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METHODOLOGICAL ARTICLE

Validating Cultural Models With Cultural Consensus Theory

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This article links the discovery process of creating a descriptive model with a verification process. Descriptive "models" distilled from qualitative interviews and narratives describe explanations, processes, expectations, possible beliefs, and appropriate responses. These models are mental models or schema for thinking about objects and relations between objects. When shared across people, they are *cultural models*. An issue of validity arises when we try to generalize to larger groups. This article describes three approaches for confirming descriptive models using cultural consensus theory combined with a mixed-methods approach. Cultural consensus offers a way to evaluate the amount of agreement among respondents and identifies salient themes. A first approach validates content by comparing themes in descriptive qualitative results with those identified with cultural consensus. A second approach validates content by explicitly stating descriptive model assumptions and then asking about them and uses cultural consensus to verify assumptions agreed upon by respondents. Agreement between models obtained descriptively and with cultural consensus offers evidence of convergent validity. A third approach goes a step further with construct validation and uses the cultural consensus cultural model to make predictions about other aspects of everyday life.

Keywords: cultural models, cultural consensus, validity

Cultural models are mental models or schema for thinking about objects and relations between objects that are shared across people (D'Andrade, 1989). They are often tacit, revealed in people's stories, linking chains of events. Such models are often thought of in terms of structuring culturally appropriate "plans of action." Rich descriptions from narratives and qualitative interviews can be distilled into key attributes and processes to create a descriptive "model" of beliefs and behaviors. An issue arises when we want to generalize descriptive information from a few individuals to a larger group. Consistency in descriptions across individuals is necessary to move to the level of a cultural model. In this article, we present a mixed-methods approach that uses results from qualitative and systematic interviews to facilitate assessment of agreement across individuals and that can be easily used with more diverse samples. Once attributes and processes are articulated, descriptive cultural models can be validated.

Informant's talk, narratives, or descriptions on some cultural topic or process are synthesized to build cultural models. Models are produced by the researcher looking for themes and logical sequences in narratives. There are numerous examples describing the process, most notably Quinn's (1982, 1996) work on the American cultural model of marriage. Quinn describes the search for themes, often reflected by metaphors, that are sorted into thematic groupings. These two processes are referred to as *winnowing* and

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classifying (D'Andrade, 2005). Once groupings are identified they can be related to one another in a logical sequence reflecting the cultural model. The important point here is that the *researcher* is the one who produces the model based on a "heuristic discovery technique" (D'Andrade, 2005). In earlier work on the study of cultural belief systems, D'Andrade (1976) referred to the ethnographer's discovery process, such as this, as "cultural immersion" followed "by some series of private, unstated, and sometimes unconscious operations, to integrate large amounts of information into an organized set of propositions" (pp. 179–180). However, D'Andrade (2005) makes the point that the production of the cultural model by the researcher represents the development of a "hypothesis" that requires eventual verification. The development of cultural models represents the discovery process requiring some type of verification or confirmation that the cultural model accurately reflects informant's cultural beliefs or knowledge. Thus, development and verification of cultural models requires a sample of informants to construct the model (i.e., the hypothesis) and a second to verify the model (i.e., confirmation).

This process conforms to a distinction traditionally made in the philosophy of science between "the context of discovery" and "the context of verification" (Rudner, 1966). In anthropology, there is a systematic logic of discovery that is referred to as "ethnography." The ethnographer carries out activities (participant observation and informal interviewing) to generate a description of cultural norms in a community. What has often happened in anthropology, however, is that additional steps to verify that description have not been undertaken. One point we hope to illustrate here is that a theory of cultural models, coupled with cultural consensus theory, provides a more complete set of ethnographic tools for eliciting cultural models and reliable and valid tools for verifying those models.

Cultural models are based on qualitative data, and a mixed-methods approach can facilitate validation of those models. Features of a cultural model can be identified with open-ended interviews or with systematic questioning about possible features. In open-ended interviews, features are spontaneously mentioned. With a mixed-methods approach, content is taken from those open-ended interviews to create a structured interview that systematically explores model features. A limitation of open-ended interviewing is that respondents may provide only part of what they know about a topic. A strength of the mixed-methods approach is that each respondent can be asked about the entire set of features, minimizing the recall bias inherent in open-ended questioning. In addition, a better sample (larger, more representative) can be used for the structured interviews to strengthen generalizability of the model. Finally, a cultural consensus analysis on responses to structured questions can assess agreement across respondents and identify shared features, thus obtaining a more accurate cultural model than descriptions based on open-ended results alone.

Cultural consensus theory (Romney et al., 1987, 1986; see Weller, 2007, for an overview) offers a means to identify shared cultural beliefs by examining the consistency in responses and verifying cultural model content. Based on the assumption that culture is the set of learned and shared ideas, norms, and behaviors, cultural consensus theory formally links agreement among respondents to shared knowledge. Given interview responses to a set of questions, all on the same topic and all in the same format, cultural consensus can identify whether there is sufficient agreement in responses to identify shared beliefs and then estimates the culturally appropriate answers and how much each person's responses corresponds to those answers. At the core, cultural consensus literally examines the agreement between each pair of respondents and then aggregates responses, weighting the answers by the relative agreement between people to estimate the culturally appropriate answers. Agreement is assessed between each respondent and the estimated answers ("cultural competence") and overall with the average cultural competence (the square root of the average cultural competence is equivalent to the average correlation between all pairs of respondents, Weller, 1987). In many ways, cultural consensus is similar to a reliability analysis on people instead of questions (Weller, 2007). Cultural consensus theory is used to identify shared beliefs and is used widely in many diverse fields from more traditional anthropological interests, such as ethnobotanical studies, environmental perception, cross-cultural studies of illness beliefs, to studies of organizational culture in business settings (see Weller, 2007 and Dressler, 2020, for examples of applications).

This article presents three mixed-method approaches to validating cultural models. A first

example illustrates how cultural consensus can be used to explore content validity for salient features in qualitative descriptions. A second example uses cultural consensus to explore content validity by examining logical inferences about processes (systematic articulation of if–then propositions) in descriptive cultural models. Last, a third example explores construct validity by extending the notion that if results from cultural consensus estimate an underlying cultural model, then results should predict related aspects in other domains of people's lives. Thus, formalization of a cultural model with cultural consensus facilitates the identification of patterns of variation in beliefs among respondents and community members and also facilitates assessment of the effect of those beliefs on other outcomes in everyday life.

Example 1: Content Validity: Comparing Features in Descriptive Cultural Models and Cultural Consensus Cultural Models

A comparison of cultural models from open-ended interviews with those from cultural consensus results can verify content by convergent validity. Validation can be achieved by collecting information with two distinct methods and comparing content. First, open-ended interviews are conducted and key themes and ideas are distilled from those interviews. Then, in a second set of interviews, questions systematically ask about possible model features employing content from the initial interviews. This latter step is similar to the "feature model" proposed by Tversky (1977) in cognitive psychology, where individual mental models are operationalized with the set of features or attributes that define an object. For example, questions can ask about the presence/absence of cultural model components or features. With this straightforward but simple data, cultural consensus can be used to identify salient features in the shared model—features with high agreement across respondents that structure the cultural model.

Examples of mental models are explanatory models for illnesses: the constellation of causes, symptoms, treatments, and bodily processes that make up one's understanding of an illness (Kleinman et al., 1978). If questions systematically ask about these illness features, cultural consensus can be used to assess if and how much individual explanatory models are shared *across* people and to estimate what the shared model, that is, the cultural model. Several studies combined Kleinman et al.'s framework with cultural consensus to examine cultural models of illness (Weller et al., 2012 and Weller et al., 2013, for cultural models of diabetes).

In a cross-cultural study of evil eye (Weller et al., 2015) conducted in rural Guatemala, urban Mexico, South Texas with Mexican Americans, and Connecticut with Puerto Ricans published both open-ended interview and consensus model results. Initial interviews explored individual explanatory models with approximately 20 people from each site. A second sample with approximately 40 people from each site were then asked 128 systematic yes/no questions about features mentioned in the initial interviews from all four sites: 43 questions on causes and susceptibility, 41 questions on symptoms, and 44 questions on treatment actions. Cultural consensus was used to represent responses from the second set of interviews and to obtain a cultural model for each of the sites. At each site, the initial sample of 20 was a convenience sample, while the second sample was more representative of the community.

To validate theme content in the cultural model for evil eye (*mal de ojo*), themes obtained from open-ended interviews (Table 1 in Weller et al., 2015) were compared with those identified with cultural consensus (Tables 4–6 in Weller et al., 2015). Thematic differences between the four sites in descriptive interviews were confirmed in the shared cultural consensus model for each site. At all four sites, evil eye had symptoms of weakness/fatigue, crying, agitation/irritability, and fever. But in Mexico, Texas, and Connecticut, there were gastrointestinal symptoms (nausea, vomiting, diarrhea), and in Guatemala, there were red watery eyes, boils, itching, a limp neck, and bad smelling head. In Guatemala, evil eye was believed to be caused by exposure of babies to strong or "hot" forces such as someone with strong blood, drunk men, or pregnant or menstruating women. In contrast, Mexico, Texas, and Connecticut emphasized jealously or envy, and only Connecticut invoked witchcraft.

In Guatemala, a detailed comparison of content between open-ended interviews and the cultural consensus model showed that of 28 features of evil eye mentioned in open-ended interviews, 20 were asked about in the second set of interviews and 18 of the 20 were confirmed in the cultural consensus cultural model (Table 1). Of eight features involving susceptibility or causes in

Table 1
Verification of Themes From Open-Ended Interviews

Guatemala	In open-ended interviews	Second set of systematic interviews and cultural consensus		
		Questions asked	Confirmed	Not confirmed
Susceptibility/causes	8	5	5	0
Symptoms	10	8	6	2
Treatments	10	7	7	0
Total	28	20	18	2

open-ended interviews, five were examined in the second set of systematic interviews and all five were endorsed in the cultural consensus model. Similarly, seven assessed curative actions were all endorsed in the consensus cultural model. However, eight symptoms from the open-ended interviews were asked about in systematic interviews and six were endorsed as part of model and two were not (diarrhea and vomiting). *Divergence in results (e.g., the gastrointestinal symptoms) across the two methods points to features that are not widely shared and that may be idiosyncratic to individuals and/or subgroups.*

An additional advantage of the mixed-methods approach is that a broader range of features can be included in the second set of interviews. In the evil eye study, feature content from all four sites was included in the final set of structured questions. Sometimes, themes that were not mentioned in the initial interviews at a particular site were endorsed when people were specifically asked about the theme or idea in the structured interviews. For example, the idea of strong blood causing evil eye in others was initially only mentioned in Guatemala but was endorsed by all four sites when specifically asked about it. This point is an advantage of circling back with a mixed-methods approach. The mixed-methods approach minimizes recall bias in the initial interviews and maximizes recognition by systematically asking about all of the possible features. As noted above, ideas might be mentioned in the initial interviews but are not endorsed in the second set of interviews. The failure to validate ideas across the two methods can result from a variety of things, including sample differences. Another advantage of the mixed-methods approach is that additional ideas can be asked about that have appeared elsewhere, such as published accounts. For example, witchcraft was not mentioned in the initial interviews but had been cited in the literature as a possible cause and was included in the set of systematic questions. All sites were asked about witchcraft, but only the Connecticut sample endorsed the idea.

Another study that published both qualitative and consensus results compared cultural models of breast and cervical cancer causation among Latina (Mexican and El Salvadorian) and Anglo women, and physicians (Chavez et al., 1995). Initial descriptive interviews with Anglo women ($n = 27$) listed 11 possible causes of breast cancer. Chavez et al. combined ideas across initial interviews with women in all four subgroups to obtain a list of 29 possible breast cancer causes and included eight of the 11 ideas mentioned by the initial Anglo sample. When Anglo women ranked the full set of 29 possible causes (and the optimal ordering was obtained with cultural consensus), six of their original eight ideas appeared among the top 10 causes and two were much further down (not breastfeeding and blows/injury to the breast) validating the salience of those six ideas for the Anglo women. Exposing women to the complete list of ideas also revealed that the ideas of taking hormone supplements, being exposed to chemical in foods, stress, and breast implants were also important—although those ideas had not appeared in the initial Anglo women's interviews. For cervical cancer, eight causes were mentioned by the Anglo women in the initial interviews and six were included in the ranking task among 24 possible causes. Of those six ideas, all six were ranked among the top 10 causes of cervical cancer validating their salience for the Anglo women. Again, however, exposure to additional ideas identified additional ideas that were also highly salient and were missed in the initial interviews.

Combining qualitative findings with systematic interviewing about the same content offers a straightforward way to validate cultural model content. A mixed-methods approach—following up a qualitative study obtaining a cultural model with systematic questions about all the features—gives

respondents a chance to consider features they may have forgotten to mention but that may be important. When each person is asked the same set of questions, cultural consensus theory can be used to evaluate agreement and to obtain a cultural model that facilitates comparisons across individuals and samples.

Example 2: Content Validity: Testing Cultural Model Propositions With the Cultural Consensus Model

While the above example illustrates how cultural consensus models can validate content, the approach is limited by focusing on cognitive features using a checklist approach. A more encompassing approach is offered by explicitly testing for content of logical propositions that are inferred in a cultural model. For example, Quinn (1982, 1996) developed a cultural model from narrative descriptions about factors that made a good, stable marriage. Propositions linked ideas together: if A occurred, then B occurred. Sentence substitutions as a question format can be used to systematically pair and ask about related sets of items and then test the veracity of the joint propositions (Weller & Romney, 1988). D'Andrade (1972) used sentence substitutions to link illnesses with symptoms and treatments in if-then propositions to discover the cultural model of illness. Responses were aggregated and dichotomized to estimate the cultural model and identified clusters of related illnesses, causes, and treatments.

D'Andrade (1976) further explored the logical relations present in the responses, to identify causal pathways in beliefs. From a detailed comparison of illnesses and features, he identified set and subset relations between the features suggesting causal relationships. He, then, constructed a typology of beliefs about illness causation from the key features. For example, children's diseases were considered contagious and contagious diseases were caused by germs. Similarly, Boster and Johnson (1989) used a sentence-substitution format pairing fish and possible attributes to develop a series of implicational and contrast relations (e.g., "most people do not eat ____" *implies* the fish is poisonous, which *implies* the fish is a scavenger, which *implies* the fish is ugly). However, the implied or logical relations themselves were determined based on the patterns in responses and not on the natural sequences of the reasoning found in informants' raw narratives. This is an important critique made by Quinn (1996) that processes may be identified directly from narratives rather than abstracted from statistical analyses. Here, we propose that it is the convergence of results across different methods that provides validation of cultural models.

If qualitative data are collected through semi-structured interviews or narratives, they are often structured in terms of cultural "plans of action" or some set of logical sequences. This is particularly true for cultural subject matter that involves human and environmental interactions where informant's behaviors, such as hunting and fishing, depend on knowledge about the environment and ecosystem dynamics in decision-making (e.g., where will the shrimp be under current environmental conditions). The search for regularities and patterns in nature (cultural process models) helps in reducing uncertainties of economic outcomes (e.g., fishing success) and social life, in the case of hunters' and fishers' cultural models of ecological processes (e.g., tides and shrimp behavior). In many respects Quinn's (1982, 1996) cultural model of marriage involves a process in which certain features of the marriage may or may not lead to "success."

In a study of arctic ecology, Ambrose et al. (2014) collected narratives on natural resources and marine organisms in Alaska among Inupiaq hunter-fishers. The narratives generated propositions about the relationship between animals and the environment and possible change over time. To verify those propositions, statements were extracted from the narratives, included in a second set of systematic interviews, and analyzed with cultural consensus. The example in this section involves a brief discussion of the winnowing, classification, model development (i.e., hypothesis), and verification of a "cultural ecological process model" among small-scale shrimpers in North Carolina. The study population involved small-scale shrimpers (25–75 ft. vessels) of the Core Sound area of Eastern North Carolina that used trawls and skimmers to catch three primary species of shrimp; brown (*Penaeus aztecus*), spotted (*Penaeus duorarum*), and green tails (*Penaeus setiferus*). They shrimp primarily in the sounds and estuaries within the barrier islands (Johnson, 1986).

A cultural ecological process model was derived from qualitative in-depth interviews with an initial sample of shrimpers in the Core Sound area. Expert fishers were selected

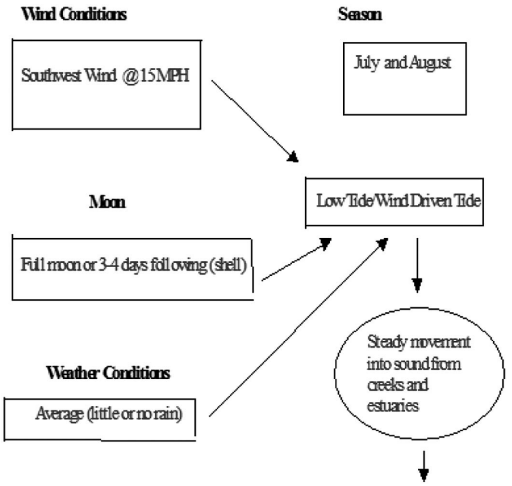
(Johnson, 1990) and interviewed ($N = 6$) about shrimp ethology (3 species) and life history (e.g., growth cycles), as well as harvesting behaviors. To facilitate the flow of the interviews, a nautical chart of the Core Sound area was used as a projective device to help in the elicitation of narratives about shrimp behaviors, ecological processes, and fishing techniques. The interviews were recorded and transcribed. The *winnowing* process in this case involved the search for themes in the raw narratives that expressed sets of natural sequences. For example, the ecological fishing narratives contained inherent logical sequences (if … then statements). These included shrimp behavior, weather, time of year relating to how a given shrimp species, say brown shrimp, behave and how those aspects are sequenced in natural descriptions. These logical relations are evident in the excerpt from one of the narratives from an expert shrimper:

> Yeah, they'll come out the bay and up the North River and all the bays, all through until they get to the sound. Which on the full moon, a lot of times we get advanced warning. If it's just average weather, a 15mph southwester and they'll start catching the shrimp that we want. They start catching them here, they'll start catching them to Atlantic. The next night they'll catch them further down and the next night we'll start catching them.

The logical relations expressed in the narrative can be structured as a series of conditions that lead to some outcomes that can be either optimal or suboptimal (e.g., successful harvest of shrimp, missing the shrimp). For example, in the quote above, the sequence is *If Full Moon*, and *15 miles per hour Southwester [wind]*, and *Average Weather* (which means little or no rain) *Then Movement of Shrimp out of the Creeks*. Also included in the sequence are temporal and spatial components (first night here and then the second night there). The different conditions are thematic and can be readily *classified.* Based on the classification of themes, the following were identified: moon and tide, wind direction and strength, different species vary in their patterns of behavior, bottom conditions, time of year, natural versus human influences, weather, and growth cycles. The themes can be restated in terms of cultural propositions and logical processes inherent in the original raw interviews can be represented as a cultural process model. Further, one can model these ecological narratives as graphical sequences in a visual representation of the cultural model.

Figure 1

A Subset of a Complete Cultural Ecological Process Model Derived From Shrimpers in Core Sound, North Carolina, for Brown Shrimp



Note. The shapes in the model represent the various themes. Circles represent themes for animal behavior, rectangles environmental factors, parallelograms fishing gear (not shown), and triangles outcomes (not shown). MPH = miles per hour.

The Figure 1 shows a subset, involving only a few themes from a larger model (not shown), of a more complete cultural process model derived from the narratives for brown shrimp. Note that the relationships described in the quote above are represented in the model.

The relations among the various themes in the ecological narrative can be expressed as propositions. Table 2 provides three propositions reflecting logical relationships for the model in the Figure 1. A total of 53 propositions were produced representing elements of multiple process

Table 2

Examples of Propositions Representing Elements of the Cultural Ecological Process Model With Possible Responses

Three or four days after a full moon is when shrimp usually show up in Core Sound.
Agree **Disagree**
At the start of the full moon, the shrimp tend to migrate down from Atlantic and Cedar Island area finally moving down to the Core Sound area by the second or third day of the full moon.
Agree **Disagree**
On a southwest wind, the tide drops and it tends to be good time to catch shrimp.
Agree **Disagree**

models for the three species of shrimp in the study. Approximately one third of statements were stated in contradiction to what shrimpers described in their narratives (for discussion of negative propositions, see Johnson & Weller, 2002). For example, the proposition "It's the smaller female shrimp that spawn" is in opposition to knowledge derived from the narratives in that the common response was that it is "larger females that generally spawn."

With responses from such articulated propositions, the cultural consensus model (Romney et al., 1986) can be used to test or confirm the validity of the cultural ecological process model, the "hypothesis," constructed from the narrative interviews. The model propositions were presented to a larger sample of shrimpers ($N = 23$) consisting of all full-time shrimpers in one village. Shrimpers were asked whether they agreed or disagreed with each of the 53 propositions. Results of the cultural consensus analysis showed high interinformant agreement among the shrimpers (the average cultural competence was 0.70) for the 53 propositions reflecting the cultural process model. Thus, the cultural ecological process model was validated using the consensus model.

Example 3: Construct Validity: Using Cultural Models to Predict Other Aspects in Everyday Life

Cultural Consensus model results also can be used as a cultural model to predict outcomes in related domains. For example, individuals have an idea of what a "family" is, including features of good families, bad families, responsibilities, and relationships. There is also a shared model of what a family is. Probably the strongest validation of a cultural model is a model that allows us to make predictions about aspects of everyday life. For example, we might predict that if someone does not have the accepted or ideal version of the family or the less their family life corresponds to the cultural model, that they will suffer adverse outcomes, for example, stress, depression, and possibly higher blood pressure. Construct validity is the ability to predict from a cultural model—or from correspondence/consonance with a cultural model—to other related variables.

Cultural consonance is the degree to which individuals, in their own beliefs and behaviors, approximate the prototypes for belief and behavior encoded in cultural models (Dressler, 2018). Cultural consonance reflects the internalization of culture. Individuals first become aware of the knowledge encoded in a cultural model and, as motivated, gradually increase their understanding of the model becoming more culturally competent (Spiro, 1997). As the cultural model is taken more seriously and incorporated into personal belief systems, it is used to guide responses, feelings, and behavior. It is this last step that is described by cultural consonance.

The concept and measurement of cultural consonance were introduced by Dressler (1996) in a study of health in urban Brazil. In that study, two salient cultural domains were identified as important goals in life span development. "Lifestyle" refers to material goods and leisure time activities that define "having a good life"; these are also markers of attaining middle-class social status. "Social support" refers to the network of individuals who can be relied upon in times of felt need. Lifestyle was assessed using an inventory of items elicited in a previous study. Social support was assessed using a set of common problems (e.g., needing to borrow money) and categories of individuals who might provide help (e.g., friends, family members).

The analysis of cultural consensus verified that there was an agreed-upon set of lifestyle items rated as important for having a good life. Similarly, a cultural consensus analysis indicated that there was a distinct pattern of resort for potential sources of social support. These analyses were conducted with a small sample ($n = 20$) of key informants drawn from socioeconomically diverse neighborhoods. Despite large socioeconomic differences, there were shared models of lifestyle and social support. It is important to note that informants were prompted to think broadly about how these domains were understood in the larger community and not in terms solely of their own personal lives (Dressler et al., 1997, 1998).

Then, in a survey sample of these same diverse neighborhoods ($n = 250$), respondents reported which lifestyle items they owned (or leisure activities pursued), and to whom they would turn for help in response to common problems. Cultural consonance in lifestyle was operationalized by creating a "score" for each respondent from the number of items they had that were collectively considered (identified in the cultural consensus analysis) to be at least "somewhat" important (for an overview of the process, see

Dressler et al., 2005). Cultural consonance in social support was similarly operationalized by matching the pattern of reporting seeking social support by the survey respondents to the consensus pattern. Higher cultural consonance between one's personal lifestyle and the cultural model for a good life and also between one's available sources of support and the cultural model for seeking social support were both strongly associated with lower arterial blood pressure and fewer depressive symptoms, controlling for standard covariates. Furthermore, both measures of cultural consonance were associated with these outcomes more strongly than standard measures of socioeconomic status and the number of reported friends and family members in the area (Dressler et al., 1997, 1998). This is consistent with the hypothesis that being unable to live in a way that is desirable in one's own society is a chronically stressful experience.

These results indicated that cultural consonance is an independent predictor of health outcomes. Subsequent research replicated and expanded on the results, refining the measurement of cultural consonance (Dressler, 2005). Five cultural domains or topical areas identified in ethnographic research as significant life goals in the community were explored: lifestyle, social support, family life, national identity, and food. Initial ethnographic interviews ($n = 43$) with open-ended and listing (free lists) questions identified 20–30 salient items for each domain. Exploration of classifications or groupings of items identified "importance" as an ethnographically relevant. Regardless of the domain, a general dimension of "importance" emerged (e.g., elements more-or-less important for "having a family" or more-or-less important for defining "Brazilianess"). Thus, a final sample ($n = 63$) rated or rank-ordered the elements in each domain in terms of importance. These ratings and rankings were analyzed for cultural consensus, which was verified for each domain and resulted in a cultural model concerning the relative importance of items for each domain. It is important to note that the level of cultural consensus varied across the domains (family life was most strongly agreed upon, elements of being a Brazilian were the least agreed upon). Furthermore, all data were collected from samples that varied by social class, age, and gender.

In a survey sample ($n = 302$), cultural consonance scales were created for each domain. For lifestyle and food, respondents simply reported whether they had or consumed the items considered most important for having a good life and eating in a way considered desirable. For social support, respondents were scored in terms of how the pattern in which they reported seeking social support corresponded to the cultural consensus pattern. For family life and national identity, respondents reported the degree of agreement for each important element from the cultural model (e.g., "In my family we feel close to one another"; "At times I wish my family were more organized"; "Brazilians rely on *o jeito* [a way of circumventing rules] too much"). Responses were weighted by the importance assigned to them in consensus models. Internal consistency reliabilities for the scales ranged from adequate (0.65 for national identity) to high (0.89 for family life). The associations of cultural consonance in lifestyle and cultural consonance in social support were replicated in relation to arterial blood pressure (Dressler et al., 2005), and all measures of cultural consonance were associated with lower reported depressive symptoms (Dressler et al., 2007a). Cultural consonance in social support also was associated with C-reactive protein, an indicator of immune system challenge (Dressler et al., 2016).

Follow-up studies have found both the cultural models and cultural consonance with those models to be stable over time. A 2-year follow-up study found change in cultural consonance over time was associated with change in reported depressive symptoms, controlling for baseline values (Dressler et al., 2007b). Another follow-up study found that, in general, cultural consensus models were stable across 10 years; there were some slight differences, but none large enough to render the measures of cultural consonance invalid (Dressler et al., 2015). Furthermore, cultural consonance in the domains of lifestyle, social support, family life, national identity, and occupational/educational aspirations all formed components of a larger cultural model of life span developmental goals (Dressler et al., 2017). Finally, cultural consonance in life goals appeared to mediate the influence of a sense of personal agency on depressive symptoms (Dressler et al., 2019).

Cultural consonance is a potent predictor of health outcomes. The association of consonance with the cultural model and health outcomes has been replicated by independent researchers working in diverse sociocultural settings on diverse topics (see Dressler, 2018, 2020, for comprehensive reviews).

Studies of cultural consonance provide general evidence of the importance of cultural models in the adjustment of individuals within their own societies and validate the study of those cultural models from the perspective of cultural consensus theory. A theory of cultural models and the approach from cultural consensus theory and cultural consonance locate individuals in a space of meaning collectively defined by the society within which they live. Individuals can, in essence, be located in a space of meaning they themselves have defined, and this location can have important implications for their subjective well-being.

Summary

These three examples illustrate the utility of a theoretical and methodological orientation that begins with the elicitation of everyday understandings that structure people's lives. This emic approach, that is, discovering the categories and configurations of those categories that are meaningful to members of the community, is best initiated employing traditional and unstructured qualitative methods of ethnography. This approach in research, however, does not stop there. We advocate, along with D'Andrade (2005), that cultural models resulting from such a discovery process require some type of verification or confirmation that they accurately reflect cultural beliefs or knowledge. Developments over the past 3 decades in cognitive culture theory and methods now enable researchers to verify the degree to which cultural models are shared, how they are distributed, and how they are put into practice.

Cultural consensus allows for verification of an articulated definition of shared cultural model features and propositions. With a detailed cultural model, we can also assess how well individuals conform to the cultural ideal and measure ramifications of the concordance/disconcordance in other aspects of life. Dressler and colleagues have found consistent associations between consonance (between life and ideal models) with adverse health effects; the less an individual corresponds with the cultural idea, the greater is their level of stress and depression. Thus, cultural models not only describe cultural values but also affect our everyday lives.

It is worth noting here that cultural modeling is basically a refinement and extension of traditional ethnography. The traditional ethnographer entered the field and, through participant observation and informal interviewing, attempted to complete a picture of what life was like for members of a community *in their own terms*. What did they themselves define as important or salient in their lives, and how did they go about accomplishing those goals? A theory of cultural models and cultural consensus achieves the same aims, only with a more systematic set of elicitation and analytic techniques that results in a more comprehensive description of the cultural domains under investigation. The key difference, however, is that this approach includes a set of analytic techniques for confirming the sharing of knowledge that is a central feature of the concept of culture. While the idea that culture is shared is fundamental, going all the way back to the founding of anthropology (Tylor, 1874: p. 10), it was an assumption. It was not until cultural consensus theory was introduced in 1986 that there was a theoretically and methodologically satisfying way to confirm that sharing.

Another key feature of culture, first articulated by Sapir (1938) but again without a means for systematically examining it, is the idea of intracultural diversity or individual differences. We have not emphasized this aspect of culture in this article, focusing rather on the sharing of culture, but it should be noted that the approach illustrated here incorporates the study of diversity in several ways. First, the cultural consensus model itself enables the analyst to distinguish between those individuals who "know" the model well (keeping in mind that to "know" the model simply means to agree more strongly with more other people) and those who do not "know" the model well. These differences in cultural competence can then be mapped onto social characteristics to examine systematic differences in the distribution of cultural knowledge. For example, Ambrose et al. (2014) found that systematic differences among Inupiaq hunters' and fishers' cultural competence on ecological knowledge reflected awareness of arctic climate change. The best fishers had unexpectedly lower cultural competence, as these fishers were detecting changes not yet observed by others. Second, there are systematic differences in cultural consonance that map onto social and psychological characteristics of individuals. Third, and something we have not illustrated here due to lack of space, there is what Boster (1986) referred to as "residual agreement" (see also Boster & Johnson, 1989). Within a shared cultural model, groups of individuals may emphasize different aspects of the model. For example, the cultural model of family life in Brazil is

overwhelmingly shared; however, in terms of the features contributing to a "good" Brazilian family, there is a systematic tendency for lower class respondents to emphasize rules, organization, and the patrifocal authority structure as most important, while middle-class respondents emphasize love, mutual understanding, and an emotional sense of union (Dressler et al., 2015). Everyone agrees that family organization and family emotional climate are important, but some respondents privilege one set of features over another (Henderson et al., 2022, for an extended discussion). Finally, the approach can be used in the study of culture change even with cross-sectional designs.

In summary, a theory of cultural models, along with a theory of cultural consensus and cultural consonance, have provided ethnographers with a powerful set of conceptual and methodological tools for addressing the ethnographic "prime directive" first articulated by Malinowski (1922: p. 24): to see the world as others see it. This theory and method have further bolstered the ability to understand how others' understanding of the world varies, and how the internalization and realization in behavior of that understanding affect health and well-being.

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