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CHAPTER 18

Ethnomedicines: Traditions of Medical Knowledge

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Abstract

This chapter introduces the range of traditional topics that have provided a framework for ethnomedical inquiry. International public health research particularly embraced Arthur Kleinman's ethnomedical principle of the "explanatory model". Across the world, people have different conceptions about the body that anthropologists refer to as body image. "Ethnophysiology" is the type of ethnomedical body image that refers specifically to cultural notions about body structure and function including perceptions of internal organs and their purpose and placement. Ethnopsychiatry is a translational field that examines cultural views on mental illness, and local practices surrounding mental illnesses. For individuals to be recognized as ill they must be considered abnormal in the home culture. Cosmopolitan or organic mental illnesses, such as schizophrenia, may at first seem unaffected by culture. Medical pluralism exists in many lower-income countries where traditional popular and folk medicine practiced alongside of biomedicine.

WHAT IS ETHNOMEDICINE?

Ethnomedicine is the area of anthropology that studies different societies' notions of health and illness, including how people think and how people act about well-being and healing. Medicine—like language, music and politics—is a subset of a larger culture. Thus, we have British medicine, Bavarian medicine, Massai medicine, Mayan medicine, and so forth. Each society has its own medical style, or medical culture (formerly and sometimes called "folk medicine" (e.g., in the Library of Congress search terms), which shapes the society's suite of expected manners, clothing or adornments, devices, diagnostics, and treatments. Beliefs about the body and illness causation, together with societal norms concerning when, why, who to seek for medical help, what kind of medicine, and how to take it comprise one's "culture of medicine", or ethnomedicine. In the London suburbs, for example, residents say that exposure to chills, particularly to vulnerable areas, such as the head, neck and feet, increases one's risk for "colds" (Helman 1978). Related societies are likely to share some ethnomedical beliefs, so readers who are native English speakers may share the above English ideas, or not. Just as linguistic dialects and political circumstances may diverge, so may their medical views. It is safe to assume that there are as many unique medical perspectives, or ethnomedicines, as there are cultures and sub-cultures. Every society's medicine (the West included) and every type and branch of medicine is potential fodder for ethnomedical study (Gaines 1992; Kleinman 1980; Nichter 1992), as everyplace has cultural beliefs and behaviors about health, in other words traditional medical knowledge (TMK) or traditional medicine (TM), academic and policy terms (usually outside of anthropology, WHO 2019) that are synonymous with ethnomedicine. Medical anthropologists (per Erickson 2016; Nichter 1992) recognize that cultures are dynamic so what people consider "traditional" medicine is not static, but changes across generations.

The term “ethnomedicine” appears in academic literature with somewhat different meanings. In the American anthropological literature, the “medicine” in “ethnomedicine” usually refers to any knowledge and ideas about health and healthcare. In European and biological literature, the “medicine” tends to refer to medication or treatment practices. In fact, the English word “medicine” is not a precise term, but a general one that, in any dictionary, has several related definitions dealing with knowledge about several areas including health, the body, illness causes, prevention, diagnosis, and treatment. Just as these types of knowledge are all “medicine” in the English-speaking world, so they are all ethnomedicine when describing the medicine of any particular culture.

As is typical for fields with the “ethno” prefix, ethnomedicine seeks out primarily an emic anthropological view, that is, the perspective of a member of the culture being studied. Emic views are not easy for an outsider to come by because they reflect developmental experience within a particular local framework. Strangely enough, it often takes an outside vantage to clarify an emic system (much as an outside psychotherapist can help untangle patterns from the noise in a patient’s social history). A foreign researcher who meets medical issues with an outsider’s or etic perspective can recognize and inquire about cognitive and behavioral models that a native of the culture may take for granted or not notice. Medical anthropologists usually learn emic health views through fieldwork among people from a particular culture (for a fuller consideration of internal logic of the medical system see Spiro 1992).

Ethnomedicine has two basic goals. First, it examines the health-related theories and knowledge that people inherit and learn by living in a culture. This information forms the base of a culture’s medical common sense, or medical logic that people use to explain and treat their illnesses. Ethnomedicine’s other goal is medical translation. We seek not only to understand the medical thinking of one group, but to compare ideas cross-culturally for regional and global understanding. Translation of ethnomedical knowledge is applicable to improve health care delivery for the group studied, or to inform alternative health practices for Western and other societies.

Translation [H2]

Ethnomedicine is a touchy subject for many. Examination of varied medical practices attracts some people and repulses others. Alien medical traditions and body image, for reasons unknown, seem to strike at the heart of our ethnocentrism—as particularly odd, wrong-headed, disgusting, or perhaps intriguing. For instance, National Geographic titled a television series that was almost entirely ethnomedical “Taboo.” Anthropological translation of these “strange” emic beliefs can make them understandable etically. For Westerners, the etic perspective is almost always the bioscientific one.

Browner, Ortiz de Montellano and Rubel (1988) propose a way to “combine the emic perspective of ethnomedicine with the etic measures of bioscience” (p.681). Following their methods, the researcher (1) identifies the health problem and how it is conceivably healed according to locals, (2) objectively assesses the remedy’s ability to produce the emically desired effect, and (3) identifies the areas of convergence and divergence between the emic and the etic assessments. For example, these authors suggest that Aztecs envisioned some headaches as the result of a build-up of blood in the head. Many Aztec headache medicines produced nasal bleeding, which the thought released the feeling of pressure allegedly caused by the excess blood in the head. These medicines were effective in Aztec

terms because they achieved the desired result (i.e., a bloody nose). From the etic perspective, Aztec medications have chemical properties capable of causing nosebleeds, though most remain scientifically undemonstrated as headache remedies (Browner et al. 1988, p. 684).

Anthropology's tradition of moving from etic to emic inquiry perhaps obstructed the study of Western medical culture, particularly biomedicine, for many decades, even though Western biomedicine is one of the world's many ethnomedicines. Cloaked in science and international adherence, Western allopathic medicine (biomedicine) may not appear "cultural" to Westerners (because people tend to be blind to their native culture—analogous to U.S. grocery isolating "ethnic" sections for East and South Asian, Latin American, and Jewish foods, implying that the rest of the store is *not* ethnic, though, of course, it is. (Where else can one find an entire isle dedicated to breakfast cereal, or a weekend pop-up section of tail-gating foods dedicated to parking lot eating?) Only in the late 20th century, did medical anthropologists, informed by other medical systems' perspectives, begin to study and constructively critique (or back-translate) biomedicine as an ethnomedical system, with its own set of professional knowledge, spaces, clothing, adornments, manners, devices, diagnostics, and treatments (e.g., Hahn and Gaines 1985, Lock & Gordon 1988, Baer 1989, Fabrega et al. 1990, Stein & Stein 1990, Good 1998, Kleinman and Benson 2006). Biomedicine is one of the few ethnomedical systems with local and global versions, the latter diffusing into many other cultures (Nichter 1992), often taking on some local flavor. Ethnomedical research nevertheless persists largely among foreign, minority and underserved populations where the need for ethnomedical translation, or culture brokering (Eisenberg [this volume], Pfeiffer and Nichter 2008, Van Willigen 2002) appears greatest.

Knowledge of ethnomedical translation has become increasingly relevant for public health because it identifies beliefs and practices among the foreign, minority, and underserved (Hahn 1999; Nations 1986; Northridge and Mack 2002; Winch et al. 1996). As mentioned, people tend to be ethnocentric about their medicine—they hold dearly to their own medical traditions. Globalization and the resulting increase in cultural contact leads to medical incongruences. Differences between groups' medical thinking becomes problematic when (1) people from small-scale cultures migrate to developed areas where biomedicine dominates (Dobkin De Rios 2002); (2) illnesses spread to societies that have not experienced the illness before (Green 1999); and, (3) Western medicine makes inroads to areas of the globe in which biomedical traditions are new, foreign, and in some cases suspect (Logan 1973; Quinlan 2004; Rubel 1990). Indeed, biomedical practitioners have had nasty habits of insulting ethnomedicines not aligned with their memorized repertoire, even in cases where practices have (hidden) scientific rationales (Kleinman and Benson 2006; Placek 2017; Wu and Tan 2019). Understanding ethnomedical beliefs allows researchers to become medical mediators.

Explanatory Models [H2]

International public health research particularly embraced Arthur Kleinman's (1980) ethnomedical principle of the "explanatory model" (Coreil et al. 2000; Hooley 2007). Kleinman et al. proposed that every illness has more than one potential cause and description. Bad health leads people to speculate about how they got sick, how it will affect them, and what they can do to make it better (Kleinman et al. 1978). People thus form an explanatory model (EM) of the illness by

integrating idiosyncratic thoughts and circumstances with the popular illness ideologies of their culture (1980). Individuals will likely have a somewhat unique EM for each illness event. Further, a patient's EM for an illness will likely differ from his medical practitioner's EM. The closer the cultures of patient and practitioner are, the more presumed convergence in their EMs.

Culture influences construction of EMs through theories and explanatory themes and images. For example, Kleinman notes that Western EMs are filled with war metaphors (e.g., pathogens "invade," and individuals use their "defenses" to "fight," "battle," and hopefully "defeat" or "vanquish" disease); in contrast Taiwanese metaphors have to do with being hit by ghosts (1980). Cultural ideas—about the nature of the body and illness, but also pervasive cultural philosophies about morality, responsibility, autonomy, powerful forces, and so forth—converge to form an ethnomedical system. This convergence of notions forms a system of "internal logic" for understanding illness. What may be a logical medical determination, according to one set of beliefs, may seem like a bad idea in the logic of a different ethnomedical system, because each system has its own internal logic (see Levin and Browner 2005). Explanatory models are often so intertwined with other cultural beliefs that identifying ethnomedical theories can be challenging.

Empacho, for example, is a gastrointestinal disorder recognized by Hispanics in Spain, particularly in the Valencia region (Jordà et al. 2005) and throughout Latin-America (Weller et al. 1993). Symptoms of *empacho* include a stomachache; a hard, swollen, or bloated abdomen; cramps; a lack of appetite, and sometimes diarrhea, vomiting, and lethargy (Weller et al. 1993). Mexican-Americans in Texas, Arizona, and New Mexico describe *empacho* as a bolus of food that sticks to the wall of the intestine and causes obstruction (Trotter 1985). A collaborative, multi-site study of four widespread Hispanic groups finds consistency in beliefs within and between groups (Weller et al. 1993). People in each group attribute *empacho* to some dietary indiscretion, including eating at the wrong time, eating too much, or eating the wrong things (such as spoiled or undercooked food or swallowing nonfood items, such as chewing gum). The offending substance becomes lodged in the gastrointestinal tract and starts a blockage. Untreated, *empacho*, may get worse, and sometimes cause death. Massage to dislodge the obstruction is a treatment in all groups (Weller et al. 1993), though regional treatments also include ingesting teas, oils, and purgatives, and dietary restrictions (Pachter et al. 1992; Trotter 1985; Weller et al. 1991). Recognition of *empacho* and its perceived cause and response has been imperative to clinician–patient understanding of gastrointestinal events in multicultural areas and helped to identify toxic remedies sold and taken to treat *empacho* (Baer et al. 1998; Trotter 1985).

People adjust traditional EMs to new situations. Eghindi, among Sahrawi pastoralists in Western Sahara, is sickness with stomach problems, rashes, edema—usually from ingesting too much salt or drinking camel milk embittered by grazing on toxic medicinal plants (Volpato and Waldstein 2014). Sahrawi people's desert homeland contains salt crust on the ground, salt in the air, and camel milk and meat is saltier than other domestic animals'. Sahrawi refugees, forced into camps where food aid and trade replaced their pastoral subsistence, expanded eghindi's EM for experiencing and managing a range of symptoms that Sahrawi link to eating perceived pollutants in processed foods and to environmental pollution. In a rural Senegal population, Sandberg et al. (2019) find that likelihood of attachment to an ethnomedical explanatory model of disease strongly

associates with biomedical and ethnomedical care experiences of people in one's social networks, and an independent association exists between EMs among social networks, indicative of direct cultural learning of EMs.

The remainder of this chapter introduces the range of traditional topics that have provided a framework for ethnomedical inquiry. Though separated here for the sake of clarity, in real life, the topics comprise conjoined entities in ethnomedical systems.

ETHNOMEDICINE OF THE BODY [H1]

Body image [H2]

Across the world, people have different conceptions about the body that anthropologists refer to as body image (Fisher and Cleveland 1958). The culture in which we grow up teaches us how to perceive variations that exist between different body types, bodies' ages, states of health, and public or private status of certain body parts or body functions (Helman 2007). Cultures have various norms about who can stand near or touch someone else's body under what circumstances, and ideals of how a beautiful body should look—for example, the amount of fat or muscle preferred, and the propriety of type of clothes or body decoration (jewelry, tattoos, etc.).

Many peoples regard a person's body, not only as an assemblage of physical parts, but as a whole person with social needs, obligations, a reputation to uphold, and a history of various "embodied" lessons and experiences (see Csordas 1994, Finkler 1994, and Scheper-Hughes and Lock 1987 for detailed theoretical discussion of the body as a broad personal concept). Body image may extend beyond the physical body and include obligations to community and family, which can result in concepts of illness that may seem to outsiders to have complex or tangential origins. For example, Kulina infants (Western Amazonia) do not have a body/person of their own and remain as extensions of their parents until they are walking, talking and eating for themselves. By Kulina internal logic then, the dependent child can be affected by what both parents ingest (Pollock 1996).

Ethnophysiology [H2]

"Ethnophysiology" (a.k.a. "ethnoanatomy") is the type of ethnomedical body image that refers specifically to cultural notions about body structure and function including perceptions of internal organs and their purpose and placement. Knowing local theories of anatomy and physiology can be key to learning how people in a culture perceive and respond to health issues. Some ethnophysiological ideas appear cross-culturally (Erickson 2008), others are confined to single cultures or to groups of related cultures, as with *empacho* among Hispanics. A world-wide commonality among many small-scale, rural and indigenous people (where, perhaps, no one has seen a microscope) is the unsurprising tendency to have no germ theory. Yet, their explanations may give one the impression that the society knows about germs because they have germ-like contamination theories in which, for instance, sicknesses travel from person-to-person through poisoned or cursed wind (Hewlett and Hewlett 2008, J. Roulette et al. 2018b).

Some ethnophysiological theories appear worldwide. For example, there is a globally widespread vision of how menstruation works. Menstruation is a cross-cultural sign of fertility,

which is valued the world over; yet nearly all cultures have menstrual taboos (Buckley and Gottlieb 1988). Those prohibitions relate to a nearly world-wide ethnophysiological theory in which peoples tend to view the uterus as a “mechanical” opening and closing vessel-type organ (Hanson 1975) (sometimes referenced with similar opening and closing metaphors such as a flower among the Santal [Carrin-Bouez and Beierle 1998]). In this view, a woman’s uterus remains closed for most of the month while blood enters it and gets trapped. Then, the uterus opens during menstruation, allowing the blood to escape. By this time, the blood is reckoned rotten or polluted—and polluting to others. Some cultures believe that the old blood is bad for the woman herself, for example some Welsh women feel ‘bloated and sluggish’ if their menstruation is insufficient to give them a ‘good clearance’ (Skultans 1970); and women in provincial Iran believe that blood that does not escape the body through a heavy period remains in the body causing headaches, joint pain, and darkened skin. Iranians employ cupping and bleeding to extract polluted menstrual blood that remains in the body (Good 1980:149). Menstrual blood is commonly reckoned as polluting to others and avoided. Hundreds of Washington State University students inform me that they feel somewhat uncomfortable even hearing particulars about another’s menstrual blood let alone touching it (asking if they would touch it generates disgust-induced laughter and occasional sneers from my students). In South Kanara, India, menstrual blood is taboo, not only because it is impure, but because it is so heating that it could “...dry a man’s semen, just as the touch of a menstruating woman was heating enough to cause a vine of cooling betel leaves to wilt (Nichter and Nichter 1996:5).” Cultural restrictions on menstruation may range from avoiding food prepared by menstruating women, as in Jamaica (Sobo 1993), women sleeping on separate bedding from their husbands, as in Sri Lanka (McGilvary 1982) to living in designated “menstrual huts,” as do the Dogon people of Mali (Strassman 1992).

Ethnophysiology of the “mechanical uterus” not only explains ubiquitous social restrictions regarding menstruating women as polluting, but influences peoples’ concepts regarding fertility and its regulation (Nichter and Nichter 1996). According to this common ethnophysiology, the time that a woman may logically become pregnant is while the uterus is reckoned opening and closing before and after menstruation; meanwhile, a woman cannot logically conceive in the middle of her menstrual cycle, because the uterus is considered sealed off. This notion opposes the biological model of the female fertility cycle. So, in the poorest and most rural areas, where birth control is often inaccessible, this ethnophysiology of fertility results in a practiced ‘rhythm method’ (e.g., Maynard-Tucker 1989) that is even less reliable than the biomedically informed version. Further, where birth control is available, women may fear reduced menstrual flow associated with contraceptive use, feeling that they are not properly purging noxious waste from their bodies (de Bessa 2006, Good 1980, Nichter and Nichter 1996, Snow and Johnson 1977).

Spiritual or Personalistic and Naturalistic Explanations [H3] Even though each medical culture is unique, some ethnophysiological principals appear in many ethnomedical systems. In a cross-cultural ethnomedical study, Erickson (2008) found that world ethnomedicines recognize only four basic domains of disease causation: (1) the individual body, (2) the natural world, (3) the social and economic world, and (4) the spiritual world. And, within the above areas, there are just three theories for why sickness occurs: (1) imbalance, (2) natural process, and (3) as punishment.

Foster (1976) split disease causation into only two sorts: naturalistic and personalistic. *Naturalistic* illnesses result from exposure to naturally occurring risks in one's environment. This may include germ theory, or a similar contagious notion of "bad air" found in many places, starvation, injury, and being out of balance. Personalistic illnesses are those that are blamed on the supernatural intervention of another—be that a human (i.e., witch or sorcerer) or non-human (i.e., a god, ghost, evil spirit, etc.). Locals reckon that the sick person with a personalistic illness is a purposeful target, not a victim of chance, fate, or the random act of an evildoer. Rather, some existing personal conflict between the perpetrator and his/her victim motivates the evildoer to inflict sickness on an enemy. In Erickson's scheme, Foster's personalistic illnesses would be those explained as punishment by the spiritual world, which may also be motivated by perceived injustices in the social and economic world.

There is some variation in the supposed degree of intent of those who cause personalistic illnesses. For example, Navajo Indians sometimes feared that they were guilty of unconscious witchcraft if they had entertained "bad thoughts" about someone who subsequently died or became ill (White 1930). Similarly, in notions of the "evil eye" (found in Southern Europe, the Middle East, North Africa, and Latin America) a person who possesses the "evil eye" is usually unaware of his supernatural powers to curse or inflict sickness on people whom he envies or admires (Helman 2007). In these cases, the curse may be unintentional, but the conflict between individuals still motivates the perpetrator. Victims of personalistic illness can also vary. For example, a perpetrator might cast an illness not on his enemy but on one of the enemy's loved ones. Anthropologists categorize all sicknesses that locals attribute to conflict-driven supernatural intervention as personalistic illnesses (Foster and Anderson 1978). Unlike a cold that people can trace as it runs through a community, arthritis that occurs with aging, or an injury that has an obvious origin, there is a mysterious and invisible aspect to personalistic illness. Though most cultures do not separate the body and the mind, invisible, brain-related illnesses like seizures and mental illnesses are often assigned to personalistic, spiritual causes, as are those of internal organs. The personalistic and naturalistic are not necessarily mutually exclusive. Patients and their families may support natural treatments with magico-religious ones and vice versa, as we see with an Andean curandero (healer) that sets up an altar to bless the patient and herbs, and prays to God and Holy Mary while ringing a bell during a healing ceremony (Joralemon and Sharon 1993).

Balance: Humoral Explanations [H3] Western cultures are not alone in believing that a well-balanced lifestyle yields a healthy mind and body. Many peoples strive for a "balanced" diet, and some harmony between work and play, rest and exercise, and so forth. In humoral medicine, the most widely known medical belief system in the world (Anderson 1987), people maintain or restore wellness by balancing opposite forces (humors) such as heat and cold, or dryness and wetness. The Chinese forces of yin and yang comprise a humoral system. The South Kanaran Indian characterization of menstrual blood as extremely "heating" is similarly part of the Indian humoral system (Nichter and Nichter 1996).

Latin Americans also have a hot/cold humoral system, which Foster claims may be “the most completely described of all ethnomedical systems” (1994:2). In the hot/cold humoral system, people group mental and physical states, plants, and animals into “hot” and “cold” categories. Here, “cold” or “hot” may refer to the temperature of air or bathing water, however “hot” and “cold” often refer to culturally ascribed symbolic values having nothing to do with thermal state. North Americans similarly refer to chili peppers as “hot” regardless of the temperature at which they are served. Mental states also carry hot or cold labels. The North American view of anger as hot-headedness and indifference as coldness reveals a glimpse of similar symbolic use of heat and cold. People that live by the hot/cold humoral system, believe that the *human* body functions best at a warm state that is in between hot and cold extremes, but that *other* species (plants and animals) function at species-specific hotter and colder states. Heat and cold are reckoned as transferable: Not only can temperatures in the physical environment be absorbed or transferred to the internal and external body, but one can also transfer the humoral quality of something one ingests to one’s own body. Becoming too hot or cold can make one sick. People must therefore balance the hot or cold humoral qualities of the foods they eat, and counter humoral forces from the environment and emotions with foods and drinks with the opposite humoral force. Thus, a Dominican who has been working in the hot sun or has experienced a “hot” anger episode (as aggressor or the attacked) must ingest cooling foods such as cucumber and cooling drinks such as coconut water (Quinlan and Quinlan 2006). In humoral systems, illnesses both result from hot/cold imbalances and also are ascribed hot and cold states. Hot illnesses require cold medicines while hot medicines treat cold illness.

ETHNOMEDICINE OF THE MIND: ETHNOPSYCHIATRY

Ethnopsychiatry is a translational field that examines cultural views on mental illness, and local practices surrounding mental illnesses. Ethnopsychiatry forms a bridge between and fits equally within the purview of both medical anthropology and psychological anthropology. In fact, many peoples of the world do not to separate the processes of the mind and body.

Western Civilization has an ancient, continual habit of separating out stuff that one can see from stuff that one cannot. This idea goes back at least as far as Plato and is also termed “mind-body dualism” and “Cartesian dualism” (for Renée Descarte, who refined the theory in 1641 [Kenny 1968]). Western culture separates the natural from the supernatural, and the world of ideas and actions from the physical (visible, touchable) world. European languages, for example, have separate terms for the “brain,” which is a physical body-part, and the “mind,” which is not a body-part (but rather an amorphous brain-based center for thought, perception, emotion, memory, will, and imagination). Like larger Western culture, academic structures distinguish mental from physical, mind from body. For example, anthropology itself traditionally splits Cultural Anthropology, which deals with human behaviors and ideas (minds), from Physical (now Biological) Anthropology, which deals with human bodies. Biomedicine conventionally divides pathologies into mental illness and physical disease. Not surprisingly then, “ethnopsychiatry,” which focuses on mental health and mental illness, is a somewhat

separate subfield from ethnophysiology, while both are in ethnomedicine. The area of ethnopsychiatry lets us translate between the biomedicine and ethnomedicine of mental health.

Human brains are essentially the same across the globe, yet mental illness varies between cultures. The language used to express troubles, the experience of symptoms, decisions about treatment, doctor-patient interactions, the practices of care providers, and the likelihood of outcomes such as suicide are all cultural. Culture shapes mental illness in three ways including: recognition of an illness; how people express a problem; and whether or the degree to which illness manifests at all. As a result, there are worldwide differences in the recognitions and content of mental illness with some conditions appearing universal and some appearing culturally distinct (Kleinman 2004).

Culture and Recognition of Mental Illness [H2]

In order for someone to be recognized as ill he or she must be considered abnormal in the home culture. What might be expected in one culture is deviant in another because norms of behavior, thinking, and feeling vary from culture to culture. Some cultures seem shier, some more strident; some are more violent while others are gentler; some tolerate complaining more than others, and so forth. What might be considered normal drinking in one culture, for example, might be considered pathological in another. Body pain may or may not be recognized as illness at all, and may or may not be regarded as a sign of emotional troubles. Back pain, for example, is regarded as pathological among some, but it is common, often expected, and rarely considered pathological among the world's laborers (e.g., Goldsheyder et al. 2004).

Culture and Expression of Mental Illness [H2]

In some societies, illnesses associated with mood or emotion may be expressed largely or only as physical rather than mental symptoms (e.g., back pain, as above). Cross-culturally, the majority of patients in care for major depression (70-80%) first present with somatic (not emotional) complaints (Ebert and Martus 1994). Depressed Chinese people, for example, do not initially seek help for mood troubles; rather they express body discomfort, pain, feelings of inner pressure, dizziness, and fatigue (Kleinman 2004). As most people do not have mind-body dualism, the feedback between physical and emotional problems is recognized and expressed as a single illness. (This is somewhat different from the psychiatric concept of somatization—expression of psychological conflicts with physical symptoms—which implies that the *real* problem is largely emotional.) Psychological stress generates physical reactions (e.g. muscle contraction) and back pain corresponds to distress, depression, anxiety, and related emotions (Linton 2000). Thus, though laborers may expect back pain due to musculoskeletal stress, back pain may also be a culturally acceptable expression of laborers' culturogenic stress, including working under several bosses, job insecurity and relative poverty.

Culture shapes the expression of illness etiologies as well as symptoms. In a cross-cultural sample of traditional cultures, hostile individuals' social cognition results in accusations fear of sickness caused by witchcraft (R. Quinlan and Quinlan 2007a), whereas in industrial

societies we would expect other routes for hostile social cognition such as hatemongering or unwarranted litigation. In many places, especially tropical locales with high pathogen densities, pregnant women experience pica, craving/eating culturally defined non-food substances, for example, unripe fruit, soil, clay, or ash. Several biological hypotheses and evidence explain pica's persistence (e.g., hunger, pathogen protection, micronutrient deficiencies [Placek and Hagen 2013; Young 2011]). And, lay people in societies where pica occurs may view it as a minor illness, as Placek finds in Tamil Nadu, southern India. Nevertheless, the American Psychological Association's Diagnostic and Statistical Manual (5th edition—the APA DSM-V [2013]) classifies pica as a psychological disorder, as, in turn, do Indian physicians (Placek 2017).

Culture-bound syndromes [H3] Some mental or behavioral disorders only occur, or occur in a unique form, within a single culture or constellation of cultures: These are culture-bound syndromes (CBS). Within a CBS's home society, the syndrome is a deviant but recognized condition. These conditions are distinctively shaped by local cultural and social contexts, such that Helman (2007) notes that CBS might also be termed 'context-bound disorders.' CBSs are a traditional topic of ethnopsychiatry and are also termed 'ethnic psychoses,' 'culture-specific' disorders, psychoses, or syndromes; and cultural idioms of distress (Ventriglio et al. 2016). An example from the English-speaking world is our folk diagnosis of the "crazy cat lady." In contrast to many parts of the world, Anglophone cultures have a tradition of keeping cats in the home as pets to cuddle. While living with cats is normal, up to a point, sharing a radically untidy household with a great number of cats results in the folk diagnosis "crazy cat lady," a Western culture-bound syndrome (see Simons and Hughes 1993).

A small sample of the many CBS that have been described (see Simon and Hughes 1985) are in table 1. As every culture is distinctive, it would be surprising if each society did not have some singular spin on the way mental illness occurs there. Some patterns are so shared or similar across cultures, however, that they easily fall into standard diagnostic categories in psychiatric manuals. From the standpoint of Western-psychiatric diagnosis, culturally unique patterns are harder to pinpoint. In my work, the Caribbean syndrome "fright" shares traits with, clinical depression and post-traumatic stress disorder, but is not a match for either (Quinlan 2010). The latest editions of the world's leading psychiatric diagnostic manuals, the American Psychiatric Association's DSM-V (2013) and the World Health Organization's ICD-10 (1993), include the foreign versions of these illnesses, as "Cultural Concepts of Distress" and "Culture-Specific Disorders" respectively; but in the back as appendices.

The DSM-V and the ICD-10 remain Western academic references, however, largely written by Westerners and geared toward Western or cosmopolitan expressions of mental illness. Each manual calls for additional clinical research on culture-bound syndromes. Others add that future research should empirically investigate the syndromes on their own cultural terms rather than attempt to force the illnesses into Western diagnostic categories (see Guarnaccia and Rogler 1999).

Table 1. Notable Culture-Specific Disorders (Culture-Bound Syndromes)

Syndrome (location)	Description
<i>Amok</i> (Malaysia)	A spree of killing and destruction (as in the expression ‘run amok’) followed by amnesia or fatigue
<i>Dhat, shen-kui</i> (India, China)	Fear of semen loss through premature ejaculation or leakage into urine
<i>Koro, jinjin bemar, suo-yang</i> (China, South and Southeast Asia)	Males and occasional females with great anxiety believe that their genitals are shrinking and retracting inside of their body cavity and are bound to kill them by strangling internal organs
<i>Latah</i> (Indonesia and Malaysia)	Highly exaggerated responses to startling including suggestibility and imitative behavior
<i>Pibloktoq</i> , Arctic hysteria (Inuits within the Arctic Circle)	Fatigue, depression, or confusion, followed by a "seizure" of unruly behavior including tearing off clothes, frenzied running, rolling in snow
<i>Susto</i> or <i>espanto</i> (Latin America)	Perceived "soul loss" induced by a severe fright to the victim or a friend or relative, which results in diverse and chronic complaints including agitation, anorexia, insomnia, fever, diarrhea, depression, and shyness

Source: Finerman 1993, in ICD-10.

Nervios, a syndrome recognized among Hispanic cultures, is the subject of a multi-site study, comparing views of *nervios* across four Hispanic populations—Puerto Ricans, Mexicans, Mexican-Americans, and Guatemalans (Baer et al. 2003). Informants in all sites regard *nervios* as a mostly female condition resulting from interpersonal problems. All sites agree on *nervios* symptoms as depression, sadness, and loss of hope; crying and trembling; insomnia; bad moods and bad tempers. Across the four societies, these Hispanic cultural contexts for *nervios* include (1) expectations for women’s emotionality (Low 1989), and (2) a perceived burden on women because of the many duties of adult daughters, wives, and mothers, as in Saraguro, Ecuador (Finerman 1989). *Nervios* may hence form a sanctioned outlet or coping mechanism for stresses (ibid.) or what Finkler calls “life’s lesions” (1994). Almost every informant in the multi-site study considered *nervios* an ‘illness,’ (Baer et al. 2003) and not necessarily as a ‘mental illness,’ even though *nervios* has no somatic symptoms (Baer 1996). Baer et al. note that the participants in their *nervios* research, “do not recognize a mind-body distinction, and indeed see a fluid relationship between physical body wellness, the mind, emotions and the spiritual.” Thus, *nervios* is simply an ‘illness.’ Prayer is the most recommended treatment (2003).

Culture and Mental Illness Occurrence [H2]

Cosmopolitan or organic mental illnesses, such as schizophrenia, may at first seem unaffected by culture. Schizophrenia may exist around the world and schizophrenics may present with hallucinations, delusions, and feelings of outside influence on bodily functions irrespective of the cultural context. However, as we see in the vast range of culture-bound syndromes, cultural context differently influences the content of hallucinations, delusions, and who or what the

schizophrenic perceives to control his or her body. Culture also affects the kind of understanding that the schizophrenic, the family and the community bring into this suffering.

If interpersonal relations affect mental health, and cultures prescribe the kinds of interpersonal interactions that are appropriate, then a population's culture affects its psychological well-being, as we see cross-culturally with cultural norms of responsive parenting decreasing crimes of aggression, theft, marital infidelity, and witchcraft accusations (see R. Quinlan and Quinlan 2007). Culture thus has some effect on social and mental stability rates and resilience. While genetic factors have a bearing on certain illnesses, such as schizophrenia (Kendler and Diehl 1993), even genetically based conditions may require an environmental trigger to emerge. (Phenylketonuria [PKU] is a genetic condition in which infants are unable to break down phenylalanine [in breast milk and other foods] so that it accumulates in the body tissues causing severe brain damage and other problems. If an infant with PKU avoids phenylalanine, mental retardation and other disabilities do not develop. Although genetic propensities for the PKU-induced mental illness exists at birth, it requires an environmental dietary trigger [see Blau and Erlandsen 2004].) Biomedicine regards schizophrenia as a disorder in which a predisposition—instead of the disease itself—is genetic. Might a cultural schema create a protective or risky environment for mental illness development?

In County Kerry, Ireland, the nature of sociocultural interactions may stimulate madness—including alcoholism, depression, and particularly schizophrenia (Scheper-Hughes 1979). During the mid-1970s, while the Republic of Ireland was undergoing rapid changes including mass-migration, it had the world's highest rates of hospitalization for mental illness, with more than half of the diagnoses being schizophrenia—nearly double the normal prevalence for Western societies. County Kerry infants began life with minimal holding or contact, and corporal punishment began during the child's first year. From birth, parental interaction included labeling that encouraged daughters and early born sons to flourish as they were “reared for export, for emigration” from the village (Scheper-Hughes 2000). Parents (and others) discouraged and derided last-born sons (deemed to become the unmarried caretaker of aging parents and inheritor of the farm), calling them the ‘black sheep,’ the ‘leftover,’ the ‘scraping of the pot,’ and the ‘runt.’ The ‘double-bind’ for these rural Irish sons indicated that “You’re worthless, you can’t live beyond the farm...” and at the same time, “We need you--you’re all we have” (Scheper-Hughes 2000). These bachelor sons comprise the majority of those hospitalized for schizophrenia. Mental volatility may also develop in response to the tradition of Irish ‘double-think, double-speak’ (Scheper-Hughes 1979), in which everyday talk is skilled repartee, an art form thick with metaphor, veiled insults and ambiguity. Such a social environment may give rise to apprehension and anxiety which create a shaky foundation for mental stability. Though impatient with the verbally inept, villagers are tolerant and implicitly loving of every village “saint.” In the local taxonomy of behavior, even the very odd are reckoned fine enough, as long as they remain reserved (the cultural norm particularly for men), free of physical or sexual aggression, and properly subordinate to parental and religious authorities. A break with

these values indicates madness, which is “uncommonly common” there (Schepper-Hughes 1979). Scheper-Hughes’ Irish example demonstrates the possible influence of culture in a population’s development and diagnosis of psychopathology.

CULTURE AND TREATMENT [H1]

There is a link between people’s ethnomedical conceptions of the nature and cause of an illness and what they do to prevent that illness or to right the body, should illness occur. The first step in treatment is judging, ‘what kind of problem is this?’ Some problems can be treated on one’s own; others need specialist help immediately; others warrant outside care after self-treatment is insufficient.

Medical Pluralism, Health-Seeking Behavior and Scale[H2]

When a health issue arises, adults of any culture will consider the nature of their (or a dependent’s) problem and weigh it against their cultural understanding of the sickness and mental repertoire of appropriate treatments to try. Assessment begins the “health-seeking process” (Chrisman 1978), in which one tries several options in until the problem is better or all options are exhausted. Most societies are not limited to self-treatment; rather they have some degree of *medical pluralism*, (see Baer 2022 (this volume), Singer et al. 2019) or series of treatment options beyond self-treatment, which one tries in a “hierarchy of curative resort” (Romanucci-Ross 1969). The levels and kinds of care a society has depends on the society’s size and scale.

There is a trend across humankind for populations to grow in scale as they (1) seize the most fertile food-growing environments, (2) develop techniques to better exploit those environments for food (and other energy), (3) increase in both population and ownership of land and other tangibles. With each step of ownership and market involvement, job specialization increases. For subsistence, hunter-gatherer individuals gather every nearby kind of edible plant in season; while horticulturalists’ grow gardens with several plant foods, but rely on a few staples (and pastoralists do the same with livestock); and, agriculturalists only grow one or two crops (e.g., wheat and soy, only grapes, only citrus, only dairy cows, etc.) Medical practices mirror the same progression. In the smallest scale foraging bands, individuals use de facto illness prevention as their primary health practice, as small, mobile bands avoid contagious epidemics of crowding and sedentary living, have fresh, varied, organic (wild) diets, exercise daily, and, their social equality ensures equal access to resources and minimal intra-community stress 2012 (Bodley 2003, 2012). Generalist medico-religious shamans are their only medical outlet. Village or tribal-level societies have folk-experts—perhaps a religious healer, an herbalist and a bonesetter; while industrial agricultural societies have numerous kinds of medical specialists, who may focus on a single body part (e.g., dentistry, cardiology). Medical anthropologists refer to this specialist progression as the evolutionary view of illness and healing (e.g., Baer 2022).

However, as this phenomenon has nothing to do with natural selection and everything to do with environment and societal scale, I prefer the term medicine of scale, following Bodley's theory of scale (1999, 2003).

Medical pluralism exists in many lower-income countries where traditional popular and folk medicine practiced alongside of biomedicine (Caudell et al. 2017). Sometimes this pluralism is complementary (e.g., Giovannini et al. 2011), and sometimes competitive (e.g., Vandebroek et al. 2004)

Sectors of Health Care Systems Anthropologists sort these scale-related treatment options into three useful realms of practitioner: professional, popular, and folk (Kleinman 1980). Healers in the "professional" sector require formal training and certification (e.g., medical school and a medical license). The "popular" sector of health care consists of regular people caring for themselves and for their families. Popular treatments are basically common knowledge. The folk sector has healers who require training, talents, and experience beyond those available to the population at large, but "folk" practitioners (e.g., an herbalist or traditional midwife) is likely to learn as an apprentice. The three health care sectors can overlap to varying degrees, depending on the society. Also, the relative size and importance of each sector varies across cultures. Some industrial societies may not recognize a folk sector while small-scale groups have no professional sector.

The professional sector of healthcare includes all licensed or legally-sanctioned healthcare workers. The professional sector includes doctors, dentists, chiropractors, nurses, physical therapists, psychotherapists, dieticians, paramedics, and numerous types of medical technicians. Ethnomedical studies within the professional sector aim to assess communication and willing cooperation between patients and clinicians (e.g. Calvet-Mir et al. 2008); to find best practices for cultural synergy in medicine (Mignone 2007); and to critique standard practices with the goal of improvement (Michaelson 1988).

In industrialized countries with large bureaucracies and legal systems, the professional sector is large. Many jobs that used to be part of the folk sector now require rigorous schooling and certification. This is the case with registered nurse midwives, for example. The Hindu Ayurvedic system of medicine has medical philosophies and practices that differ from those of Western biomedicine. Ayurveda used to be India's primary folk medicine. Now there are several established Ayurvedic medical schools, and since 1970 Ayurveda has been a legal and complimentary alternative to Western biomedicine in India (Fulder 1997). In 2018, the U.S. recognized Acupuncture and Chinese (or Asian or East Asian) Medicine (TCM, CM, TAM, TEAM) as a medical profession, with regulation and licensing in each state. Standardization of these ancient practices remains incipient as the disagreement on a single name for the practice indicates (Suh 2020).

The popular sector is universally and logically the first and most commonly used area of healthcare. No matter what one's society, it is natural and pragmatic for adults to treat their own

ailments (and their dependents') immediately and privately before bothering to seek help from some medical specialist. An estimated 70-90 percent of healthcare takes place in the popular sector (Helman 2007, Kleinman et al 1978). Variation (between the 70-90%) in peoples' reliance on self-care occurs largely due to discrepancies between communities' accessibility to outside treatment and the acceptability of those options. Travel distance to outside medical care increases likelihood of self-treatment (M. Quinlan and Quinlan 2007) and competence in home remedies (Nolan and Robbins 1999). Immigrants, particularly undocumented ones, may steer clear of outside healthcare due to legal issues, language and social barriers and a preference for traditional, familiar remedies (Waldstein 2008). People also rely more heavily on self-treatment when the quantity and quality of supplies or staff at local facilities are not dependable, or when using specialized care is prohibitively expensive in terms of money or opportunity costs (Quinlan 2004, Wayland 2004). Home healthcare is literally the most "popular" sector of treatment. And, first response to illness can be critical: It may improve, mask, or exacerbate a condition—or create a new problem. Yet, perhaps because it is so ordinary and unobtrusive, the popular sector of healthcare remains an understudied topic within medical anthropology.

The folk sector of health care tends to be large in non-Western and non-industrialized societies, and it was a large sector of Western healthcare into the 1900s. This sector includes all of the expert curers who, rather than going through formal schooling for their medical training, learn through self-teaching and exploration, unofficial apprenticeships, and knowledge passed down through kin. Folk healers include (among others) midwives, herbalists, spiritualists, bonesetters, and shamans.

The tacit assumption in much of the medical anthropology and medical ethnobotany research has been that because folk healers are members of a particular culture, and they are medical specialists, their knowledge is the same as knowledge within the popular sector only more so. It seems that one could most efficiently study local ethnomedicine by speaking with the few folk specialists in a community, rather than deal with sampling issues, or blanketing a population; unfortunately, the assumption may be flawed.

Waldstein and Adams (2006) trace ethnomedical coverage of Tzotzil Maya (in Chiapas, Mexico) and illustrate the problem in treating folk healers as representative of community knowledge. One healer's "rudimentary concepts of anatomy and physiology" led Holland and Tharp to conclude that "the Tzotzil have only vague and elementary knowledge of the human body (1964: s102)". Nash (1967), followed by Fabrega et al. (1970) asserted that ideas about physiology play no role in a curer's diagnosis. Fabrega and Silver (1973) added that Mayan healers neither think about illness in terms of physiology nor have specialized knowledge about the body. One should not, however, conclude from the above statements that Maya generally have little or no physiological knowledge. Mayan *folk* healing is actually a supernatural enterprise therefore physiology is irrelevant to folk healers' practice. Maffi (1994) points out that Mayan folk healers benefit from avoiding natural, physiological explanations, because healers profit only from personalistic, supernatural illnesses. Meanwhile, ordinary Mayans of the

popular sector do have detailed knowledge of body parts (Berlin and Castro 1988) and a complex ethnophysiological system (Adams 2004). Edward Green (1999) similarly notes a “myth of excessive supernaturalism” regarding African ethnomedicines, which though they are largely spiritual among the folk sector of healing, remain predominantly naturalistic on the popular front.

Ethnomedical syncretism While traditional medical systems retain threads of customs, they remain in constant flux as societies respond to new conditions and health needs with adjustments in ethnomedical thinking and techniques. Societies adopt new health procedures through a bit of invention and a lot of borrowing, which leads to blended, or *syncretic* medical beliefs and practices within “traditional” or customary medicines.

Ethnomedical systems often intertwine supernatural and natural, and mental and physical healing (Erickson 2008). Folk healers often call on the supernatural. For example, before England had obstetricians, English midwives treated physical preparation of the mother, baby delivery, and maternal physical restoration, yet they relied on prayer on their own to improve their practice, and with their patients to improve outcomes (Otten 1993). A Dominican *obeahman*, a sorcerer hired to heal (or counter-curse), talks to a patient (and often the patient’s family) about the patient’s physical complaint and also about the patient’s present social life and village circumstances. Then the obeahman enters an altered state which involves prayer; discovers the agent that caused the problem; and gives the patient prayers, rituals and medicinal herbs to ward off the problem (personal patient communications). Shamans, found throughout the world, are a sort of curer who works explicitly through spiritual mediation. Shamans, like the obeahman, share the ability to enter a trance and communicate with a spirit world in which there are both good and evil spirits, and they can treat sickness caused by evil spirits. Shamans also tend to share experiential characteristics, such as a spiritual death and rebirth with a calling as a shaman, often coinciding with a near death experience (Eliade 1972). Fratkin writes of the northern Kenyan Samboro pastoralists’ shaman, or *laibon*, as a great magico-religious healer and soothsayer, yet sick Samboro also use an herbalist from a different, non-pastoral, foraging tribe, who, as a foreigner, has a woodsman mystique that adds to his curing reputation (Fratkin 2012).

We thus find that Maasai pastoralists, who have consensus on extensive ethnoveterinary EMs on livestock illnesses, etiologies, and treatments, have readily added over-the-counter “exotic medicines” (pharmaceutical tick dip and antibiotic injections) to their animal treatment regimens, without any ethnoveterinary explanation of how and why the medicine works, beyond knowing that they do work marvelously (Caudell et al. 2017).

Ethnopharmacology [H2]

Ethnopharmacology examines drugs or medicines used within a particular culture. In remote and impoverished areas of the world, traditional home and folk remedies persist as the main healthcare option. Distance from medical facilities, expense, and distrust of physicians can impede rural people's access to biomedical care. In contrast, self-treatment (or treating one's own dependents) with traditional remedies is accessible and culturally acceptable healthcare. Over 70% of the world's population (Pei 2001) rely mainly on traditional herbal medications for primary health care (see Balick et al. 2000).

About 85% of traditional remedies are herbal (Farnsworth 1988:91). Animal and mineral treatments also exist cross-culturally, but as a minority of treatments. Where I work in Dominica, people boil a chunk of termite nest (with termites) to induce vomiting. They also use salt water for gargling and cleaning wounds and sulfur gathered near volcanic ponds for wounds and fungal infections. About 80% of the total treatments are herbal, and 97% of the salient, common treatments are from plants (Quinlan 2004).

Because most traditional remedies are botanical, ethnopharmacology largely overlaps with ethnobotany—which examines human-plant interrelations. People use plants for multiple purposes. For example, recreational or ceremonial drug plants, like tobacco and marijuana, often have medicinal uses too (Schultes and Hoffman 1992). Multiple uses of single plants may intertwine ‘medical ethnobotany,’ with broader ethnobotany. Ginger and garlic are common food seasonings in many cultures, but they are also common remedies. The diet is often not only nutritional but pharmacological (see Etkin 2006, Pieroni and Price 2005). Tanzanian Maasai men make a feast soup with medicinal plants as a way to dose men with these healthy but strong herbs occasionally (C. Roulette 2018). Further, plants have uses beyond ingestion. The Kalinago (Island Carib) people of Dominica not only eat pineapple fruit, but ferment a urinary treatment from pineapple skins; use the small, immature fruits to induce abortions; and extract fibers from the leaves to make sewing thread, fishing line, and cords for jewelry (Hodge and Taylor 1956). Ethnobotanists study plants for cultivation, construction, or any use (see Balick and Cox 1996), and thus may or may not be medical anthropologists. Medical ethnobotany is a large part of ethnobotany, though not the majority of that field. Meanwhile, *most* ethnopharmacology is ethnobotanical.

Ethnographic field research is foundational to ethnopharmacology, though anthropologists are a minority of the field (Etkin 2001). Ethnopharmacology synthesizes cultural, botanical and biochemical inquiry of traditional medicines and few individuals do all three (though see Quave 2021). Just as many traditional remedies are herbal, many Western pharmaceuticals also have plant origins. The Bayer Company, for example, derived aspirin from salicylic acid in willow bark from which Europeans brewed a traditional rheumatism and headache remedy (Rishton 2008). Ephedrine, digoxin, morphine, and quinine are a few more important drugs, which were discovered through traditional cures and folk knowledge of indigenous people (Gilania and Attar-Rahmanb 2005), though examples abound. Of the top 150 brand name drugs, 57 percent contain at least one major active compound that was originally a plant extract (Rajasekharan

2006). Pharmacognosy (chemistry and biology of natural sources) thus applies ethnopharmacology for biomedical drug development. Yet, ethnopharmacology requires understanding EMs about why, when, and how people use a substance.

Lost in Translation [H2]

Ethics and Utility in Ethnomedicine [H3] The utility of herbal medications for the people who use them traditionally, as well as for adoption by others, particularly in pharmaceutical form, helps and hurts the anthropological pursuit of medical ethnobotany. Medical ethnobotany is bolstered by the awareness that, in addition to ethnographic and ecological data gathering, there is a lot of important applied ethnopharmacology to be done. There are copious herbal remedies to be identified and protected, and some of them are potentially beneficial to the world. It is unclear exactly how globalization and modernization are impacting traditional herbal knowledge (see M. Quinlan and Quinlan 2007a), intensifying efforts to learn about remedies before medical traditions change or die out. However, the potential for someone (e.g., a pharmaceutical company) to profit from ethnopharmacological findings presents ethical issues concerning intellectual property rights of the study populations. Anthropologists must work in concert with their subjects, carefully assuring benefit sharing and maintaining collaborators' intellectual property rights. Pharmaceutical researchers have not always been attentive to these issues. Consequently, medical ethnobotany can be a politically charged issue. The best intended research may be stonewalled with accusations of "biopiracy" (see Berlin and Berlin 2004). And, because plants are emically inseparable from EMs of the illnesses they treat, cultural stakeholders may perceive inquiry of even non-botanical ethnomedicine as biopiracy, if not cultural piracy. Again this calls for translation from ethnomedical researchers. Rather than translating from a local study-community to the academic one, here, we must translate our academic goals to our study community and their local organizations. Researchers may circumvent political troubles with preemptive diplomacy and cooperation, not only within the study population (per tradition), but with local government and non-governmental organizations who act as watchdogs for local communities (See Code of Ethics on the International Society of Ethnobiology website).

Besides drug discovery, local cultural conservation efforts can benefit from ethnomedical research. The Dominican elders I work with do not question the effectiveness of their medical traditions and herbal medicines. They say that pharmaceutical tablets are condensed herbs (in many cases this is essentially true). Elders appreciate my systematic record of traditional practices so that the younger generations, who seem to have less interest in (or need for) learning local medicines now, may have access to self-reliant treatments when they have children of their own to treat, get old or sick, or if their currently limited access to pharmaceuticals becomes even less attainable. Elders even feel vindicated by my reports of phytochemistry of the plants they use because they present a convincing case to Dominican youth, who, in a rapidly modernizing

culture, may be skeptical of traditional remedies and attracted by new pharmaceuticals. Outside substantiation supports their cultural preservation from within.

Meaning and Efficacy in Ethnomedicine [H3] The West has not always taken the effectiveness of ethnomedicines seriously, and has waged, “extensive and impassioned debate...about whether botanical medicines are efficacious” (Etkin and Elisabetsky 2006:7), and about the effectiveness of ethnomedicines beyond the placebo effect (Thompson et al.2009). For the audience inclined to dismiss local remedies as purely symbolic or bunk, it is convenient to point to the growing body of results that demonstrate bioscientific therapeutic actions of traditional plant remedies (e.g., Flores and Quinlan 2014, Pieroni et al 2002, Quave and Pieroni 2015, Quinlan 2004, Thiel and Quinlan 2020). Although identifying bioactive phytochemicals does indicate that a plant is likely effective, lack of literature on a plant, or researcher failure to identify its active chemicals does not indicate that a plant is ineffective (Moerman 2007). To use pharmacology to buoy a culture’s traditional medical knowledge is constructive. For outside scientists to attempt to “validate” traditional medicines through biochemistry is a mistake. If a treatment is popularly used within a culture, it is obviously “valid” within that culture, in that it is truly used. Privileging biomedical knowledge is not only ethnocentric, but does not account for the myriad elements of healing that bioscience has yet to learn.

Writing-off treatments with negative chemical results, little consensus about their use, or even untested plants is a logical as well as a scientific error. For one thing, a scientist can miss an important plant constituent for numerous reasons (see Etkin and Elisabetsky 2006: 5-8). Or, the scientist may be testing for the wrong medicinal activity. For example, antibiotics cure sinusitis and have been a standard clinical treatment, but biomedicine has found that most sinusitis is self-limiting with congestion well-controlled (Mölstad 2003). A couple of decades ago, a plant that showed no antibiotic activity may have been dismissed as a poor sinusitis treatment, despite having been a good decongestant, or perhaps having a quality that we still do not know cures sinusitis, just as we did not previously understand that decongestants treat sinusitis effectively. Some plants, called adaptogens, for instance, may be effective in that they decrease the harmful stress response or stimulate the immune system rather than target a particular pathogen or symptom (see Winston 2019).

Cross-culturally, medical ethnobotanists have observed that some popular remedies have organoleptic properties (or perceived sensory qualities such as taste, appearance and odor that relate to the plant’s medical function), which may be taken as a “signature” (literally, a “sign from nature”). For example, several peoples use blood-red plant infusions to build blood, such as after childbirth. Red color, in addition to looking like blood, may indicate elements such as iron that aid metabolic functions. Organoleptic qualities may be passed down as explanations of effective plants and certainly are mnemonic devices. (After seeing a fire-roasted banana, one will not likely forget its use as a laxative.) Further, a sensory cue may add to the plant’s symbolic appeal, ergo its ultimate effectiveness.

In ethnomedical ethnopharmacology, there is much more to a medicine than the chemicals it possesses: Medicines have cultural and symbolic meanings that play into their healing, even affecting the drug's biological effect on the human body (Moerman and Jonas 2002). Taking any medication can produce a healing psycho-physiological response (thus clinical drug trials must compare results of patients using the tested drug against the results of patients taking a placebo, rather than compare taking the tested drug with taking nothing). Cultural beliefs about medicines (form, color, dosage), as Moerman (2007) notes can affect the efficacy of a placebo: four placebo tablets work better than two; blue placebos generally make better sleeping aids than red placebos; and inert injections work better than inert tablets (in the US, but not in Europe). Similar additive effects occur when the medicine is not a placebo. Post-operative patients who receive medications face to face from a clinician report about one third as much pain as patients receiving the same medication secretly via a computer-controlled intravenous line (Moerman 2007). Moerman (2002) terms this medical augmentation through cognition, the 'meaning effect,' which is like the 'placebo effect' but with emphasis on the symbolic value of medications for placebos and non-placebos alike. A loved one's hug is bioactively "inert," yet it has a biological response: It increases levels of the hormone oxytocin and reduces blood pressure (Grewen et al. 2005). If a plant with an organoleptic cue and cultural salience functions purely as a placebo (which is a hard call to make) it is still ethnographically and medically important. Many societies keep animals, but cultures vary in their views of them. Western medicine has been studying patients' beliefs and health outcomes of interacting with pets and therapy animals with positive findings (Hooker et al. 2002); hence, ethnozoological ethnophysiology, ethnopsychiatry, and ethnopharmacology should be forthcoming.

CONCLUSION [H1]

Ethnomedical systems are comprised of all of these domains—ethnophysiology, ethnopsychiatry and ethnomedical treatment—but they are usually treated as distinct spheres of inquiry with different kinds of medical anthropologists specializing in each. This separation is an academically practical but artificial one as these branches of ethnomedicine are natural complements, and usually not discretely bounded. For Earth's many societies who are not Western, Educated, Industrialized, Rich, and Democratic (i.e., WEIRD; Henrich et al 2010), the mental and physical realms of illness are inseparable. Western culture views mind and body as distinct, other cultures rarely do. In most cultures, people are simply sick, not physically ill *or* mentally ill. By definition, these fields—ethnopsychiatry and ethnomedicine—examine emic perspectives on illness, and so, unless the research is taking place in Western culture where body and mind are distinct, ethnopsychiatry *is* ethnophysiology, and vice versa. The bond between ethnopsychiatry and ethnophysiology is clear, and both of these ethnomedicines are permeated with treatment traditions whose use only makes sense in terms of cultural ideas about the body/mind.

In sum, ethnomedicine examines local ideas and behaviors surrounding how to stay well, and how to treat sickness. Anthropologists examine the diversity of ethnomedical beliefs and practices between individual cultures, and compare ethnomedical trends at the regional and global levels. Ethnomedicine seeks to understand the internal logic of medical systems. We can then apply ethnomedical understanding to several kinds of cultural translation. When we study popular and folk explanatory models, we translate that ethnomedical logic to academics and clinicians with the goal of better treatment through improved cultural understanding. When we study clinicians, we can translate critical findings for potential patients and policy makers with the goal of making professional medicine more user-friendly and efficient. We also need to translate the aims of ethnomedicine to the public, local organizations and governments so that people are aware of the potential humanitarian outcomes of applied ethnomedical study.

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