The Validity of the Multidimensional Health Locus of Control Scales

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Abstract

This introductory article addresses the question, 'Are the Multidimensional Health Locus of Control (MHLC) scales valid?' The initial evidence for the validity of the family of MHLC scales is reviewed, followed by a discussion of the empirical evidence for the hypothesis linking MHLC scale scores to measures of health behavior. There is ample evidence in the literature that the MHLC scales validly assess health locus of control beliefs. Nevertheless, caution should be used when making generalizations regarding the validity of the MHLC scales to new theoretical or situational contexts. The theoretical relationships between these beliefs and other constructs are complex, making it necessary to thoughtfully consider the valid application of the MHLC scales in each new study.

Keywords

health locus of control, measurement, psychometrics, validity

IN THE ALMOST 30 years since we first developed and published Forms A and B of the MHLC scales (Wallston, Wallston, & DeVellis, 1978), I have received hundreds of letters (or, lately, email messages) that read something like this:

> Dear Dr Wallston:
>
> I would like to use your MHLC scales in a study that I am proposing. Could you please let me know the reliability and validity of your scales so that I could put that information in my proposal?
>
> Sincerely,
>
> Sally Student

I recognize that we expect our students (and colleagues), when writing research proposals, to address the issue of the psychometric properties of the instruments they plan to incorporate in their studies, yet, when it comes to the validity of MHLC scales—a family of measures with which I am very much identified—I am often at a loss for words.

A number of years ago I put together a series of Frequently Asked Questions (FAQs) about the MHLC scales.[1] Here is how I attempted to answer that dreaded frequently asked question:

> This is one of the toughest questions I ever get asked. There is no simple answer. By now, the MHLC scales have been used in literally hundreds of studies. Generally, the results are that they are moderately reliable (i.e. they have Cronbach alphas in the .60–.75 range and test–retest stability coefficients ranging from .60–.70). These reliability estimates vary, of course, depending on many issues (e.g. the particular population studied; the length of time between administrations). Thus, it is fair to say that the scales are 'reliable'.
>
> The validity question, on the other hand, is harder to answer. The simple answer is that there's plenty of evidence in the published literature to back up an assertion that they do, indeed, measure individuals' health locus of control beliefs (which is the construct they were designed to measure). Validity, however, is such an elusive concept and cannot really be addressed without knowing 'validity for what purpose?' Because researchers want to measure health locus of control beliefs for a wide variety of purposes, there is really no easy answer to this question.

Unfortunately, as the number of MHLC scales proliferate—and today we have Form C (Wallston, Stein, & Smith, 1994) in addition to Forms A and B (Wallston et al., 1978) as well as the more recent God Locus of Health Control (GLHC) subscale (Wallston et al., 1999)—and as the number of studies using the various MHLC scales multiply, it becomes harder and harder to give a simple answer to what is an understandable, but simplistic question. In this article I attempt to clarify why I cannot easily say whether or not the MHLC scales are valid—at least not in a 'cookie-cutter' sentence or two that any health researcher can conveniently insert into the Measures section of a proposal or manuscript.

A primer on scale validity

What does it mean to say that a scale is valid? Most of us learned in graduate school that validity means that a scale (or instrument) measures what it 'is supposed to' measure. In other words, an anxiety scale is valid to the extent that it actually measures *anxiety*, not some related emotion such as depression or some unrelated construct such as social desirability. Bob DeVellis, a co-author on the seminal 1978 MHLC publication and the author of the widely adopted Sage publication, *Scale Development*, takes the approach that a scale is a measure of a latent (i.e. underlying, unobservable) variable, and validity of the scale is a function of the extent to which that latent variable is the underlying cause of item covariation within the scale (DeVellis, 2003).

According to DeVellis, 'Validity is [conventionally] inferred from the manner in which a scale was constructed, its ability to predict specific events, or its relationships to measures of other constructs' (2003, p. 49). The operations in that sentence relate to the three essential types of validity: (1) content; (2) criterion-related; and (3) construct:

> Content validity concerns item sampling adequacy—that is, the extent to which a specific set of items reflects a content domain . . . In theory, a scale has content validity when its items are a randomly chosen subset of the

> universe of appropriate items. (DeVellis, 2003, pp. 49–50)

In practice, few scales are made up of a *randomly* chosen subset of items. Instead, we opt for a *carefully* chosen set of items, and we turn to knowledgeable colleagues to serve as 'expert judges' of the adequacy with which our scale items represent the content domain of our measures.

As the term implies, all that is necessary for a scale to have criterion-related validity is for the scale to demonstrate 'an empirical association with some criterion or "gold standard"' (DeVellis, 2003, p. 50). Thus, if a self-report measure of anxiety correlates 'highly' (by which we usually mean $r \geq .60$) with a diagnostic determination of clinical anxiety by a trained psychological or psychiatric examiner, the self-report scale is said to have criterion-related validity. DeVellis groups *predictive*, *concurrent* and *postdictive* validity under the same umbrella as criterion-related validity.

Construct validity:

> . . . is directly concerned with the theoretical relationship of a variable (e.g., a score on some scale) to other variables. It is the extent to which a measure 'behaves' the way the construct it purports to measure should behave with regard to established measures of other constructs. (DeVellis, 2003, p. 53)

For example, anxiety and distress are conceptually quite similar, so an anxiety scale would have construct validity if it correlated 'significantly' and positively with an indicator of distress. Conversely, although both anxiety and anger are considered subtypes of negative affect, we might question the construct validity of an anxiety scale that correlated 'too highly' (say $r \geq .45$) with a measure of anger, and we would definitely have doubts if the anxiety scale correlated at all positively with a measure of positive affect.

Convergent, *discriminant* and *known-groups* are three subtypes of construct validity. For convergent validity, a measure should correlate moderately (say $r > .30$ to $r < .40$) with measures of similar, but different constructs. For discriminant validity, a measure should *not* correlate with measures of distinctly different constructs. Known-groups validity is demonstrated when individuals from populations that are 'known' to be 'high' (or 'low') on the construct being assessed score higher (or lower) on the purported measure of that construct than individuals 'known' to be 'low' (or 'high') on that construct. For example, an anxiety measure would have known-groups validity if people nominated by their friends as being 'nervous Nellies' scored higher on the measure than individuals whose friends characterized them as 'cool as a cucumber'. Also, factor analysis can be utilized for construct validation purposes if a scale is theoretically believed to be either definitely unidimensional or multidimensional and if, in the latter instance, the various dimensions are identified a priori.

It is usually difficult to establish a measure's construct validity or, for that matter, to refute the fact that a measure lacks construct validity. The process is an ongoing one, consisting of a series of tests of theoretically derived hypotheses. Each time one of these hypotheses is confirmed, our confidence in the construct validity of the measure is enhanced. But, if a hypothesis is not confirmed, we do not necessarily conclude that the measure is invalid.

Each study that uses a particular instrument can be construed as an additional opportunity to demonstrate that measure's validity. Usually, it is not sufficient to claim validity for an instrument simply because it has content validity. If there is a recognized 'gold standard' by which to establish a measure's criterion-related validity, that is often sufficient, but for many new measures there does not exist a 'gold standard'. It is in these instances where construct validity becomes both necessary and sufficient.

The MHLC as a family of instruments

One should not speak of the MHLC as if it were a single instrument. First, there is the original, health-focused, version of the instrument that has two more-or-less equivalent forms (A and B) each consisting of three six-item subscales: Internality (IHLC); Powerful Others externality (PHLC); and Chance externality (CHLC; Wallston et al., 1978). Next is Form C, designed to flexibly assess patients' locus of control beliefs regarding an existing medical condition (Wallston et al., 1994). Aside from the obvious difference between these forms—A and B tap

beliefs about control of one's *health status* while C taps beliefs about control of one's *illness or disease*—subsequent factor analyses revealed that the six items making up the single Powerful Others dimension in Form C constitute two independent dimensions—Doctors and Other People, each with three items.

More recently, my colleagues and I developed the God Locus of Health Control (GLHC) subscale (Wallston et al., 1999) that can be administered alone or in conjunction with any of the three existing MHLC forms or individual subscales from forms A, B or C. Similarly, any of the MHLC subscales can be administered alone or with other subscales. Thus, when it comes to discussing the validity of the MHLC *scales*, it is probably more correct to discuss the validity of an interrelated set of scales—a family of instruments, if you will—rather than a single entity. In any one study, there is a choice to be made as to which form of the instrument or which subset of subscales to administer. Unless the purpose of a study is explicitly to test the validity of the MHLC, it usually suffices to administer only one of the three forms (A, B or C), either with or without the GLHC items included.

The initial case for the validity of the MHLC scales

Although we never focused on establishing the content validity of the MHLC scales, in hindsight we have probably done as good a job with this aspect of validity as with any of the others. Initially, back in the mid-1970s when we developed the item pool for Forms A and B, our 'expert judges' consisted solely of members of our own research team. We each wrote and critiqued one another's items until we were satisfied that we had a sufficient pool of 81 items that covered our understanding of the domains of internal health locus of control, powerful others health locus of control and chance locus of control (including fate and luck under the rubric of chance). We then administered those items to a diverse sample of respondents whom we recruited at the Nashville Municipal Airport (see Wallston et al., 1978, for details) and eliminated items that had insufficient variance, loaded highly on more than one dimension, or correlated significantly with a measure of social desirability bias.

The fact that since the mid-1970s the MHLC scales have been adopted for use by hundreds of health researchers around the world can, perhaps, be construed as at least evidence that they have 'face' validity, the weakest form of validity. On the other hand, we were careful never to claim that the three original subscales of the MHLC were all that were necessary to fully tap the construct of health locus of control. For example, one potential internal dimension that has never been developed is the belief that one's genes determine one's health.[2] The development of the God Locus of Health Control subscale (Wallston et al., 1999) was an attempt to broaden the content validity of the MHLC, and the work by Chaplin et al. (2001) suggests that God represents a third type of external locus, sharing some common variance with the other external loci (i.e. Chance and Powerful Others), and empirically independent of Internality. However, a still undeveloped external dimension is the physical environment as a locus of control over one's health. The physical environment in which we exist plays a very important role in shaping our health status, but until an environmental locus of health control scale is developed and put to an empirical test, we will not know how important this dimension is or how necessary it is to include a measure of it in our studies.

Forms A and B

The validity evidence put forth in our 1978 article on the development and validation of the MHLC scales consisted principally of four arguments:

1. Each of the MHLC subscales correlated significantly and positively with its counterpart from Levenson's generalized I, P and C scales (Levenson, 1973) after which the MHLC was modeled. For instance, IHLC correlated .57 with Levenson's I-scale, but only –.12 with the P scale and –.14 with the C scale, respectively. This could be construed as evidence of the MHLC's criterion-related validity.[3]
2. The IHLC and PHLC subscales were uncorrelated ($r = .12$) with one another, PHLC and CHLC were only weakly positively correlated ($r = .20$),[4] and IHLC and CHLC were weakly negatively intercorrelated ($r = -.29$),

thus supporting the construct validity claim that these dimensions were more-or-less orthogonal to one another.

3. Neither the IHLC nor PHLC subscale was highly correlated with a measure of social desirability bias, an argument for the MHLC having discriminant validity (although the correlation with social desirability for the CHLC subscale ($r = -.24$) was significant at $p < .05$).
4. Finally, it was shown that the IHLC was positively correlated ($r = .40$) and the CHLC was negatively correlated ($r = -.28$) with a two-item measure of self-reported health status, evidence of the construct validity of these two dimensions.[5]

On balance, the initial case for the validity of Forms A and B of the MHLC scales (with the possible exception of the IHLC subscale) was not a particularly strong one. Luckily, as more health researchers began including the MHLC scales in their studies, the validity evidence began to accumulate. Some of that early evidence appeared in two chapters that Barbara and I wrote in the early 1980s (Wallston & Wallston, 1981, 1982), as well as in the last article that we worked on together (Wallston, Wallston, Smith, & Dobbins, 1987), an article that was published after her untimely death in early 1987.

Form C

The work on Form C started in 1989. Because of the proliferation in the literature of new scales, modeled after the MHLC, assessing such constructs as 'cancer locus of control', 'mental health locus of control', 'pain locus of control' and so forth, I perceived a need for a 'generic', easily modifiable measure of locus of control beliefs. The problem was that each new scale developer started almost *de novo*, selecting an arbitrary set of item stems, thus making any sort of between-study comparison very difficult. I also had the advantage of being in the middle of a longitudinal investigation of behavioral aspects of rheumatoid arthritis (RA), so I could administer arthritis-specific items to my sample and compare their responses to data from Form B that I had already obtained. The other members of my research team helped write and edit items for this new version. Once I had some sense from my arthritis data that the new scale was both reliable and valid, I made it available to other health researchers to use with other populations.

The initial case for the validity of Form C of the MHLC, presented in the 1994 article by Wallston, Stein and Smith, was stronger than that presented for Forms A and B in the 1978 article by Wallston, Wallston and DeVellis. For one thing, data from multiple samples representing patients with arthritis, chronic pain, diabetes or cancer were presented rather than data from a single sample. Among the validity evidence for Form C was:

1. In our sample of patients with rheumatoid arthritis, correlations between Form B and Form C of the MHLC showed that the two Internality subscales correlated $r = .59$, the two Chance subscales correlated $r = .65$ and Powerful Others from Form B correlated $r = .55$ and .38 with the Doctors and Other People subscales from Form C, respectively. This was evidence of concurrent validity, a form of criterion-related validity.
2. Patients with diabetes scored higher on the Internal subscale of Form C than did patients with chronic pain, cancer or rheumatoid arthritis. The RA patients, in turn, were lower on Internality than those with chronic pain or cancer. The diabetes patients also scored lowest on the Chance subscale, while those with cancer had higher Chance beliefs than those with RA or chronic pain. Finally, the cancer patients were also highest in attributing a change in their condition to Other People and were similar to the diabetes patients in believing that Doctors were responsible for their condition getting better. This was evidence of known-groups validity.
3. In both the arthritis and chronic pain samples, the Internal subscale from Form C was significantly and negatively correlated with measures of pain and helplessness, while the Chance subscale was significantly and positively related to measures of depressive symptoms and helplessness. The Other People subscale was consistently positively related to helplessness in both samples. These correlations with other constructs are evidence of convergent validity for Form C.
4. The mean scores for the sample of chronic pain patients increased significantly on the

Internality subscale of Form C and decreased significantly on the three external subscales (i.e. Chance, Doctors and Other People) as a function of having received a six-week behaviorally oriented pain management program. This theoretically predicted pattern of change scores is evidence of the construct validity of Form C.

5. Form C explained more of the unique variance in the pain ratings of the arthritis patients than did Form B, while the opposite pattern was found for the measure of depressive symptomatology.[6] Both of those findings were consistent with theoretically derived hypotheses and, thus, are further evidence for Form C's construct validity.

The GLHC

Back when we were developing the MHLC in the mid-1970s, a number of items in the original item pool alluded to God as the locus of health control, but none of the 'God items' survived our inclusion/exclusion criteria for Forms A or B. In the 1990s, however, a colleague from a 'Bible Belt' state who was using Form C as a cancer locus of control scale mentioned that many of her subjects expressed frustration that the instrument did not assess anything about what they considered to be the main determinant of their health, i.e. God. With the help of my colleagues on the arthritis project, we decided to create the GLHC subscale and to try it out on participants in our longitudinal study. As with Form C, once we had some evidence of the scale's psychometric properties from our own study, I made it freely available to other health researchers in the hope that they could add to the evidence of the instrument's validity.

The initial case for the validity of the GLHC was published in 1999 in an article that was part of a Special Issue of *Cognitive Therapy and Research* guest edited by Vanessa Malcarne. The article on the GLHC contained data from two of my RA samples and Malcarne's study of persons with systemic sclerosis (SSc), another severe, chronic and progressive rheumatic disease. The alpha reliability for the six-item GLHC was ~.90, higher than any of the other health locus of control scales. The main construct validity case for the GLHC made in the 1999 article consisted of:

1. Positive correlations (r = .29 and .32) between GLHC scores and ratings of the importance of religion in the two RA samples, and evidence that SSc patients who actively practiced their religion scored higher on the GLHC than those who did not.
2. Modest positive correlations (r = .20 to .22) between GLHC scores and the Other People dimension of Form C for all three samples, and moderately high correlations (r = .44 and .47) between GLHC and CHLC for those in the RA samples. (All other correlations with Form C dimensions, especially Internality and Doctors, were not significant.)
3. Positive correlations (r = .42 and .47) between GLHC and turning to religion as a way of coping with pain for the RA samples, and a positive correlation (r = .49) between GLHC and the religiosity subscale of the Ways of Coping Checklist-Revised for the SSc sample.

Also, there were additional 'findings' presented in the Wallston et al. (1999) article that spoke to the convergent and discriminant validity of the GLHC scale, such as the fact that GHLC correlated (r = .28 and .31) with negative affect in two of the three samples, or the absence of any correlations with gender, income or level of physical disability.

The MHLC and health behavior

One of the main ways that the MHLC scales have been used is as predictors of health behavior. This is consistent with the scales' theoretical origins, namely Rotter's (1954) social learning theory, where locus of control is conceptualized as a generalized expectancy. In Rotter's theory, *expectancies* (such as those regarding the likelihood of a desired reinforcement occurring as the result of a particular behavior or set of behaviors in a particular situation) and the *value of that reinforcement* to the individual in that same particular situation are the main determinants of *behavior potential*, or the likelihood of that behavior occurring in that specific situation. Generalized expectancies (such as locus of control beliefs) are cross-situational; thus, they are more trait-like than state-like. The MHLC was conceived to be partway between a trait-like and state-like measure; it was supposed to

be applicable to a variety of health-related behaviors and situations, but sensitive enough to change as a function of one's health-related experiences.

The obvious hypothesis, especially for people who highly value their health, is that people who score highly on the IHLC dimension (and who, therefore, believe that their own health behavior determines their own health status) should be *more* likely to carry out healthy behaviors than someone who scores low on the IHLC or who values other outcomes more highly than being healthy (see Wallston, 1991; Wallston & Wallston, 1982). Similarly, if someone scores high on the CHLC subscale (thus believing that it is fate, luck or chance that determines their health status), they should be *less* likely to carry out recommended health behaviors.[7] Most of the studies that attempted to correlate MHLC scores with measures of health behavior did not find evidence of a strong association between any of the three MHLC subscales and behavior, particularly if they looked at a single behavior rather than an index of behaviors. In fact, the bivariate correlations seldom exceeded .30 signifying that MHLC beliefs explained less than 10 percent of the variance in any particular health behavior (see Wallston, 1992). This was even the case when taking into account the value of health to the individual.

From a construct validity perspective, however, it is extremely important to remember that locus of control does not operate alone to determine behavior potential (Wallston, 1991, 1992). Not only does the value of health theoretically moderate the relationship between health locus of control beliefs and health behavior, but so does *self-efficacy*, a behavioral expectancy that the individual can do the behavior, as well as *perceived instrumentality*, an outcome expectancy that doing the behavior will lead to good health. I can, for example, have an internal orientation in regard to my health and I can believe that being in good health is extremely important to me, but if I do not believe that I can carry out the behavior or I do not believe that doing that particular behavior will lead to good health, I am not likely to engage in that behavior. Although many studies have been carried out linking self-efficacy to health behavior (see Luszczynska & Schwarzer, 2005), few, if any, studies linking MHLC to health behavior have assessed self-efficacy as a moderator of that relationship. Furthermore, none that I am aware of have included the perceived instrumentality of the behavior as yet another moderator of the relationship between an MHLC subscale score and a measure of health behavior.[8] Thus, just because there is not a *strong* correlation between an MHLC score and a measure of health behavior does not mean that the MHLC is an invalid scale. All it means is that health locus of control beliefs *alone* play a modest role in explaining health behavior.

Steptoe and Wardle (2001) argued that the inconsistent and small associations found between MHLC scores and health behavior may be due to the relatively small sample sizes employed in most of the studies, and to an over reliance on the Pearson product-moment correlation as the measure of statistical association. They administered Form B of the MHLC along with a measure of 10 health behaviors to over 7000 university students in 18 European countries. When analyzing their data using partial correlations (controlling for age, sex and country), they found that IHLC scores were positively associated with four of the behaviors, CHLC scores were negatively associated with six of the behaviors and PHLC scores were positively associated with three and negatively associated with two of the health behaviors. As with many other studies, the correlations, although statistically significant, were small, accounting for no more than a small percent of shared variance between health locus of control beliefs and health behaviors.

When Steptoe and Wardle analyzed their data using multivariate logistic regression analysis, however, they found striking differences on health behavior for individuals in the top quartile on an MHLC dimension compared to individuals in the lowest quartile. For example, an individual in the highest quartile on the IHLC subscale was 77 percent more likely to exercise than someone in the lowest quartile. Not only did their multivariate logistic analyses control for age, sex and country, but they also controlled for the other health locus of control dimensions. One lesson from Steptoe and Wardle is that new statistical approaches might be necessary to establish the validity of the MHLC scales (see

Masters and Wallston, this issue, for an extension of this argument).

The action is in the interaction

It is not only when predicting health behavior that MHLC scales should be thought of as moderators instead of, or in addition to, thinking of them as main effects. About 10 years ago I published a chapter along with Shelton Smith in which we presented a number of examples where measures of perceived control of health (e.g. MHLC scale scores) moderated (or were moderated by) other constructs to predict a variety of dependent variables in a variety of populations (Wallston & Smith, 1994). One study we highlighted in that chapter was conducted by Alan Christensen and his colleagues at Iowa. Christensen et al. (1991) gave the IHLC and PHLC subscales to 96 end-stage renal disease patients, 30 of whom had had unsuccessful kidney transplants and 66 of whom had never been transplanted and, thus, had never experienced a transplant failure. The patients were also administered the Sickness Impact Profile as a measure of disease severity, and the Beck Depression Inventory as the measure of depressive symptoms, the main outcome variable. Christensen et al. actually predicted, and found, two three-way interactions, one involving the IHLC scale and one involving the PHLC scale. The pattern of results was similar for both types of MHLC beliefs, but only for patients with high disease severity. In the failed transplant group, patients with both high IHLC and low PHLC scores were more depressed than patients with low IHLC and low PHLC. Among the patients who had never had transplants, the opposite effects were found.

The implication of those findings by Christensen et al. (1991) is that contextual variables are important to consider in interaction with health locus of control beliefs when predicting the effects of an illness on psychological states. In 1994, Shelton Smith and I wrote:

> Beliefs in the controllability of health are more critical when those beliefs are challenged. When challenged, strong beliefs in control can actually be detrimental rather than beneficial. The experience of illness in and of itself challenges a belief in control over one's health. (Wallston & Smith, 1994, p. 159)

This illustrates the complexity of the relationship of health locus of control beliefs (and, thus, MHLC scale scores) to measures of other outcomes of interest to health researchers. Many of the articles that appear in the Special Issue on research with the MHLC scales in the *Journal of Health Psychology* are further demonstrations that 'the action is in the interaction'. They also, however, illustrate how difficult it is to answer the question, 'what is the validity of the MHLC scales?'

Conclusion

The answer that has appeared for years on the MHLC website about the validity of the MHLC scales is basically a sound one, but one that needs a little tweaking:

> The simple answer is that there's plenty of evidence in the published literature to back up an assertion that the *various MHLC subscales* do, indeed, measure individuals' health locus of control beliefs (which is the construct they were designed to measure). Validity, however, is such an elusive concept and cannot really be addressed without knowing 'validity for what purpose?' Because researchers want to measure health locus of control beliefs for a wide variety of purposes, there is really no easy answer to this question. *Taken as a whole, the evidence for the validity of the MHLC subscales has been modest, but this varies as a function of the particular subscale being used, the appropriateness of the statistical analyses being conducted, and, most particularly, the theoretical contexts in which validity is being examined.*

Notes

1. Initially we mailed out these FAQs to anyone requesting copies of the MHLC scales. These days, they are accessible from the MHLC homepage on the Internet: http://www.vanderbilt.edu/nursing/kwallston/mhlcscales.htm.
2. Although genes are clearly 'internal' to the individual, they are inherited from one's parents (who are powerful others), so it is unclear whether a Gene Locus of Health Control subscale would correlate more highly with the IHLC subscale or with PHLC.
3. Even more impressively, CHLC correlated .80 with

Levenson's C scale. Lost in the shuffle, however, was the fact that PHLC only correlated .28 with Levenson's P scale, a fact that throws into question the criterion-related validity of both our and Levenson's measures of 'powerful others' LOC.

4. The .20 correlation between the PHLC and CHLC subscales was much lower than the .60 intercorrelation of Levenson's P and C scales, thus bolstering the claim that powerful others and chance are orthogonal dimensions when applied to the health domain.
5. This was actually a test of construct validity more than predictive (or criterion-related) validity. Quite frankly, little of the evidence presented in this seminal article on the MHLC made a strong case for the validity of the PHLC scale which was uncorrelated ($r < .06$) with self-reported health.
6. It is noteworthy that the only consistency found in the correlations between the Doctors subscale from Form C and the measures of pain, depression and helplessness was the absence of any correlation with depression. Although this might be construed as evidence of the discriminant or divergent validity for the Doctors subscale, it is a weak case for that subscale's validity.
7. The hypothesis about the relationship between PHLC and health behaviors was less straightforward. If someone believes that it is the behavior of other people that affects their health, there is no particular reason why that person should engage in health behaviors *except* if they also believe these 'powerful others' want them to carry out the behavior and/or they are trying to please or win approval from the powerful others. To my knowledge, this more complex hypothesis has never been adequately tested.
8. This is very similar to the argument made in my 1992 'Hocus-pocus, the focus isn't strictly on locus' article, although there I was making the case for IHLC and health value moderating the relationship between self-efficacy and health behavior.

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