Intra-cultural Variation in Folk Medical Knowledge: A Comparison between Curers and Non-curers
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Intracultural Variation in Folk Medical Knowledge: A Comparison Between Curers and Noncurers

This paper investigates variation in folk medical beliefs in a Tarascan community in west-central Mexico. The data are from a structured interview completed with ten traditional curers and a like-sized comparison group of noncurers. Three possible patterns of interinformant agreement are described and tested using the quadratic assignment program. The results suggest that although curers and noncurers do differ, the differences are not so great that they represent two variant systems of medical beliefs. Rather, there is a single system of beliefs common to both groups, but with curers showing higher agreement among themselves in expressing this system than noncurers. This finding, and a related one showing higher agreement among older informants, are explained in terms of culture learning. Curers and older people share more knowledge about illness because of their greater experience in both dealing with and communicating about illness. A model of folk medical knowledge is then presented and systematic variation from this model examined.

An assumption that is implicit in much of the literature on folk medical practices is that traditional healers and their patients share the same cognitive understandings about illness (e.g., Clark 1970:163; Helman 1984:47; Rubel and Sargent 1979:3). This assumption is investigated here by looking at variation and consistency in responses to a structured interview given to both a group of traditional healers, who specialize in herbal remedies, and noncurers. The interview was designed to be representative of folk medical knowledge in Pichátaro, a rural Tarascan community in west-central Mexico, and consists of a series of questions about illness beliefs and practices. The issue of variation in knowledge will be approached from two perspectives. The first is quite specific and is concerned with the extent and nature of variation in folk medical knowledge between curers and noncurers. The second is more general as it addresses the broader problem of describing cultural knowledge given the presence of intracultural variation.

Variation in Medical Knowledge

Folk healers have been a popular subject of ethnographic inquiry. Yet they have often been studied in isolation, with little attention given to how they relate, interact, and contrast with other participants in the health-care system, such as people seeking help and other providers of health care (Fabrega 1972:183; Kleinman 1980:34). As a case in point, and the topic of interest here, research on how medical beliefs of curers and laymen are distributed in particular settings is relatively rare (Fabrega and Silver 1973; Kleinman 1980:chap. 7) and the varying bases upon which folk practitioners validate their curing functions are not well described. The issue here is, as Fabrega and Silver (1973) point out, "whether practitioners in different cultures, when compared to laymen, have a dif-
different, more specialized, or more highly structured basis for their approach to medical problems (p. 94).

This question was first systematically addressed by Fabrega and Silver (1973) in a unique study that examined differences in responses to a series of questions about illnesses given to groups of both shamans and nonshamans in Zinacantan, Mexico. Two different interview formats were used. For the first, a chi-square analysis found no significant differences between the two groups in evaluating symptoms as indicators of illness. However, in the second interview, as a group the shamans tended to respond in a more traditional manner, stating more frequently that deities were the cause of illness and that the appropriate recourse for more illnesses were shamans. In addition, the shamans tended to be more consistent with themselves across the series of questions asked. Fabrega and Silver concluded that shamans do not legitimate their status through a specialized knowledge of either the body or illness manifestations but rather through spiritual power and ceremonial knowledge.

Curers in Pichátaro are quite different from the shamans described by Fabrega and Silver. The most basic distinction is that the shaman in Zinacantan is thought to possess spiritual power whereas curers in Pichátaro are not. In Zinacantan, the greater part of curing is spiritual as most illnesses are thought to be caused by supernatural events. In addition to curing ceremonies, the Zinacanteco shaman plays a central role in a variety of ceremonial functions, such as agricultural rituals and rainmaking ceremonies. Curers in Pichátaro are primarily herbalists whose main function is to restore bodily equilibrium which has been upset by diet, external factors (such as weather), or emotional disturbances. Curers do not usually treat illnesses caused through supernatural means, including witchcraft. They perform few, if any, curing ceremonies (an exception might be the “limpia” or cleaning for certain illnesses such as evil eye) and none of any other type. One question to be asked of the data is: If not through spiritual power, then how do curers in Pichátaro legitimate their status as healers?

Variation in medical knowledge is also of theoretical interest because similarities and differences in the belief systems of practitioners and their patients are likely to affect how treatment alternatives are perceived and utilized. For example, in Pichátaro, the degree to which the curer’s knowledge about illness differs from that of laymen is often an important consideration in the treatment decision-making process (cf. J. C. Young 1981:chap. 6). People in Pichátaro would go to a curer rather than attempt treatment at home when they felt they did not possess the knowledge and experience concerning a given illness and its appropriate remedy. Often curers attempt to keep the ingredients used in their herbal remedies a secret. On the other hand, it has been argued (Kleinman 1980:114; Horton 1967; Obeyesekere 1977) that similarity in beliefs between practitioner and patient may have a beneficial effect on the efficacy of treatment. In Pichátaro, curers, when treating illness, explain it in folk terms easily understood by their patients and provide remedies having the appropriate qualities given these beliefs. However, such a congruence of expectations does not necessarily mean that both parties share exactly the same system and medical beliefs, and indeed some variation is inevitable (Wallace 1970).

Intracultural Variation and Cultural Knowledge

A number of recent articles have focused on intracultural variation and the problem of describing culture as something shared given this variation (Boster 1986; Burton and Kirk 1979; Ellen 1979; Furbee and Benfer 1983; Gardner 1976; Hays 1976; Mathews 1983; Pelto and Pelto 1975; Sankoff 1971; Weller 1983, 1984). The key question for intracultural variation is this: In order to function in a cultural system, is it necessary for people to share cultural knowledge or is it possible for people to have varying degrees of cultural competency? Phrased in terms of the curer-lay comparison studied here, the question can be made more specific: Do curers validate their curing functions by commanding a specialized, esoteric body of knowledge about illness and its manifestations,
or rather, does their practice depend upon specific skills in the implementation of a more or less shared body of knowledge?

At the center of these questions are the concepts of sharing and variation, and specifically, what is significant variation and how is it to be measured. To say that individuals vary is to state a truisim, and no one would go so far as to say that a shared culture implies complete cognitive equivalence among informants, but how to incorporate variation and individual differences in culture theory is problematic. Responses to the issue of intracultural variation in the anthropological literature have ranged from dismissing individual differences as minor variations on a cultural theme (see Pelto and Pelto 1975 for examples) to statements that there is so much variation in cultural knowledge that the idea of a shared cultural system is untenable (Crick 1982:295).

Although both of these positions have merit, they represent extremes and each is correct only within certain limits. At a general level, both within the same culture and across cultures, people are the same and this fact motivates discussion of psychic unity (Goodenough 1963:chap. 4; Hutchins 1980), of high concordance codes and systemic culture patterns (Roberts, Golder, and Chick 1980; Romney 1982), and the search for cognitive universals (Berlin and Kay 1969; Heider 1972). On the other hand, it is also true that individuals are unique interactive products of experience and genetic makeup. Although cultures, like languages, can be studied at the level of “idiolects” for most purposes this is neither a practical nor desirable approach simply because individuals do not exist apart from a social setting and consequently their view of the world will be affected by that setting.4

Variation, then, because it occurs in a social setting, cannot be considered solely an individual phenomenon. Indeed, as early as 1936, Linton pointed out that much variation in cultural knowledge is distributed in a systematic fashion. He argued that the cognitive content of an individual mind is to a great extent determined by the role system, especially by sex roles and the division of labor. Recent research has examined the distribution of informant disagreement and has indeed found that much of the variation in cultural knowledge is not random (i.e., idiosyncratic) but patterned (Boster 1986; Cancian 1963; Gardner 1976; Hays 1976; Mathews 1983; Rose and Romney 1979; Sankoff 1971). For example, in Agaruna plant identification, Boster (1986) shows that women agree more with other women than with men, and women in the same kin group agree more often with each other than with women outside their kin group. Since women gather plants and men do not, and women in the same kin group work and live together, variation and sharing in plant knowledge along these lines cannot be considered surprising. Patterning in variation is a consequence of living in a culture.

The recognition of systematic patterning in the distribution of cultural knowledge leads to two questions. First, how do such patterns arise, and second, can their occurrence be explained or even predicted? Prediction is more difficult than explanation because it requires testing specific hypotheses as to which individuals are likely to form a systematic and describable variant. In order to answer these questions, our perspective on the distribution of cultural knowledge must be broadened to include a component for cognitive development and change. Culture is learned (Goodenough 1981) and the things that are learned best, and hence shared, are the things people communicate. Although the specific topic is language learning, the following quote by Goodenough is directly applicable to all kinds of cultural learning:

Because an individual creates his own version of what he understands the language of his fellows to be, the degree to which his version approximates their individual versions must depend . . . on the opportunities he has for discovering significant differences in his and his fellows' speech. The more he and they talk together, and the wider the range of the situations and of subject matters covered, the greater the opportunities to discover these differences and to adjust speech to reduce the variance. [1981:36]

Thus, through participation and communication, people come to both learn more and share more.
Of course, the idea of culture learning is not new in anthropological theory and indeed a number of researchers have used it to explain at least part of the intracultural variation found (e.g., Boser 1986; Gardner 1976:463; Goodenough 1981; Hays 1976:505). But, culture learning can play a more powerful role in anthropological theory. In addition to explaining variation and sharing, culture learning can also be used in a predictive sense by guiding the development of testable hypotheses. For example, informant characteristics will be used to test a specific prediction about the distribution of knowledge, namely that some people share more because they have learned more in specific situations. In this paper, the relationship between occupation as a curer and folk medical knowledge will be explored. The cultural learning hypothesis leads to the prediction that curers will share more knowledge about illness because they have more experience in dealing with and communicating about illness. After presenting a method for testing this hypothesis, it will be shown that as a group, curers agree more with other curers than with noncurers, but that both groups are best described by a single model of folk medical knowledge. This model of folk medical knowledge is then presented and systematic variation from this model discussed.

The Research Setting

The fieldwork was carried out in Picháctaro, a rural community of approximately 3,000 people of Tarascan Indian background located in the west-central Mexican state of Michoacán. The town is located on the eastern edge of the Sierra Tarasca about 30 kilometers from the regional market and administrative center of Pátzcuaro. Most adults are Spanish-Tarascan bilinguals, although the use of Tarascan among the young is declining. The people of Picháctaro are primarily maize farmers, with fruit growing, resin collecting, some craft production, and temporary wage migration as secondary occupations.

At the time of the field research, traditional medical practices were being followed in Picháctaro, and a fairly large number of folk curers or curanderas (around 10) remained active. At the same time, recent years have seen a growing tendency toward the use of different forms of modern medical treatment, particularly since the construction of a motor road into the town in the early 1970s. Therefore, while the present study focuses specifically on traditional or folk medical practitioners, it should be kept in mind that these represent just one of a number of alternative sources of health care simultaneously available to the community.

Curanderas are persons skilled in the use of folk remedies in treating illness, who provide their services for a fee to others. These curers are almost exclusively women, usually middle aged or older, illiterate, and natives of Picháctaro. Some curers also practice as midwives, although this is not generally the case. The majority of curers had mothers (and often grandmothers as well) who were curers. For most, curing is not a full-time, nor particularly profitable, occupation. They use folk herbal remedies almost exclusively; rarely, if ever, incorporating manufactured or "doctor's" remedies into their treatments. Curers treat a variety of illness types, although there is de facto specialization since people tend to bring certain kinds of illnesses to curers more frequently than others. In particular, curers get disproportionately greater numbers of gastrointestinal and emotion-based illnesses (in the local view of illness causation), and fewer numbers of "cold" and flu-like illnesses. Curers also treat children and infants more frequently than adults. Curers, when treating illness, explain it in folk terms easily understood by their patients and provide remedies having appropriate qualities given these beliefs.

Interviewing Procedures

The interview was completed with 20 women, ranging in age from 22 to over 70. Ten of these had been previously identified as active folk curers and perceived themselves as such. The other 10 did not engage in curing other than routine home treatment within the immediate household. They were persons with whom we were well enough ac-
quainted to feel that they possessed only the usual familiarity with illness matters. The average age of the curers was around 53 years, while the noncurers averaged slightly under 46 years. The curers cannot be distinguished from the noncurers on the basis of education or socioeconomic status.

The size of the curer group is, of course, limited by the number of available folk practitioners. Even though the size of the noncurer comparison group is small, previous research with lay individuals in Pichátaro, as well as in another Tarascan community, have shown a relatively high degree of cultural consensus for the domain of folk medical knowledge (Garro 1983; Young and Garro 1982). Recent work by Romney, Weller, and Batchelder (1986) demonstrates that relatively small numbers of informants are sufficient to adequately represent domains characterized by high cultural consensus.

The structured interview format used as the primary data collection technique is known as a term-frame substitution task. Here, it consisted of 18 illness terms and 22 sentence frames (see Tables 1 and 2). Many of the items in this interview are from a larger question matrix developed in earlier research (J. C. Young 1978). The set of question frames used initially came out of informants’ statements about illness beliefs and practices elicited during a series of more informal interviews. The frames and questions used here are by no means thought to be exhaustive of illness beliefs in Pichátaro, but are representative of what informants express when they talk about illness.

In order to give this interview, each illness term is systematically placed in each belief frame and the informant is asked whether the resulting statement is true or not. In all, the interview consisted of 396 separate queries posed to each informant. It produced 28 18-by-22 item incidence matrices, in which each cell contains a “yes” or “no,” for each of the informants.

### Data Analysis: The Curer/Noncurer Comparison

The first step in the data analysis was to aggregate the individual matrices. For each pair of individuals a similarity score was calculated based upon the number of instances in which the same term-frame combination received the same answer from both women (Pearson’s r). Thus, the higher the value for each pair of informants, the more the two

<table>
<thead>
<tr>
<th>Term</th>
<th>Translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enfermedad de corazón</td>
<td>heart illness</td>
</tr>
<tr>
<td>Empacho</td>
<td>blocked digestion</td>
</tr>
<tr>
<td>Cólico</td>
<td>colic, sharp stomach pains</td>
</tr>
<tr>
<td>Mollera caída</td>
<td>fallen fontanelle; displacement of a section of the top of the skull</td>
</tr>
<tr>
<td>Disentería</td>
<td>dysentery</td>
</tr>
<tr>
<td>Color rubido</td>
<td>risen heat</td>
</tr>
<tr>
<td>Gripe</td>
<td>grippe, “cold,” “flu”</td>
</tr>
<tr>
<td>Deposisiciones</td>
<td>diarrhea</td>
</tr>
<tr>
<td>Sofoca del estómago</td>
<td>bloated stomach</td>
</tr>
<tr>
<td>Latido</td>
<td>“palpitations” brought about by eating delay</td>
</tr>
<tr>
<td>Broncomonia</td>
<td>bronchopneumonia</td>
</tr>
<tr>
<td>Anginas</td>
<td>swollen glands in the neck</td>
</tr>
<tr>
<td>Bilis</td>
<td>“bile,” illness resulting from strong emotions</td>
</tr>
<tr>
<td>Punzadas</td>
<td>sharp headache around the temples</td>
</tr>
<tr>
<td>Pulmonía</td>
<td>pneumonia</td>
</tr>
<tr>
<td>Mal de ojo</td>
<td>evil eye</td>
</tr>
<tr>
<td>Fogo</td>
<td>fever sores</td>
</tr>
<tr>
<td>Bronquitis</td>
<td>bronchitis</td>
</tr>
</tbody>
</table>

Table 1
Illness terms.
women responded alike. These values were used to create a 20-by-20 interinformant similarity matrix which was used in all further analyses.

Two procedures were used to explore for patterning in the data. The primary analytic technique used here is the quadratic assignment program (Baker, Hubert, and Schultz 1977; Hubert and Schultz 1976). The quadratic assignment program (described in more detail below) allows tests of specific hypotheses about relationships among and between curers and noncurers. Another technique, multidimensional scaling, was used to provide a spatial representation of the patterning underlying the interinformant similarities data. Multidimensional scaling is a procedure that takes a similarity matrix for a set of items and produces a set of coordinates for each item in Euclidean space. In this space, items highly similar to each other are grouped closely together, while dissimilar items are placed further apart. For this data, the more agreement in responses between a pair of women, the closer together they will be placed in a multidimensional scaling plot. The scaling may be done for a space of any dimension; in this case only the two-dimensional configuration will be presented, since the primary purpose is to discover how people cluster, rather than a determination of the underlying features or variables that structure the picture. The specific program used is KYST (Kruskal, Young, and Seery 1973).

In hypothesis testing, both a null hypothesis and an alternative hypothesis are needed. The null hypothesis is that there is no difference between the curers and noncurers, meaning that both groups share a common system of knowledge and any variation that occurs is random or idiosyncratic. For this set of data there are at least two alternative hypotheses that can be tested against this null hypothesis. The first is that curers have a separate system of knowledge distinct from that of noncurers. The second is more complex because it incorporates both sharing and variation. The hypothesis here is that the curers form a systematic variant in that they agree more with other curers, but that both groups share the same conceptual organization of medical knowledge.

Table 2
Belief frames.

<table>
<thead>
<tr>
<th>Number</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Can _______ come from anger?</td>
</tr>
<tr>
<td>2</td>
<td>Does _______ come from the “heat”?</td>
</tr>
<tr>
<td>3</td>
<td>Are there pains in the chest with _______?</td>
</tr>
<tr>
<td>4</td>
<td>When you leave a warm place and enter into the cold air, can you _______?</td>
</tr>
<tr>
<td>5</td>
<td>Can you get _______ from eating lots of “hot” things?</td>
</tr>
<tr>
<td>6</td>
<td>Does _______ come from an air?</td>
</tr>
<tr>
<td>7</td>
<td>With _______ does the head hurt?</td>
</tr>
<tr>
<td>8</td>
<td>Can you cure _______ with folk remedies?</td>
</tr>
<tr>
<td>9</td>
<td>Does _______ come from germs?</td>
</tr>
<tr>
<td>10</td>
<td>Does _______ come from not eating “by the hours”?</td>
</tr>
<tr>
<td>11</td>
<td>With _______ do you lose your appetite?</td>
</tr>
<tr>
<td>12</td>
<td>Can you get _______ from eating lots of cold things?</td>
</tr>
<tr>
<td>13</td>
<td>With _______ is there a temperature?</td>
</tr>
<tr>
<td>14</td>
<td>When you get wet, can you get _______?</td>
</tr>
<tr>
<td>15</td>
<td>With _______ is there pain in the stomach?</td>
</tr>
<tr>
<td>16</td>
<td>Does _______ come from the “cold”?</td>
</tr>
<tr>
<td>17</td>
<td>Does _______ come by contagion from other people?</td>
</tr>
<tr>
<td>18</td>
<td>Can _______ come from witchcraft? has</td>
</tr>
<tr>
<td>19</td>
<td>Does _______ come from walking about without shoes?</td>
</tr>
<tr>
<td>20</td>
<td>When you have _______, do you have to take “hot” remedies to be cured?</td>
</tr>
<tr>
<td>21</td>
<td>Can you cure _______ with “doctors” ” remedies?</td>
</tr>
<tr>
<td>22</td>
<td>Can _______ come from a fright?</td>
</tr>
</tbody>
</table>

Note: the word(s) italicized in each frame appear in the multidimensional scaling plot (Figure 3).
These three hypotheses, the null and the two alternatives, are depicted in the idealized multidimensional scaling plots of interinformant similarities shown in Figure 1. Model A represents the null hypothesis. Here there is no systematic variation in illness beliefs—curers do not tend to agree with other curers more often than with noncurers. Therefore, there is no strong clustering of either curers or noncurers, individuals are randomly distributed throughout the plot. Moreover, any variation that occurs is random and idiosyncratic.

Model B represents the hypothesis of the model of two variant systems of illness beliefs—one held by curing specialists, the other by lay people. Such a situation would likely be obtained where the basis of the curer's practice was in a specialized and esoteric body of knowledge about illness and its characteristics, related to, but a significant variant of, the lay tradition. Here it would be found that curers group together on the graph, separate from the noncurers, who would tend to form their own clustering.

A third possibility is that of a single system of beliefs common to both lay person and curer, with individuals varying according to their relative congruence with this standard (Model C). In this case one would expect a single clustering centering upon those individuals in a position to possess the most authoritative knowledge, which would presumably be the curers. Here, although curers and noncurers share the same system of medical knowledge, curers form a systematic variant that should be further explored and described. The important difference between Models A and C is that A specifies no curer

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Figure 1
Three hypothetical models for the curer/noncurer comparison.
clustering effect, whereas C does. It should also be mentioned that although Models B and C are consistent with the learning hypothesis, Model C represents the specific prediction that curers share more knowledge about illness because they have learned more about illness.

Each of these models can be evaluated by the quadratic assignment program (Hubert and Schultz 1976). The quadratic assignment program uses two matrices—a proximity matrix and a structure matrix. The proximity matrix used here consists of the interinformer correlations. The structure matrix, which is of the same size as the proximity matrix, represents the hypothesis to be tested. The structure matrices for Models B and C are shown in Figures 2 and 3. In each of these matrices, the first ten entries represent the curers and the next ten the laymen. The value 1 indicates that high correlations are predicted for these cells and 0 indicates expected low correlations (diagonals are always set to 0). Model A is not directly tested as it represents the null hypothesis and is therefore incorporated into the statistical procedure. The quadratic assignment program evaluates how well the model given in the structure matrix fits the data in the proximity matrix. The program provides both a test of significance (a z-score) and an index value, \(\gamma\). The index value is a measure of the structural closeness between the two matrices.\(^5\)

\[
\begin{array}{cccccccccccccccc}
\text{Curers} & \text{Noncurers} \\
C & 01111111110000000000 \\
U & 10111111110000000000 \\
R & 11011111110000000000 \\
E & 11101111110000000000 \\
R & 11110111110000000000 \\
S & 11111011110000000000 \\
& 11111011110000000000 \\
& 11111111101000000000 \\
& 11111111110000000000 \\
\end{array}
\]

\[
\begin{array}{cccccccccccccccc}
N & 00000000000111111111 \\
O & 00000000000101111111 \\
N & 00000000000110111111 \\
C & 00000000000111011111 \\
U & 00000000000111011111 \\
R & 00000000000111011111 \\
E & 00000000000111111011 \\
R & 00000000000111111011 \\
S & 00000000000111111101 \\
& 00000000000111111110 \\
\end{array}
\]

Figure 2

Structure matrix for Model B: two variant systems.
As can be seen in Figure 3, for the test of Model B, the intersections of curers with other curers and those of noncurers with other noncurers have 1s, and 0s are elsewhere. This corresponds to the hypothesis that curers will be highly correlated with curers and noncurers with noncurers and that there will be no correlation between curers and noncurers. In analogous fashion, the test for Model C (Figure 3) corresponds to the hypothesis that the correlations will be higher among the curers than elsewhere. If neither Model B nor Model C is significant, then the null hypothesis (Model A) cannot be rejected and the conclusion is that there is no difference in medical knowledge between curers and noncurers. The level for rejecting the null hypothesis is set at $p < .05$.

**Results**

The usual procedure in conducting statistical tests is to evaluate only one alternative hypothesis for a given set of data. For this set, Model C represents the most likely alternative based both on previous research done in other communities (Clark 1970; Fabrega and Silver 1973) that documents the similarity of folk beliefs between practitioners and laymen, and from personal fieldwork experience in Pichátoro with both curers and noncurers. As pointed out earlier, curers in Pichátoro diagnose illness and prescribe treat-
ment in a fashion easily understood by their patients. Model B was introduced and described because it is a logical possibility and may be appropriate for other researchers in other settings or domains. For those who are curious, however, the test of Model B was not significant.

A significant z-score was obtained for Model C, which means that support was found for the learning hypothesis and for a curer clustering effect. The z-score of 2.06 ($p < .048, \gamma = .496$) is close to the cutoff level of .05, and so although there is a significant curer clustering effect it is not as strong as expected. The Monte Carlo option in the program, which does not assume a normal distribution, was also used and leads to the same conclusion ($p < .04$).

The actual multidimensional scaling plot of interinformant similarities is shown in Figure 4 and shows the tendency for curers to cluster together more than noncurers. However, there is something else of interest in this plot. The numbers beside the identification letters represent the age in years of the informant at the time of the study. The noncurers located within the central cluster are all middle-aged or older, while those outside it, with one exception, are in their 30s or younger. Since increasing experience and knowledge about illness may not only be associated with being a curer, but also with age, the quadratic assignment program was run again in a strictly exploratory fashion. This time the sample was divided into two groups on the basis of the median age. Thus the 10 informants over the age of 50 formed the group that was expected to be more highly intercorrelated. The z-score for this run was larger (2.77, $p < .035, \gamma = .517$), indicating a somewhat stronger relationship than for the curer test (for the Monte Carlo test, $p < .01$). Age and curerhood are confounded in this sample.

Discussion

As previously stated, the basic question addressed by these findings is this: Do curers in Pichátaro validate their curing functions by commanding a specialized, esoteric body

![Figure 4](image_url)

Two-dimensional scaling plot of interinformant similarities. The letter “C” represents curers and “N” noncurers (stress = .162).
of knowledge about illness and its manifestations, or rather, does their practice depend upon specific skills in the implementation of a more or less shared body of knowledge? These results support the latter conclusion. It appears that agreement with these beliefs is related to the opportunity to learn this aspect of the cultural tradition. Knowledge about illness is best described as something learned rather than something shared. Curers, with their extensive day-to-day dealings with illness, have generally achieved a more highly patterned and consistent set of beliefs, but since these beliefs are not curer-specific, high levels of agreement also come about with increasing age in noncurers. As curers treat illness and as noncurers grow older and have more experience in dealing with illness, both learn about illness beliefs in a social setting where through shared communication and experiences they come to share a similar set of beliefs.

The learning hypothesis is also in agreement with views expressed by informants themselves who suggest that curers are successful because they have learned special treatment skills or because they have a special talent for communicating medical knowledge. Curers in Pichátarro, then, validate their status as healers through the knowledge of special skills that are learned through experience in treating illness and are consistent with a generally shared body of knowledge.

These findings render understandable one phenomenon which at first appeared contradictory in our study of illness treatment decision making in Pichátarro (J. C. Young 1980, 1981). Some people who expressed considerable confidence in folk herbal remedies also reported that they rarely consulted local folk curers. The reason is that although they are not curers themselves, they have had considerable experience in treating illness within their household and have often, in their view, been successful in achieving a cure. The above results show that the older, and by implication, the more experienced women in the same sample come into close agreement with the curers in terms of their traditional medical knowledge. Such women might rightly infer, then, that if their remedies cannot cure the illness, neither will the curers'. In such households, when home treatment is unsuccessful, another medical alternative other than a curer would be consulted.

The patterning in the multidimensional scaling plot indicates that there is a basic system of folk medical knowledge common to both lay person and curer. This overall similarity can be demonstrated another way by applying reliability theory (Nunally 1978) to informants. Reliability theory is commonly used in psychological test construction to determine if individual test items are tapping into the same knowledge base. Here, the same statistical methods are used but on informants rather than test items (see Romney and Weller 1984 for a fuller discussion of the theory). The reliability procedure in SPSS (Hull and Nie 1981) was used to calculate each informant's correlation with the aggregate data when that informant's contribution is subtracted from the total. These values are shown in Table 3 with curers and noncurers identified by C and N. Ages appear beside the letter to help in locating informants in Figure 4. The reliability values are all quite high (Cronbach's alpha = .949), supporting the assumption of a single system. This is not surprising given the importance of illness and illness behavior in Pichátarro, and numerous opportunities available to individuals there either to participate in or listen to conversations about illness. Next, as support has been found for a single cultural knowledge system for the domain of illness, a brief description of this system will be presented and then some specific areas will be isolated where there is variation in responses.

Data Analysis: Representing Medical Knowledge

Although a single representation of folk medical knowledge will be presented, it is important not to think of this model as some sort of a cultural standard. The idea of a cultural standard reifies the concept of culture and carries with it the implicit assumption that there is some sort of ultimate and true culture, and that deviations from this standard should be considered errors. Instead of a standard, a more flexible framework is needed. There is, perhaps, for most domains, a more common or " prototypical" pattern of cul-
tural knowledge. The use of the term “prototype” here is analogous to (but not the same as) its current usage in cognitive psychology (see Rosch 1975, 1978). A prototypical representation for a domain is an abstraction in that it does not exist in the mind of any single informant but serves as the “best example” across informant. In this sense, a prototypical representation may be seen as the model of the omniscient informant. Prototypical patterns do not depend on cultural homogeneity, and are based on the fact that people’s cognitive models are not identical and vary in either idiosyncratic or systematic ways. Idiosyncratic or random variation is expected and left unexplained, but the presence of systematic variation calls for explication. For most domains a single prototypical pattern, either with or without systematic variation from it, is sufficient, but there are also cases when there is so much systematic variation that a single cultural model is not adequate. In these cases, although each informant is represented by only one prototypical pattern, more than one prototypical pattern is needed to represent all informants. More than one prototype would be needed in the situation illustrated by Model B in Figure 1 where, for a given domain, specialists possess a different kind of knowledge than laymen.

The same set of term-frame data can be used to represent the illness belief system. A model of this system can be generated through the use of multidimensional scaling. In the scaling plot, each of the illness terms and beliefs frames from Tables 1 and 2 are represented, with location of each item in the plot determined by similarity among items. The model to be depicted here does not aim to encompass all of the information about illness in memory, but rather serves as a prototypical model of semantic relations among the illness terms and belief frames.8

The Folk Medical Belief System

Figure 5 depicts the two-dimensional solution. Illness terms are given in Spanish and appear in capitals. Belief frames appear in lowercase letters and are identified through English keywords highlighted in Table 2. There are three basic groupings in this plot, which correspond to the ways Pichatareños talk about and deal with illness (see J. C.
Figure 5
Two-dimensional scaling plot of illness terms and belief frames (stress = .235).

Young 1978, 1981). These three groupings are all related to a basic distinction between external and internal locus of cause that underlies the categorization of illnesses. On the left side of Figure 5 are the external causes of illness, the illnesses themselves (e.g., *gripa, bronquitis*) and their symptoms. The illnesses located in this section are primarily respiratory-tract illnesses brought about by contact with “cold” agents in the environment. External conditions are thought to upset the body’s internal balance. Illnesses are often attributed to changes in weather, especially cold and wet weather. Remedies with a “hot” quality that restores the balance are thought to cure the illnesses located in this section. The other illnesses in the plot are called “personal” illnesses by Pichatareños. These illnesses do not come about through contact with an external agent, but rather through failure to maintain a healthy internal balance, either through improper diet or emotional experiences. In the right-hand section, are the gastrointestinal, diet-related illnesses. Not eating or eating too many “hot” or “cold” things are common causal explanations for these illnesses. In Pichátaro, the idea of germs rarely comes up in discussions of illness. When it does, germs are equated with dirtiness and are thought to cause stomach problems and diarrhea when present in food, which explains why they are present in this section. The third group of illnesses and frames are located in the lower middle section of the plot. These are also related to an upset of the internal balance, but often the cause here is an emotional disturbance, such as fright or anger. The illnesses in this group are thought to be particularly amenable to treatment by home remedies. Other features of the Pichatareño medical belief system will be introduced in a later section that attempts to describe systematic variation in this system.

The scaling plot should not be interpreted as having literal correspondence to the structure of medical knowledge in memory, but should be thought of as having a functional relationship or isomorphism (Shepard 1975) with the organization of semantic memory. As mentioned previously, a model of this type is at best just one aspect of the information about illness in memory. Although the items in a semantic model may serve as cognitive reference points for understanding and organizing illness episodes, the actual occurrences
of illnesses are probably stored in another type of memory structure. Psychologists have labeled this type of structure “episodic” memory (Tulving 1972) and it contrasts with the type of semantic structure portrayed here. Semantic memory stores general knowledge about the world, and episodic memory is basically autobiographical and contains knowledge about events that are temporally dated. Cognitive accounts of medical knowledge have been criticized on the grounds that they divorce illness from its social context and its meaningfulness to people involved in illness situations (Good 1977; A. Young 1982), and these critiques emphasize the need for further research on how people conceptualize particular illness episodes. In fact, the explanatory model approach (Kleinman 1980) has attempted to fill this “episodic” gap. Both semantic and episodic memory are fertile grounds for anthropologists and each is appropriate for answering different questions. If your goal is, as it is here, to describe prototypical knowledge, that is, knowledge of a basic and general nature, then the type of semantic model depicted here is appropriate.

Evaluating Systematic Variation

Although there is an overall pattern of high agreement among informants, there is also variation present and in order to look at this variation more closely the following was done. Since distinctions between informants cannot be made solely on the basis of whether one is a curer or not, nor on age, the correlations with the total shown in Table 3 were used. The 10 informants with the highest correlations with the total were designated the reliable subjects and the other 10 the less reliable ones. In the multidimensional scaling plot, the most reliable are those closest to the center, and the least reliable ones are scattered around the edges. This division creates two groups that are maximally dissimilar for this sample and yet can be shown to share similar illness beliefs. If the quadratic assignment program is used (in a completely post hoc fashion), with the reliable informants forming the group expected to be more highly intercorrelated, the obtained z-score is 3.75 (p < .001, r = .55), a larger value than previously reported in this paper. However, if two new data matrices are created, one for the reliable group and one for the less reliable group, which consist of the aggregated term-frame response data for each of these groups, and one of these matrices is designated as the “structure” matrix and the other as the “proximity” matrix, and the quadratic assignment program is run again, the resulting z-score of 10.45 (p < .01) indicates that the pattern of responses is highly similar for the two groups. The correlation between the two aggregated matrices is a high 0.897. Thus, the less reliable and more reliable subgroups are at once both different and the same.

In order to explore variation, a difference matrix was made by subtracting the reliable group from the less reliable group. The patterning of disagreement between the two groups can be shown in yet another matrix, whose values are those term-frame cells for which there was a greater than average (i.e., more than two) difference in the number of informants in each group responding affirmatively. This matrix is shown in Figure 6. An “r” or “R” indicates a reliable informant responded affirmatively more often; an “l” or “L” indicates a less reliable informant responded affirmatively more often. Although the maximum possible difference between the two groups is 10, the largest obtained difference of 5 is indicated by capital letters with stars. Capital letters alone represent a difference of 4, and lowercase letters a difference of 3.

One of the most general features of the variation in responses is a pattern whereby highly salient notions about illness causation and consequences are generalized across illness types by the less reliable group, but more sharply differentiated—made more specific to particular illness types—among the more reliable group. This can be seen merely by noting the greater number of the letter “l”’s in Figure 4. This pattern is consistent with the learning hypothesis. The more reliable informants are the informants who have learned more about illness and thus make finer distinctions between illnesses—distinctions that may be important in diagnosis and treatment.
In the one frame that deals specifically with traditional curing practices (frame 20—"When you have ______, do you have to take 'hot' things to be cured?") the reliable group asserted the falsehood of the property, much more frequently, and more strongly, than the less reliable group. Further, while the less reliable group most often responded simply "yes" or "no," the more reliable group would, when disagreeing, specify some other quality (e.g., "temperate," "bitter," "a purgative") as being the appropriate one for the particular illness type in question. In addition, I have collected detailed descriptions of which herb or remedial quality is appropriate for a given illness type from other informants, and the reliable sample is more consistent with this information. Again, the reliable group exhibits more knowledge about the folk medical system.

There is also a clear pattern whereby the more reliable group more strongly asserts the falsehood of Western-derived concepts of illness causation. In frame 9 ("Does ______ come from germs?") and in frame 17 ("Does ______ come from contagion from other persons?"), all instances of disagreement between the two groups find the more reliable group more nearly unanimous in asserting the falsehood of the contagion property. As these beliefs are not part of the traditional system of medical knowledge, it is not surprising that the reliable group has not incorporated these beliefs.

There are also differences on those frames dealing with emotion-based causes. For frame 1 ("Can ______ come from anger?") and frame 22 ("Can ______ come from a
fright?”), there is a fair amount of disagreement, with the reliable group, for some illness types, asserting the truth of the property more strongly than the less reliable group, and for others more strongly asserting the falsehood of the property. As noted earlier, emotion-based illnesses are thought to be particularly appropriate for traditional treatment methods.

The one frame where the reliable sample generalizes more across illness types than the less reliable one is frame 11 (“With ______ do you lose your appetite?”). No explanation can be offered for the difference exhibited between the two groups.

Overall, however, the more detailed analysis of variation supports the learning hypothesis. The more reliable informants on the whole make finer distinctions between illness types and have an internally consistent belief system that may recognize, but does not incorporate, Western-derived approaches to illness cause and treatment.

Conclusions

What has been represented here is a single basic system of folk medical knowledge common to both curer and noncurers, with individuals varying according to their relative congruence with this standard. Those informants who come into closer agreement with each other are primarily the curers in the sample as well as those individuals who are older, and presumably more experienced in dealing with illness. These informants also tend to be more conservative in their responses, in terms of including fewer Western-derived concepts in their working knowledge of illness. For the curer this would seem to be important, as maintenance of the folk curer role as exclusively oriented toward traditional medicine removes the curer from direct competition with the Western-trained practitioner in most instances, and would seem to be an important part of the curer's successful adaptation to a changing medical situation.

The results reported here are similar in a number of respects to those reported by Fabrega and Silver (1973:94-122) in their comparative study of the medical knowledge of shamans and nonshamans in Zinacantan, Mexico. They also found evidence that curers in that setting do not validate their curing roles through a specialized body of knowledge about illness, but rather in terms of the consistency with which this knowledge is applied, and in terms of several personal attributes of individual practitioners. As in the present study, Fabrega and Silver also found a conservative tendency in the responses of the curers.

From the perspective of representing cultural knowledge systems, an implication of this study is that more attention needs to be directed toward understanding the processes by which cultural knowledge is acquired. Cognitive anthropologists have long been interested in the structures and processes that underlie knowledge systems, but the interest has been on internal psychological process and relatively little work has been done on the process of culture learning. This paper presents a way for studying the outcomes of the process of culture learning, but anthropologists also need to focus more on the relationship between changes in cognitive content and the communication processes and interactions on which such changes are based.

The central aim of this paper, however, is to provide an example of how the problem of intracultural variation can be approached. In the research reported here, at one level all informants are shown to be consistent with the same set of cultural beliefs, yet it is also possible to isolate systematic differences among groups of informants through the cultural learning hypothesis. By asking specific and testable questions about the nature of the variation present, anthropologists will be in a better position to discuss the implications of such variation.

Notes

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1This interview format is very similar in design to the term-frame substitution interview used in this paper to examine differences between curers and noncurers.

2Another study that looks at differences between practitioners and patients has been recently reported by Finkler (1984). Spiritualist healers and patients in Mexico identified medicinal plants, described usage and dosage for these plants, and answered questions about causes, symptoms, and cures for illnesses. Although Finkler reports greater agreement among the healers, the data are difficult to evaluate because of the small number of informants interviewed. For example, in the plant identification and usage interviews, the comparison is essentially based on four curers and two patients.

3Another type of folk practitioner, a “good” witch, treats illnesses thought to be caused by witchcraft.

4Wallace’s (1970) “organization of diversity” argument is one perspective that incorporates both sharing and variation. According to Wallace, it is not necessary for people to share the same view of the world, but only that their views lead to actions that are mutually predictable. As the criterion of mutual predictability presumes sharing in conceptual knowledge at a general level, Wallace’s position shows the interdependence of both sharing and variation in representations of cultural knowledge.

5Another anthropological illustration of the quadratic assignment program is provided by Nakao and Romney (1984). They use the program to test two models of American kinship, one proposed by Wallace and Atkins (1960) and the other by Romney and D’Andrade (1964), against a data set built out of informants’ similarity judgments in a triad task. As Nakao and Romney point out, the quadratic assignment program is of wide applicability and allows for hypothesis testing in problem areas and with data sets where no testing techniques have previously been available.

6The one exception is a woman who had spent a great part of her adult life working in Texas. As it is common only for men to work outside the community, this woman has an unusual life history. Her position outside the central cluster may be explained by her lack of learning experiences with illness in the village context that the other older women do have.

7Related to this point is a recent article concerning the use of the key informant strategy in data collection. Boster (1986) presents convincing evidence that in spite of a lot of diversity, there is a single model that underlies Agaruna manioc plant identification. He then goes on to conclude that we can isolate those members of the culture who know the most about the cultural model and use them as our key informants. These key informants, who know the most about the culture, are used to represent the culture. Again, the implication here is that there is some “true” culture out there and if we talk to the right people we can find it. Although there may be situations where identification of more knowledgeable informants is important (e.g., the knowledge-behavior problem for informant accuracy discussed by Bernard et al. 1984), it is not clear that this is the best strategy when we want to represent cultural knowledge systems. More knowledge about a domain may or may not be related to what is generally shared about a domain.

8In order to place the illness terms and belief frames in the same multidimensional scaling space a new aggregate matrix was created by summing the number of informants who responded affirmatively to each illness term—belief frame pairing. This matrix was normalized (see Mosteller 1968 or Romney 1971) and then used to create two additional matrices by taking Pearson’s correlation between illnesses and across frames and between frames and across illnesses. All three matrices—the normalized raw matrix, the illness correlation matrix, and the belief frame correlation matrix—were then standardized (to set the mean and standard deviations equal) and joined together. This new $40 \times 40$ matrix (the size of the matrix equals the sum of the number of illness terms and belief frames) is then used as input to KYST. The major benefit of creating the input matrix in this manner is that, unlike other procedures, both illness terms and belief frames appear in the same multidimensional scaling space by means of a full rather than partial input matrix (cf. D’Andrade et al. 1972). In addition, the multidimensional scaling representation for this combined matrix has been shown to preserve the relationships present in the two component matrices—the illness and
belief frame correlation matrices (Garro 1983). I am indebted to Kim Romney for suggesting this procedure.

References Cited

Baker, F. B., L. J. Hubert, and J. V. Schultz
1977 Quadratic Assignment Program (QAP). Laboratory of Experimental Design, University of Wisconsin. (Unpublished ms. in author's possession.)

Berlin, B., and P. Kay

Bernard, H. R., P. Killworth, D. Kronenfeld, and L. Sailer

Boster, J. S.

Burton, M., and L. Kirk

Cancian, F.

Clark, M.

Crick, M.

D’Andrade, R. G., N. R. Quinn, S. B. Nerlove, and A. K. Romney

Ellen, R. F.

Fabrega, H.

Fabrega, H., and D. B. Silver

Finkler, K.

Furbee L., and R. A. Benfer

Gardner, P. M.

Garro, L. C.

Good, B.
Goodenough, W.  

Heider, T. E.  

Helman, C.  

Horton, R.  

Hutcheson, E.  

Kleinman, A.  

Kruskal, J. B., F. W. Young, and J. B. Seery  
1973 How to Use KYST. Bell Laboratories. (Unpublished ms. in author’s possession.)  

Linton, R.  

Mathews, H.  

Mosteller, F.  

Nakao, K., and A. K. Romney  

Nunally, J. C.  

Obeyesekere, G.  

Pelto, P., and G. H. Pelto  


Romney, A. K.  

Romney, A. K., and R. G. D’Andrade  

Romney, A. K., and S. Weller  
1986 Predicting Informant Accuracy from Patterns of Recall Among Individuals. American Anthropologist 88(2).
Romney, A. K., S. Weller, and W. Batchelder

Rosch, E.

Rose, M. D., and A. K. Romney

Rubel, A., and C. Sargent

Sankoff, G.

Shepard, R. N.

Tulving, E.

Wallace, A. F.

Wallace, A. F., and J. Atkins

Weller, S.

Young, A.


Young, J. C.


Young, J. C., and L. Garro
1982 Variation in the Choice of Treatment in Two Mexican Communities. Social Science and Medicine 16:1453–1465.