

- A15. Wallston, B. S. & Wallston, K. A. (1978). Locus of control and health: A Review of the literature. *Health Education Monographs*, 6, 107-117.

**Locus of Control and Health:  
A Review of the Literature\***

Barbara Strudler Wallston, Ph.D.\*\*  
George Peabody College for Teachers  
Nashville, Tennessee

Kenneth A. Wallston, Ph.D.  
Vanderbilt University  
Nashville, Tennessee

*Locus of control, an individual difference construct from social learning theory, has shown some promise in predicting and explaining specific health-related behaviors. Research is reviewed on the utility of the locus of control construct in understanding smoking reduction, birth control utilization, weight loss, information-seeking, adherence to medication regimens, and other health or sick-role behaviors. Implications for health educators are presented.*

Locus of control, a construct derived from Rotter's social learning theory,<sup>40,42</sup> has received a significant amount of attention in behavioral research. A thorough review of this research is beyond the scope of this paper, but numerous other general reviews are available.<sup>18,26,27,35,38,41</sup> This review focuses on measurement of internal-external locus of control and the relation of this individual difference dimension to health-related behaviors.

Health-related behavior has been conceptualized by Kasl and Cobb<sup>21</sup> as behavior related to prevention; termed health behavior; behavior once symptoms appear, termed illness behavior; and behavior following diagnosis, termed sick-role behavior. This review is primarily concerned with health behavior and sick-role behavior, since published research on illness behavior and locus of control was not available.

\*This research was subsidized in part by Grant NU06426 from the Division of Nursing, Public Health Service, Department of Health, Education, and Welfare; and Grant R01-HS 02638 from the National Center for Health Services Research, Public Health Service, Department of Health, Education, and Welfare.

\*\*Dr. Barbara Wallston is an Associate Professor and Chair, Faculty of Psychology, Box 512, George Peabody College for Teachers, Nashville, TN 37203; Dr. Kenneth Wallston is an Associate Professor of Psychology, School of Nursing, Vanderbilt University, Nashville, TN 37240.

Address requests for reprints to either author.

HEALTH BEHAVIOR

*Smoking*

Several studies have shown that internals (those who believe that reinforcement is contingent upon the individual's behavior) are more likely to engage in behaviors that facilitate physical well-being. James et al<sup>16</sup> replicated Straits and Sechrest's<sup>47</sup> finding that nonsmokers were more likely to be internal than smokers. In addition, they found that males who believed the Surgeon General's Report and quit smoking were more internal than those who believed the report but did not quit smoking. Platt<sup>39</sup> (summarized in Strickland<sup>48</sup>) found internals able to change smoking behavior to a greater extent than externals (those who believe reinforcement is controlled by outside forces such as fate, luck, chance or powerful others). Steffy et al<sup>46</sup> found internals more likely to reduce their smoking; Williams<sup>34</sup> found greater cigarette smoking among external ninth-grade subjects. Some studies, however, have failed to corroborate the relationships among smoking and locus of control.<sup>4,23</sup> Phares<sup>38</sup> points out that these relationships might be improved with systematic consideration of values, needs, other expectancies, and prior learning history. However, even without consideration of the influence of other factors, locus of control can significantly differentiate samples.

Recent studies,<sup>4,5</sup> have shown type of treatment to interact with locus of control in determining treatment outcome. Evidence suggests that it may be useful to tailor treatments to individual differences in locus of control, although the treatment groups did not perform significantly better than the no-treatment group. Thus, the results are suggestive only.

*Birth Control*

Research on locus of control and use of birth control has produced similar results. MacDonald<sup>32</sup> showed that among single female college students, 62% of the internals reported practicing contraception, while only 37% of the externals did so. Data on married females were in the same direction but were not statistically significant. Among a sample of single college females, Lundy<sup>31</sup> found that sexually active contraceptive users were more internal than sexually active nonusers. Phares<sup>38</sup> studied three samples of females; girls attending a compulsory industrial school were less likely to use contraceptives, although they reported a high degree of sexual activity. These samples also differed in age, socioeconomic status, and education. Within each sample, where the variability was small, locus of control was not related to use of contraceptives.

Harkey and King<sup>14</sup> collected data, using the Health Locus of Control (HLC) scale, for unwed mothers, abortion patients, and users of some form of birth control. Analysis showed no difference in locus of control between abortion patients and users of birth control, with both groups scoring slightly more internal than female norms. The sample of unwed mothers, who

obviously failed to use effective birth control methods, were more external, but this group also differed from the others in age and socioeconomic status.

More recent research has failed, however, to confirm these findings on locus of control and contraceptive use. Seeley<sup>44</sup> tried to differentiate successful from unsuccessful family planners. There were no differences among five groups of women (which were not clearly defined) on locus of control. Among poor, black women, Fisch<sup>11</sup> found no significant differences in locus of control between effective and ineffective family planners; family planning categories were based on interview data. In general, these women were highly external. Harvey<sup>13</sup> found differences in locus of control between individuals using highly effective and those using less effective methods of contraception; however, diaphragm, foam, and condom were categorized with rhythm and no contraceptive in the less effective category. Gough,<sup>12</sup> using factor analysis to classify contraceptives into coitus-dependent, surgical coitus-inhibiting, and coitus-independent, found no significant correlation between locus of control, and rated acceptability of contraceptives for any of the four factors; however, subjects were not asked actual usage questions, so it is not clear that differences in locus of control would be expected to relate to these attitudes toward contraceptive data. Darrow,<sup>9</sup> in a study of prophylactic use for venereal disease prevention, found that perceptions of control were relatively poor predictors of condom acceptance.

Using concepts similar to locus of control, Bauman and Udry<sup>2</sup> found powerlessness to be a relatively strong predictor of failure to regularly practice contraception among a sample of black, married, recent fathers; and Keller et al<sup>22</sup> found with male and female subjects, that contraceptive users were more likely to have high feelings of efficacy than nonusers.

#### *Weight Loss*

Studies of weight loss have found locus of control to be a relevant factor. Manno and Marston<sup>33</sup> found, in their control group, that externally oriented subjects weighed more initially but lost less weight, although heavier subjects generally lost more weight; thus, among control group subjects, internals were more successful. However, for their two treatment groups there was no relation between locus of control and weight loss. Bellack et al<sup>1</sup> failed to find a significant correlation between locus of control and weight loss, but it isn't clear from their presentations whether they calculated separate correlations within treatment and control groups, which was necessary to replicate the Manno and Marston<sup>33</sup> findings.

O'Bryan<sup>36</sup> found overweight women to be more external. Although externals and internals in her sample differed on a variety of self-report measures, they did not differ on behavioral indices, including information-seeking and learning. Since all subjects were involved in the TOPS weight reduction program, they are somewhat comparable to treatment groups in other studies reported. Jeffrey and Christensen<sup>1</sup> found, within their "willpower" treatment group that subjects with greater weight loss were more

internal than subjects with less weight loss. Locus of control, however, failed to differentiate between successful and unsuccessful weight loss among behavior therapy or control subjects. Balch and Ross,<sup>1</sup> using a self-control weight reduction program, found significant correlations between internality and completion of the program and between internality and success in the program (weight loss greater than the median of eight pounds). Thus, there is some indication that treatments may be differentially effective for internals and externals.

Wallston et al<sup>30</sup> failed to find significant differences in weight reduction between internals and externals using either the I-E scale or the HLC scale to measure these traits. However, HLC externals lost more weight in the externally oriented, group program, while HLC internals lost more weight in the internally oriented, self-directed program. Subjects in programs matched to their locus of control expressed greater satisfaction with the program. This suggests the value of the locus of control construct in designing programs compatible with individual orientations. Phares<sup>38</sup> suggests future research should investigate the effectiveness of applying knowledge of locus of control in weight loss programs. "Perhaps internals can be enrolled in more independent, self-regulated reduction programs while externals would profit most from programs that rely on prestige suggestion or support from others." (p 174)

#### *Other Preventive Behaviors*

Internality has been related to other preventive behaviors. Williams found that internality was related to greater reported seat belt use<sup>51</sup> and to preventive dental care.<sup>35</sup> Dabbs and Kirscht<sup>9</sup> found that college subjects they termed internal, (using motivational items to measure locus of control), were more likely to be inoculated against influenza than those they termed external; but using expectancy items, (the theoretically consistent way of measuring locus of control), internals were more likely not to have taken the shots. Motivation to control one's health may be predictive of health behaviors, but caution must be exercised not to confuse motivation with locus of control. Kirscht's<sup>35</sup> recent work clarifies this distinction.

#### SICK-ROLE BEHAVIOR

Various forms of compliance have been studied in relation to locus of control, as have other behaviors aimed at controlling illness. Johnson et al<sup>20</sup> found that among women undergoing abdominal surgery, internal patients received more analgesics than external patients. First-born internals had longer hospital stays than externals, which these women could perceive as a desirable outcome since return home meant a return to household chores. In an earlier report of this study, Johnson et al<sup>19</sup> interpreted their findings as evidence "that the belief that one can control one's environment is associated with the ability to influence others so as to achieve one's own ends." (p 26)

In a well-controlled experiment, Cromwell et al<sup>7</sup> included participation in

self-treatment as one of three nursing care interventions. No myocardial infarction patient in a congruent condition (i.e., internals with high participation and externals with low participation) returned to the hospital within 12 weeks ( $p=.06$ ) or died within 12 weeks ( $p=.06$ ). Although of marginal statistical significance (possibly because of the low number of deaths), the importance of these dependent measures makes the findings worth noting. No similar interaction occurred for non-MI patients. Although an information manipulation was also included, the authors failed to report analyses of locus of control by information interactions because they conceptualized repression-sensitization as the personality variable relevant to information. On the 14 other recovery-related variables, there were no significant interactions of locus of control and participation in self-treatment. There were, however, main effects of locus of control such that externals spent more days in the coronary care unit and had higher temperatures and lactate dehydrogenase while in the CCU. While these data lend some weight to the importance of locus of control, the lack of additional interactions also provides some reason for caution.

#### *Information*

In an early study, Seeman and Evans<sup>45</sup> found that among tuberculosis patients matched for occupational status, education, and ward placement, internals knew more about their condition, were more inquisitive with physicians and nurses about tuberculosis and their own situation, and indicated less satisfaction with the amount of information they were getting from hospital personnel than did externals. Similarly, DuCette<sup>10</sup> reported that among newly diagnosed diabetics, internals knew more about their condition than did externals; these findings are also reported in Lowery<sup>29</sup> and Lowery and DuCette.<sup>10</sup> For long-term diabetics, however, information differences did not exist between internals and externals. Because of the cross-sectional nature of this study, caution must be used in drawing conclusions.

Contrary to his prediction, DuCette<sup>10</sup> found that long-term diabetics who were internal missed an increasing number of doctor appointments and began to ignore their diets. He hypothesized that the uncontrollable, unpredictable aspects of diabetes leads internals to find that their normal response is inadequate; internals, upon learning that knowledge does not lead to control, respond by relinquishing the degree of control they might maintain. Among mentally depressed patients DuCette has studied, internals respond to the diagnosis by actively seeking information about the condition.

In two studies in which college students were given a mildly threatening message about the danger of hypertension and asked to role-play newly diagnosed hypertension patients, Wallston et al<sup>51</sup> found that internals (measured by the HLC scale) with high health values sought more information than any other group. Thus, as suggested by social learning theory, prediction of preventive health information-seeking utilizing a health-specific measure of locus of control was enhanced by measuring values also.

Consistent with a great deal of research on locus of control, there is evidence of greater health information-seeking among internals.

#### *Adherence*

Weaver<sup>52</sup> found that among kidney patients using dialysis machines, internals were more likely to comply with diet restrictions and keep scheduled appointments more regularly than externals. Key,<sup>54</sup> however, in a study of predominantly black, female, working class hypertension patients, found more compliance among externals using independent measures of diet and medication-taking compliance; but found no relationship between locus of control (measured by the HLC scale) and compliance measured by appointment-keeping, clinic discontinuance, or self-report of medication-taking.

Similarly, Kern<sup>23</sup> found, among elderly subjects, that externals used more total outpatient physician services, but there were no differences between internals and externals in patient-initiated physician visits. Marston<sup>34</sup> found no relationship between locus of control and compliance of myocardial infarction patients. Thus, the relation between compliance with medical regimen and locus of control is unclear. Failure to include measures of perceived value of health may account for some discrepancies in this literature.

#### *Veneral Disease*

Darrow<sup>9</sup> (summarized in Strickland<sup>48</sup>) found that internal females with venereal disease were more likely to return for treatment with the appearance of new symptoms than were external females. Olbrisch,<sup>37</sup> using the HLC scale, found that female gonorrhea patients were more external than male gonorrhea patients. External subjects had more naive beliefs about venereal disease and a casual helpless attitude about how it is contracted, but they did not differ from internals in plans to take future precautions. While race was the best predictor of reinfection, HLC scores also discriminated, with reinfected black males more internal. This may correspond with Darrow's finding. The relation between sick-role behaviors and locus of control for venereal disease patients is obviously complex, but again, there is some indication that locus of control is a meaningful variable.

#### SUMMARY

There is evidence that the locus of control construct is relevant to the prediction of health behaviors and sick-role behaviors. Specific behaviors where locus of control is relevant include seeking information, taking medication, making and keeping physician appointments, maintaining a diet, and giving up smoking. Internals generally show more positive behaviors in each of these areas, but contradictory evidence has been presented which, in some instances, could indicate that it is more functional to hold external beliefs.

The lack of consistent findings may relate to differences in or problems with the measurement of locus of control and/or to failure on the part of many investigators to consider other variables which modify the influence of locus of control beliefs. Most of the early studies utilized Rotter's I-E scale, although in increasing numbers investigators are beginning to turn to health-related measures of locus of control (such as the HLC scale) as the preferred alternative for studying health and sick-role behaviors. However, even with this more specific measure, it should be recognized that locus of control is only one of a complex of factors (e.g., the value of health; motivation; social supports; previous behavior; perceived costs and benefits of special actions), which individually or in interaction with one another explain the variance in health-related behaviors. As Phares<sup>38</sup> points out, "If one tries to predict behavior by means of an I-E scale alone, that scale will have to be potent and complex indeed to do the job. If, on the other hand, one simultaneously assesses needs, expectancies for success, and the nature of the situation with other instruments, the grossness of a single score on an I-E scale can partially be compensated for." (p 175)

#### IMPLICATIONS

Several major implications for health educators may be drawn from the concept of locus of control. Scales to measure locus of control may be used to evaluate health education programs. Health educators may want to focus on training internality. Health educators may also begin to tailor programs to individuals' generalized expectancies regarding locus of control.

##### *Evaluation Using Locus of Control Scales*

Many health education programs which do not label themselves as internality training emphasize patient responsibility and internal beliefs. For such programs, health locus of control scales can be used to evaluate program success. Clearly, for evaluation purposes, changes in beliefs or expectancies are only relevant if accompanied by desired behavior change. However, obtaining behavior change data is not always possible, and expectancy data will add to understanding of the change or lack of change in behaviors. Thus, use of a health locus of control scale is recommended in conjunction with behavioral measures to evaluate health education programs.

##### *Training Internality*

Internals appear more likely to engage in positive health and sick-role behaviors. To the extent this is true, health educators need to involve themselves in training patients to hold more internal beliefs. As recommended above, such training should be accompanied by evaluation of changes in locus of control in combination with behavioral change measures.

Pilot programs involving some form of internality training have begun to appear in the literature. For example, Green et al<sup>31</sup> included internality training as one phase of a multiple-intervention health education program for

hypertensive outpatients. Schachat<sup>43</sup> found that subjects within a hypertension screening situation who received a motivational booster in line with internal locus of control beliefs were more likely to make an appointment to see a physician quickly. Tobias and MacDonald<sup>49</sup> found a shift in internality on a weight locus of control scale, but not on Rotter's I-E scale for subjects in a self-determination group. However, this group did not differ in weight loss from the control groups, while subjects assigned to a weight reduction manual treatment and to a behavioral contract treatment did show significant weight loss and no change in locus of control beliefs. The researchers failed to divide subjects on locus of control to test the differential effectiveness of their treatments, but they did show evidence of successful internality training (their self-determination group), which might prove more effective when combined with some other weight loss program.

The goal of such training programs should be to train responsible internals, people who will recognize the need to use a health professional as an appropriate resource, but who will also see that actions of their own (based on sound medical advice) will be necessary to obtain and maintain health.

##### *Tailoring Programs to Locus of Control*

The potential for health education programs tailored to individuals' health locus of control beliefs is also suggested. Best<sup>4</sup> found an attitude change manipulation was more effective in decreasing smoking when it was matched with subject motivation. Best and Steffy<sup>5</sup> showed suggestive evidence that type of treatment interacted with locus of control in determining smoking reduction outcome. Several studies reviewed above<sup>17,33,50</sup> also found weight loss programs to be differentially effective for internals and externals. An internally oriented program should provide more choice of treatment, more involvement of the patient in making choices and, in general, strong emphasis on individual responsibility. An externally oriented program might be designed to move individuals who believe in chance to a belief that their health can be controlled, even if it is dependent upon powerful others. A belief that events can be controlled is preferable to a belief that fate will take its course. Externally oriented programs might also stress reliance on social support systems and the importance to the individual of compliance with health professionals' instructions.

#### CONCLUSIONS

This paper shows that the concept of internal-external locus of control can provide direction for health education programs and a means of assessing whether or not the programs are accomplishing what they have set out to do. The research reviewed provides initial evidence of the relationship between locus of control and health-related behaviors. This is increasingly an area of investigation among health researchers; a confident prediction can be made that further investigations of health-specific locus of control beliefs will increase understanding of health behavior.

## REFERENCES

1. Balch P, Ross AW: Predicting success in weight reduction as a function of locus of control: A unidimensional and multidimensional approach. *J Consult Clin Psychol* 43:119, 1975.
2. Bauman KE, Udry JR: Powerlessness and regularity of contraception in an urban Negro male sample: A research note. *J Marr Fam* 34:112-114, 1972.
3. Bellack AS, Rozensky R, Schwartz JA: A comparison of two forms of self-monitoring in a behavioral weight reduction program. *Behav Ther* 5:523-530, 1974.
4. Best JA: Tailoring smoking withdrawal procedures to personality and motivational differences. *J Consult Clin Psychol* 43:1-8, 1975.
5. Best JA, Steffy RA: Smoking modification procedures for internal and external locus of control clients. *Can J Behav Sci* 7:155-165, 1975.
6. Best JA, Steffy RA: Smoking modification tailored to subject characteristics. *Behav Ther* 2:177-191, 1971.
7. Cromwell RL, Butterfield EC, Brayfield FM, Curry JJ: *Acute Myocardial Infarction: Reaction and Recovery*. St. Louis, CV Mosby, 1977.
8. Dabbs JM, Kirshet JP: "Internal Control" and the taking of influenza shots. *Psychol Rep* 28:959-962, 1971.
9. Darrow WW: Innovative health behavior: A study of the use, acceptance and use-effectiveness of the condom as a venereal disease prophylactic. *Diss Abstr Int* 34A:2792A, 1973. (Univ Microfilms no 73-25:393)
10. DuCette JP: Some thoughts on the current status of locus of control research. Unpublished manuscript, 1974.
11. Fisch MA: Internal versus external ego orientation and family planning effectiveness among poor black women. *Diss Abstr Int* 35(2-B):1045-1046, 1974.
12. Gough HG: A factor analysis of contraceptive preferences. *J Psychol* 84:199-210, 1973.
13. Green LW, Levine DM, Deeds SG: Clinical trials of health education for hypertensive outpatients: Design and baseline data. *Prev Med* 4:417-425, 1975.
14. Harkey J, King M: Unpublished research, personal communication, 1976.
15. Harvey AL: Risky and safe contraceptors: Some personality factors. *J Psychol* 92:109-112, 1976.
16. James WH, Woodruff AB, Werner W: Effect of internal and external control upon changes in smoking behavior. *J Consult Psychol* 29:184-186, 1965.
17. Jeffrey DB, Christensen ER: The relative efficacy of behavior therapy, will power and no-treatment control procedures for weight loss. Paper presented at the Association for Advancement of Behavior Therapy, New York, 1972.
18. Joe VC: Review of the internal-external control construct as a personality variable. *Psychol Rep* 28:619-640, 1971.
19. Johnson JE, Dabbs JM, Leventhal H: Psychosocial factors in the welfare of surgical patients. *Nurs Res* 19:18-19, 1970.
20. Johnson JE, Leventhal H, Dabbs JM: Contribution of emotional and instrumental response processes in adaptation to surgery. *J Pers Soc Psychol* 20:65-70, 1971.
21. Kasl SA, Cobb S: Health behavior, illness behavior, and sick-role behavior. I. Health and illness behavior. *Arch Environ Health* 12:246-266, 1966.
22. Keller AB, Simms JH, Herry WE, et al: Psychological sources of "resistance to family planning." *Merrill-Palmer Q* 16:286-302, 1970.
23. Kern SP: Differential utilization of health care facilities by an elderly population as a function of internal versus external locus of control and subject sex. *Diss Abstr Int* 35(B):3022, 1974.
24. Key MK: Psychosocial and education factors surrounding compliance behavior of hypertensives. Doctoral dissertation, George Peabody College, Nashville, Tennessee, 1975.
25. Kirscht JP: Perceptions of control and health beliefs. *Can J Behav Sci* 4:225-237, 1972.
26. Lefcourt HM: Internal versus external control of reinforcement: A review. *Psychol Bull* 65:206-220, 1966.
27. Lefcourt HM: Recent developments in the study of locus of control. In Maher BA: *Progress in Experimental Personality Research*. New York, Academic Press, 1972, vol 6.
28. Lichtenstein E, Keutzer CS: Further normative and correlation data on internal-external (I-E) control of reinforcement scale. *Psychol Rep* 21:1014-1016, 1967.
29. Lowery BW: Disease-related learning and disease control in diabetics as a function of locus of control. *Diss Abstr Int* 35(6-A):3528, 1974.
30. Lowery BJ, DuCette JP: Disease-related learning and disease control in diabetics as a function of locus of control. *Nurs Res* 25:358-362, 1976.
31. Lundy JR: Some personality correlates of contraceptive use among unmarried female college students. *J Pers* 80:9-14, 1972.
32. MacDonald AP Jr: Internal-external locus of control and the practice of birth control. *Psychol Rep* 27:206, 1970.
33. Manno B, Marston AR: Weight reduction as a function of negative covert reinforcement (sensitization) versus positive covert reinforcement. *Behav Res Ther* 10:201-207, 1972.
34. Marston MV: Compliance with medical regimens: A review of the literature. *Nurs Res* 19:312-323, 1970.
35. Minton HL: Power as a personality construct. In Maher BA: *Progress in Experimental Personality Research*. New York, Academic Press, 1967, vol 4.
36. O'Bryan GG: The relationship between an individual's I-E orientation and information-seeking, learning, and use of weight control relevant information. *Diss Abstr Int* 33B:447B, 1972. (Univ Microfilms no 72-19:541.)
37. Olbrisch ME: Perceptions of Responsibility for Illness and Health Related Locus of Control of Gonorrhea Patients. Master's thesis, Florida State University, 1975.
38. Phares EJ: *Locus of Control in Personality*. Morristown, NJ, General Learning Press, 1976.
39. Platt ES: Internal-external control and changes in expected utility as predictions of the change in cigarette smoking following role-playing. Paper presented at the Eastern Psychological Association, Philadelphia, 1969.
40. Rotter JB: *Social Learning and Clinical Psychology*. Englewood Cliffs, NJ, Prentice-Hall, 1954.
41. Rotter JB: Generalized expectancies for internal versus external control of reinforcement. *Psychol Monogr* 80:1 (Whole No. 609), 1966.
42. Rotter JB, Chance J, Phares EJ: *Applications of a Social Learning Theory of Personality*. New York, Holt, Rinehart & Winston, 1972.
43. Schachat R: Acceptance of Health Recommendations as a Function of Communicator-Audience Similarity and Induced Perception of Personal Control. Doctoral dissertation, University of Connecticut, 1975.
44. Seeley OF: Field dependence-independence, internal-external locus of control, and implementation of family planning goals. *Psychol Rep* 38:1216-1218, 1976.
45. Seaman M, Evans JW: Alienation and learning in a hospital setting. *Am Sociol Rev* 27:772-783, 1962.
46. Steffy RA, Meichenbaum D, Best JA: Aversive and cognitive factors in the modification of smoking behavior. *Behav Res Ther* 8:115-125, 1970.
47. Straits B, Sechrest L: Further support of some findings about the characteristics of smokers and nonsmokers. *J Consult Psychol* 27:282, 1963.
48. Strickland BR: Locus of control: Where have we been and where are we going? Paper presented at the American Psychological Association, Montreal, 1973.
49. Tobias LL, MacDonald ML: Internal locus of control and weight loss: An insufficient condition. *J Consult Clin Psychol* 45:647-653, 1977.
50. Wallston BS, Wallston KA, Kaplan GD, Maides SA: Development and validation of the health locus of control (HLC) scale. *J Consult Clin Psychol* 44:580-585, 1976.
51. Wallston KA, Maides S, Wallston BS: Health-related information-seeking as a function of health-related locus of control and health value. *J Res Pers* 10:215-222, 1976.
52. Weaver R: Internality, Externality, and Compliance as Related to Chronic Home Dialysis Patients. Unpublished Master's thesis, Atlanta, Emory University, 1972.

53. Williams AF: Factors associated with seat belt use in families. *J Saf Res* 4(3):133-138, 1972.
54. Williams AF: Personality and other characteristics associated with cigarette smoking among young teenagers. Unpublished research, Boston, Massachusetts, The Medical Foundation, Inc. 1972.
55. Williams AF: Personality characteristics associated with preventive dental health practices. *J Am Coll Dent* 39:225-234, 1972.

## Preface

Health educators are concerned that individuals can do a great deal to promote, maintain, or regain their health. Belief in the efficacy of these health-oriented actions may or may not be valid, although some research evidence supports this, but it is quite certain that most health educators hold such beliefs. In fact, many role-related behaviors of health educators could be explained by the fact that they both value health highly and possess the type of belief system described above.

What about the public at large, however, the people to whom health educators address their informational and motivational strategies? What does the public believe about the relationship between individual behavior and health, and what, if anything, do these beliefs have to do with the public's behavior? We know for certain that many people often don't behave the way health educators recommend that they behave. Individuals all too often smoke, drink and eat too much, forget to use seat belts, delay in seeking appropriate care, miss appointments, and misuse medications. Can these health behaviors be explained by individuals' beliefs about the influence their behaviors have on their health? Research efforts aimed at this question are presented in this issue of *Health Education Monographs*. Specification of this relationship is a step toward providing conceptual and empirical bases for health education practice.

Within psychology, one's beliefs about the relationship between one's behavior and its outcomes fall under the domain of locus of control, a construct derived from Rotter's<sup>5</sup> social learning theory. This theory posits that "the potential for a behavior to occur in any specific psychological situation is a function of the expectancy that the behavior will lead to a particular reinforcement in that situation and the value of that reinforcement."<sup>7</sup> (p 57) The generalized expectancy that reinforcement is either under the control of the individual (termed internal) or outside forces such as fate, luck, chance, or powerful others (termed external) is referred to as internal-external locus of control. Thus, knowledge of locus of control expectancies together with knowledge about values should, theoretically, contribute to the prediction of health behavior.

In a recent paper, Strickland<sup>8</sup> cited the relationship between a belief in internal control and physical health or well-being as one of three significant areas emerging in the psychological literature regarding expectancies about locus of control. She reviewed evidence suggesting that internals are more likely to take preventive measures to keep themselves healthy and free of disease or the possibility of accident.

At a National Heart and Lung Institute Working Conference on Health

Behavior,<sup>10</sup> the relevance of locus of control was noted in several different sessions. For example, in the discussion of compliance behavior (pp 41-46), it was stated that externals are less likely to comply than internals. Thus, it was suggested that research is needed on educational interventions to shift people toward internal orientations and thus increase their compliance. Similarly, the report of the task group on arteriosclerosis (pp 57-66) noted that locus of control may have implications for such health-related behaviors as overeating, smoking, and alcohol abuse. Finally, Rosenstock's discussion of individual responsibility for health maintenance (pp 130-138) noted that external control "is associated with higher rates of morbidity, lower rates of compliance, lower health motivation, reduced ability to control weight, smoking, and use of alcohol and other drugs." (p 135)

Psychologists have developed a number of paper-and-pencil inventories with which to determine individual differences in beliefs about the locus of control of reinforcement. Developmentally, most research on this construct was conducted using the Internal-External (I-E) scale,<sup>6</sup> a generalized measure of expectancies. We developed the Health Locus of Control (HLC) scale<sup>9</sup> to be a measure of internal or external health beliefs; while more specific than the I-E scale, the HLC scale still is fairly generalized since the items relate to health and illness in general. More specific scales for specific disease entities (e.g., hypertension or diabetes) or specific health behaviors (e.g., weight control or adherence to medical regimens) could be developed.

In the first paper in this monograph we review the previously available research literature on locus of control and sick-role behaviors. We also discuss three possible ways in which health educators might utilize the locus of control construct: (1) program evaluation; (2) training internality; and (3) tailoring programs for individuals holding different sets of beliefs. The remaining papers fall into two categories; three reports of new research and two reports on the development of new scales to measure individual differences in beliefs about the locus of control of health.

Saltzer's paper, "Locus of Control and the Intention to Lose Weight," is an excellent example of the integration of two major theoretical postulations about the relationship between beliefs and behaviors: Rotter's social learning theory and Fishbein's behavior intentions theory.<sup>1</sup> Fishbein's theory states that behavioral intentions can be predicted from two components; normative beliefs and attitudes toward the behavior. Consistent with her hypotheses, Saltzer found that, for those undergraduate students who value health and/or physical appearance highly, intentions to lose weight could be predicted from Fishbein's two predictive components, with greater emphasis on the normative component for locus of control externals and greater emphasis on the attitudinal component for locus of control internals. Saltzer's study also demonstrates the usefulness of measuring specific locus of control beliefs, since her expected pattern of results was found for weight locus of control, but not for the more generalized HLC or I-E scales.

The paper by Kaplan and Cowles, "Health Locus of Control and Health

Value in the Prediction of Smoking Reduction," reports on the longitudinal effectiveness of a smoking cessation program. Controlling baseline smoking levels, they found that individuals who both valued health highly and who expressed internally-oriented health locus of control beliefs were more successful following a 15-week treatment program and demonstrated better maintenance of behavior change at long-term follow-up evaluation than other individuals.

A third study indicating the interaction of locus of control beliefs with other factors is reported in the paper by Lewis, Morisky, and Flynn. Studying the self-reported compliance behavior of a sample of inner-city hypertensive patients, they found that compliance was a joint function of internal health locus of control beliefs and a high reported level of perceived home assistance in following the prescribed medical regimen. The paper by Lewis et al also examines the psychometric properties of the HLC scale when used in an interview format with a sample of black, female, low SES respondents. These three papers demonstrate, to some extent, the positive consequences of an individual's internal locus of control beliefs, although in all three instances the findings are moderated by other theoretically relevant variables, such as health value or perceived home assistance.

As originally conceptualized, locus of control was a unidimensional construct, ranging from extreme external beliefs at one end to extreme internal beliefs at the other end. The I-E and HLC scales were developed to reflect the unidimensional nature of the construct, a single score to locate an individual's beliefs along a single dimension. Recent evidence, based upon factor analyses of the I-E scale and a closer examination of HLC scale data, supports viewing locus of control as multidimensional. Levenson<sup>2,3</sup> developed the I, P, and C scales which, in addition to measuring internality, separate externality into two components: belief in fate or chance and belief in control by powerful others. Neither the I-E scale nor the I, P, and C scales measure health beliefs.

The final two papers in this monograph report on the development of new, multidimensional health locus of control scales; one for children ages 7 through 12 (Parcel and Meyer), the other for older teenagers and adults (Wallston, Wallston, and DeVellis). A children's health locus of control scale fills a void in the type and quality of instruments available to health educators and other investigators of children's health beliefs and behaviors. The Multidimensional Health Locus of Control scales developed for adults are psychometrically and conceptually superior to the original HLC scale and provide the additional advantage of equivalent forms.

With the publication of this monograph, research on locus of control beliefs matures from its infancy stage to one of adolescent growth and development. This stage is characterized by tentativeness and uncertainty, coupled with great potential. In order to mature, however, a number of research issues must be resolved. There is great controversy over the proliferation of instruments to measure locus of control beliefs. Rotter<sup>7</sup> points out that obtaining highly

accurate and reliable predictions of behavior in specific situations using a generalized measure is not reasonable to the extent that the situation is structured, familiar, and unambiguous. Furthermore, he stated, "what kind of measure an investigator might prefer and the kind of data available to him depends on his purpose. Since development of any adequate measure includes careful test construction and discriminant validity studies, constructing a different measure for every specific purpose would be a very expensive undertaking. Nevertheless, it would be worth developing such a specific measure if one's interest is in a limited area and particularly if one is seeking some practical application where every increment in prediction is important." (p 59) The new Multidimensional Health Locus of Control scales represent a middle ground between highly generalized and highly specific levels of measurement. A great deal of careful work went into their construction, but they may not suit every purpose nonetheless. Before embarking on studies using less adequately developed scales, however, investigators should recognize that such a practice could lead to further proliferation of confusing and non-replicable findings.

From both a theoretical and an empirical perspective, beliefs in locus of control are not straightforward predictors of health behavior or population group differences. A misunderstanding of the interactive nature of locus of control with other important constructs, such as the perceived value of the outcome, has caused many investigators to adopt relatively unsophisticated approaches to methodology and data analysis. Much work remains to be done on the best means to measure the concepts which interact with locus of control, and there is a need to standardize the measurement of dependent variables, such as degree of compliance to medical regimens. No study is stronger than the validity of its weakest component.

Statistical procedures to account for the multivariate, interactive relationship of beliefs in locus of control and health behaviors need further development and standardization. The two most popular methods employed in the past have been factorial analysis of variance with single dependent variables and multiple linear regression. The former approach, which calls for cross-classification of individuals as internals or externals, high or low health value, etc., has the advantage of testing higher order interactions, but suffers from the possible loss of information due to the somewhat artificial and, perhaps, arbitrary classification procedure. True multivariate analysis would simultaneously examine multiple dependent variables, but no investigations to date have done this. Multiple linear regressions also are limited to dealing with single dependent variables and do not easily permit the examination of higher order interactions among the independent variables. In addition, multiple regression is useful only for uncovering linear relationships among the variables, and it has not yet been established whether the relationship between health beliefs and behavior is linear.

The challenge for health researchers over the next few years is to help resolve the issues discussed above. If this challenge can be met successfully, the



field of health education will be able to move forward on a more solid conceptual and empirical basis.

*Kenneth A. Wallston  
Vanderbilt University  
Nashville, Tennessee*

*Barbara Strudler Wallston  
George Peabody College  
Nashville, Tennessee  
Guest Editors*

#### REFERENCES

1. Fishbein M, Ajzen I: *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Reading, Addison-Wesley, 1975.
2. Levenson H: Multidimensional locus of control in psychiatric patients. *J Consult Clin Psychol* 41:397-404, 1973.
3. Levenson H: Activism and powerful others: Distinctions within the concept of internal-external control. *J Pers Assess* 38:377-383, 1974.
4. MacDonald AP Jr: Internal-external locus of control and the practice of birth control. *Psychol Rep* 27:206, 1970.
5. Rotter JB: *Social Learning and Clinical Psychology*. Englewood Cliffs, NJ, Prentice-Hall, 1954.
6. Rotter JB: Generalized expectancies for internal versus external control of reinforcement. *Psychol Monogr* 80:(1 Whole no 609), 1966.
7. Rotter JB: Some problems and misconceptions related to the construct of internal versus external control of reinforcement. *J Consult Clin Psychol* 43:56-67, 1975.
8. Strickland BR: Locus of control: Where have we been and where are we going? Paper presented at APA, Montreal, 1973.
9. Wallston BS, Wallston KA, Kaplan GD, Maides SA: Development and validation of the health locus of control (HLC) scale. *J Consult Clin Psychol* 44:580-585, 1976.
10. Weiss SM (ed): *Proceedings of the National Heart and Lung Institute Working Conference on Health Behavior*. DHEW Publication no NIH 76-868. Bethesda, Md, Public Health Service, 1975.

*Work on this article was subsidized in part by Grant RO1-HS02638 from the National Center for Health Services Research, PHS, DHEW.*