 59.) Add to this sum +24. The possible range on each scale is from 0 to 48. Each subject receives three scores indicative of his or her locus of control on the three dimensions of I, P, and C. Empirically, a person could score high or low on all three dimensions.

I, P, and C Scales

	Strongly disagree	Disagree somewhat	Slightly disagree	Slightly agree	Agree somewhat	Strongly agree
1. Whether or not I get to be a leader depends mostly on my ability.	-3	-2	-1	+1	+2	+3
2. To a great extent my life is controlled by accidental happenings.	-3	-2	-1	+1	+2	+3
3. I feel like what happens in my life is mostly determined by powerful people.	-3	-2	-1	+1	+2	+3
4. Whether or not I get into a car accident depends mostly on how good a driver I am.	-3	-2	-1	+1	+2	+3
5. When I make plans, I am almost certain to make them work.	-3	-2	-1	+1	+2	+3
6. Often there is no chance of protecting my personal interests from bad luck happenings.	-3	-2	-1	+1	+2	+3
7. When I get what I want, it's usually because I'm lucky.	-3	-2	-1	+1	+2	+3
8. Although I might have good ability, I will not be given leadership responsibility without appealing to those in positions of power.	-3	-2	-1	+1	+2	+3
9. How many friends I have depends on how nice a person I am.	-3	-2	-1	+1	+2	+3
10. I have often found that what is going to happen will happen.	-3	-2	-1	+1	+2	+3
11. My life is chiefly controlled by powerful others.	-3	-2	-1	+1	+2	+3
12. Whether or not I get into a car accident is mostly a matter of luck.	-3	-2	-1	+1	+2	+3

(cont.)

P, and C Scales (cont.)

	Strongly disagree	Disagree somewhat	Slightly disagree	Slightly agree	Agree somewhat	Strongly agree
3. People like myself have very little chance of protecting our personal interests when they conflict with those of strong pressure groups.	-3	-2	-1	+1	+2	+3
4. It's not always wise for me to plan too far ahead because many things turn out to be a matter of good or bad fortune.	-3	-2	-1	+1	+2	+3
5. Getting what I want requires pleasing those people above me.	-3	-2	-1	+1	+2	+3
6. Whether or not I get to be a leader depends on whether I'm lucky enough to be in the right place at the right time.	-3	-2	-1	+1	+2	+3
7. If important people were to decide they didn't like me, I probably wouldn't make many friends.	-3	-2	-1	+1	+2	+3
8. I can pretty much determine what will happen in my life.	-3	-2	-1	+1	+2	+3
9. I am usually able to protect my personal interests.	-3	-2	-1	+1	+2	+3
10. Whether or not I get into a car accident depends mostly on the other driver.	-3	-2	-1	+1	+2	+3
11. When I get what I want, it's usually because I worked hard for it.	-3	-2	-1	+1	+2	+3
12. In order to have my plans work, I make sure that they fit in with the desires of people who have power over me.	-3	-2	-1	+1	+2	+3
13. My life is determined by my own actions.	-3	-2	-1	+1	+2	+3
14. It's chiefly a matter of fate whether or not I have a few friends or many friends.	-3	-2	-1	+1	+2	+3

Scale	Items	Interpretation
Internal Scale	(1, 4, 5, 9, 16, 19, 21, 23)	High score indicates that the subject expects to have control over his or her own life. Low score indicates that the subject does not expect to have control over his or her own life.
Powerful Others Scale	(3, 8, 11, 13, 15, 17, 20, 22)	High score indicates that the subject expects powerful others to have control over his or her life. Low score indicates that the subject expects powerful others do not have control over his or her life.
Chance Scale	(2, 6, 7, 10, 12, 14, 16, 24)	High score indicates that the subject expects chance forces (luck) to have control over his or her life. Low score indicates that the subject expects chance forces do not control his or her life.

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