

BIOCULTURAL MODELS, CULTURAL CONSONANCE AND SALUTOGENESIS IN TYPE 2
DIABETES TREATMENT; MEASURING THE IMPACT OF SYMBOL SYSTEMS ON
HEALTH WITHIN A MEXICAN COMMUNITY

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ABSTRACT

The project described here takes place in Guadalajara, Mexico in a major government sponsored health clinic. It examines the impact of social and cultural factors on clinical medical treatment with a focus on type 2 diabetes. The aim of the project is to understand the effects of culturally specified aspects of medical treatment on health outcomes. The approach to the problem is from cognitive biocultural anthropology, which emphasizes the interdependency of biology and culture. It was hypothesized that after controlling for clinical treatment, including diet, activity, and pharmaceutical consumption, that those who are able to implement culturally specified models of treatment in their own lives (cultural consonance) will have better diabetic outcomes such as lower BMI, controlled blood glucose, and greater overall well-being.

A multi-stage research design, including logistic and least squares regression, facilitated hypothesis testing. The project begins with cultural domain analysis including qualitative elicitation of local cultural models of treatment (n=57), followed by cultural consensus analysis (n=56). The project finishes with quantitative and comparative analyses through epidemiological survey with 85 diabetic patients. Physiological outcome measures were drawn from medical records.

The local cultural model of treatment adheres closely to the biomedical model, but also includes influences from traditional medical belief systems and from the social system more generally. Diet was an especially salient aspect of the model.

Survey results show an association between greater cultural consonance in the food-as-treatment model and lower BMI. Greater cultural consonance in the treatment domain was not associated with greater glucose control. Rather it was associated with poor control, which led to a reconsideration of glucose levels from an emic, patient-centered perspective. Glucose levels were re-conceptualized as disease gravity. In this sense, glucose predicts greater participation in the broadly conceived therapeutic model, but not necessarily more intensive participation in the clinical treatment regimen. Finally, greater cultural consonance in treatment predicts greater well-being. Results are discussed in relation to the research questions.

DEDICATION

This dissertation is dedicated to the people of Earth, without whom everything else is meaningless.

LIST OF ABBREVIATIONS AND SYMBOLS

<i>a</i>	Cronbach's index of internal consistency
Avg.	Average
BMI	Body mass index
CMNO	<i>Centro Médico Nacional Occidente</i> (Western National Medical Center)
<i>DF</i>	Federal District of Mexico (Mexico City)
F	Fahrenheit
FBG	Fasting Blood Glucose
IMSS	<i>Instituto Mexicano de Seguro Social</i> (Institute of Mexican Social Security)
ISSTE	<i>Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado</i> (Institute of Insurance and Social Security for State Workers)
MDS	Non-metric multi-dimensional scaling
<i>n</i>	Sample size
P	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
<i>r</i>	Pearson's correlation
R^2	R-squared
SOC	Sense of Coherence
<i>t</i>	Computed value of <i>t</i> test

UISESS	<i>Unidad de Investigación Social, Epidemiológico, y Servicios de Salud</i> (Social, Epidemiological, and Health Services Research Unit)
WWII	World War II
=	Equal to
>	Greater than
<	Less than
%	Percentage

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CONTENTS

ABSTRACT.....	ii
DEDICATION.....	iv
LIST OF ABBREVIATIONS AND SYMBOLS	v
ACKNOWLEDGMENTS	vii
LIST OF TABLES.....	xv
LIST OF FIGURES	xviii
1. CHAPTER ONE: INTRODUCTION.....	1
a. Specific Project Aims.....	5
b. Chapter Previews... ..	9
2. CHAPTER TWO: LITERATURE REVIEW.....	14
a. Symbolic Healing and Death	14
b. A Universal Model of Symbolic Healing	16
c. A Psychobiological Critique of the Universal Symbolic Model.....	18
d. Culture in Clinical Context.....	19
e. Placebo Effects.....	20
f. Views from Anthropology and Neuroscience	21
g. Neuroscience and the Clinical Trial.....	22
h. Total Effects of Treatment	25
i. Interdisciplinary Movement.....	25

k. Placebos in Clinical Practice.....	27
l. Placebos in Discourse	29
m. Placebo: Theory and Critique	30
n. Classical Conditioning Model.....	30
o. Expectancy Model	31
p. Context and Meaning.....	32
q. Clinical Interactions	32
r. Meaning Model.....	33
s. Embodiment and Performativity as an Alternate Paradigm.....	34
t. Performativity and Meaning	38
u. Meaning and the Gap in Theory	40
v. Meaning in Evolutionary Context.....	41
w. Meaning as a Cultural System	44
x. Implications of a Theory of Meaning in Anthropological Research	45
y. Placebos and Salutogenesis.....	46
z. Cultural Consonance	49
aa. The Patient-Centered Meaning of a Clinical Encounter	52
bb. The Sick Role: A Sociological Perspective	53
cc. Diabetes.....	57
dd. Health Effects of Modernization.....	61
ee. The Anthropology of Diabetes	62
3. CHAPTER THREE: THE ETHNOGRAPHIC CONTEXT.....	70
a. Mexican Geography and Climate	71

b. Ethnography and the Family Road Trip.....	73
c. A Brief Political Economic History: The Distant Past.....	77
d. Political Economy: European Arrival and Integration.....	78
e. Political Economy: Colonial Rule and Independence.....	79
f. Political Economy: The Mexican Revolution	82
g. Political Economy: The PRI Years	83
h. Political Economy: A Summary	87
i. Contemporary Mexico	88
j. Problems with Modernization.....	90
k. The War on Drugs.....	91
l. Modernization and Migration	95
m. Modernization and Land Rights	95
n. People and Politicians: Us versus Them.....	96
o. A Role for Religion	97
p. The Mexican Family	99
q. Holiday Culture.....	104
r. Late Winter and Early Spring Holidays	105
s. Late Spring Holidays.....	105
t. Late Summer and Early Fall Holidays.....	106
u. The Case of Ciudad Guzman	106
v. Late Fall Holidays.....	108
w. Winter Holidays	108
x Food and Holidays	109

y. Other Popular Pastimes.....	110
z. Mexican Concepts of Time	110
aa. Divisions in Social Space: Gender	111
bb. Divisions in Social Space: Wealth.....	112
cc. Divisions in Social Space: Urban-Rural.....	112
dd. Markers of Modernity	113
ee. Entertainment Lifestyles.....	116
ff. Social Class and Market Participation	118
gg. Guadalajara: A Sensory Experience	121
hh. Olfaction	122
ii. The Smell of Food in the Air.....	124
jj. Food and Society	125
kk. Color	128
ll. Sounding Out the Rhythm of the Day	129
mm. Pluralism in the Mexican Health Care System.....	134
nn. Mexican Biomedicine	135
4. CHAPTER FOUR: A QUALITATIVE LOOK AT DIABETIC EXPERIENCES	139
5. CHAPTER FIVE: CULTURAL DOMAIN ANALYSIS METHODS AND RESULTS	152
a. Research Assistants.....	152
b. Research Strategy.....	153
c. Cognitive Tasks Part 1: Free Listing.....	157

d. Overall Free List Results	163
e. General List of Diabetes Treatments.....	163
f. Food List Results.....	168
g. List of Diabetic Activities	175
h. List of Clinical Concerns	177
i. List of Blood Sugar Monitoring Activities	180
j. Searching for Information List	182
k. Emotions and Behaviors List	184
l. List of Family Aspects of Treatment.....	188
m. List of Treatment Obstacles	191
n. Cognitive Tasks Part 2: Pile Sorting Methods	194
o. Results for Pile-Sorting Tasks	199
p. Results for the Unconstrained Core Treatment Pile-Sort	200
q. Pile Sorts for Food Cards.....	206
r. Pile-Sort Results for Emotions and Behaviors	210
s. Two Types of Cultural Consensus Data.....	213
t. Cultural Consensus in the Model of Food: Method and Result.....	213
u. Cultural Consensus Formal Survey Methods	215
v. Cultural Consensus Formal Survey Results.....	221
6. CHAPTER SIX: SURVEY METHODS AND RESULTS	227
a. Epidemiological Survey Sampling Methods	227
b. The Survey Instrument.....	228
c. Cultural Consonance	229

d. Controls for Daily Activity	232
e. Controls for Daily Food Consumption.....	233
f. Controls for Adherence to Pharmaceutical Medications	236
g. General Well-Being Scale	237
h. Psychological Adjustment to Diabetes	239
i. Life-Orientation or Sense of Coherence Scale	241
j. Clinical Biomedical Data.....	243
k. Calculating Scales and Coding Variables	244
l. Sample Description.....	245
m. Diabetic Outcomes.....	248
n. Food Frequency Short List Results.....	250
o. Self-Reported Consumption and the Diabetic Food Pyramid.....	251
p. Physical Activity Results	253
q. Results for Pharmaceutical Consumption.....	254
r. Results Related to Well-Being	256
s. Results for Psychological Adjustment	257
t. Results for Life-Orientation or Sense of Coherence.....	258
u. Data Analysis: Household Imbalance and Role Strain.....	259
v. Cultural Consonance in the Domain of Food-As-Treatment.....	260
w. Results for Cultural Consonance in the Treatment Domain	261
x. Cultural Consonance in the Treatment Domain and FBG	262
y. An Alternative Hypothesis: Sickness Gravity	264
7. CHAPTER SEVEN: DISCUSSION OF RESULTS	269

a. Patient-Centered Meaning and the Treatment Process	270
b. Salutogenic Factors	275
c. Treatment Efficacy.....	277
d. Further Insights about Treatment and Therapy.....	279
e. Centripetal Forces	285
f. Transforming Sick Roles to Therapeutic Roles.....	286
g. Social Roles, Values, and Norms.....	286
h. The Sick Role Revisited.....	290
i. The Patient Role.....	293
j. On Placebo Effects.....	295
k. Improving Outcomes in Mexico	296
l. Study Limitations and Future Directions.....	296
8. CHAPTER EIGHT: CONCLUSION	299
WORKS CITED	304
APPENDIX A: CULTURAL CONSENSUS SURVEY INSTRUMENT	321
APPENDIX B: CULTURAL CONSONANCE SURVEY INSTRUMENT	324
APPENDIX C: IRB DOCUMENTATION	332

LIST OF TABLES

Table 1. Initial free list protocol in English and Spanish.....	157
Table 2. Modified (second) free list protocol.	159
Table 3. Third free list instrument.....	161
Table 4. Pooled free list (protocol 1 and 2): general treatment items for diabetes listed by frequency of mention (n=18).....	164
Table 5. Pooled free list (protocol 2 and 3): foods that are important for diabetics listed by frequency of mention (n=17).....	169
Table 6. Pooled free list (protocol 2 and 3): activities which diabetics should engage in listed by frequency of mention (n=17)... ..	176
Table 7. Pooled free list (protocol 2 and 3): relationship with doctor and the benefits of clinical visits listed by frequency of mention (n=17).	178
Table 8. Pooled free list (protocol 2 and 3): checking blood sugar and other self-monitoring behaviors listed by frequency of mention (n=17).	181
Table 9. Free list (protocol 3): types of information and information sources for diabetics listed by frequency of mention (n=6).....	183
Table 10. Pooled free list (protocol 3): emotional and behavioral contributions to treatment listed by frequency of mention (n=17).	184
Table 11. Pooled free list (protocol 2 and 3): family contributions to treatment listed by frequency of mention (n=17).	188
Table 12. Pooled free list (protocol 2 and 3): motivations to complete treatment listed by frequency of mention (n=17).	190
Table 13. Free list (protocol 3): obstacles to treatment listed by frequency of mention (n=11).	191

Table 14. Card sets used for pile-sorting tasks, arranged alphabetically in Spanish.	197
Table 15. Cultural consensus rankings for core diabetes treatments	202
Table 16. Linear regression standardized Beta coefficients for PROFIT analysis of consensus ranked treatment items.....	205
Table 17. Scenarios presented in the cultural consensus analysis ratings section (n=56)....	218
Table 18. Cultural Consensus Key listed by average rating.	223
Table 19. Cultural consonance survey scenarios... ..	230
Table 20. Control questions for physical activity.....	233
Table 21. Adherence to medication scale from Morisky et al. (1986)...	237
Table 22. Bradley’s (1992) General Wellbeing Questionnaire... ..	237
Table 23. The ATT19: a measure of psychological adjustment to diabetes including its subscales... ..	239
Table 24. Life-orientation Questionnaire (Antonovsky 1987).....	242
Table 25. Calculation formulas for General Well-Being (Bradley 1992)....	245
Table 26. Descriptive statistics for sample demographics.....	246
Table 27. Mean blood glucose	248
Table 28. Frequency of glucose monitoring... ..	249
Table 29. Descriptive statistics for blood pressure and other physiological characteristics	250
Table 30. Descriptive statistics for select items from the food model....	251
Table 31. Descriptive statistics for sweets and sugar substitutes.....	251
Table 32. Descriptive statistics for food consumption.....	252
Table 33. Descriptive statistics for physical activity.	254

Table 34. Descriptive statistics for pharmaceutical consumption... ..	255
Table 35. Descriptive statistics for the adherence scale... ..	256
Table 36. Descriptive statistics for Bradley’s (1992) General Well-Being Questionnaire.....	256
Table 37. Standardized Beta regression coefficients for dependent variable BMI.....	261
Table 38. logistic regression B coefficients and odds ratios for hypothesis cultural consonance will predict diabetes control, with control measured at 110 mg/dl.....	263
Table 39. Logistic regression B coefficients and odds ratios for hypothesis cultural consonance will predict diabetes control, with control measured at 140 mg/dl.....	264
Table 40. Standardized Beta regression coefficients for hypothesis that cultural consonance is positively related to severity of diabetes, including the entire sample of 77 cases.	266
Table 41. Standardized Beta regression coefficients for main effects versus interaction effects of hypothesis cultural consonance are positively related to diabetes severity... ..	267
Table 42. Standardized Beta regression coefficients with cultural consonance in treatment domain as dependent variable.....	267
Table 43. Standardized Beta regression coefficients with general well-being as dependent variable	268

LIST OF FIGURES

Figure 1. A bio-psycho-social model of symbolic healing. Adapted from Kirmayer (2004).	18
Figure 2. Effects of no treatment, taking a pill, aspirin, and branding. Adapted from Braithwaite and Cooper (1981).	24
Figure 3. Cognitive structure of diabetic patients in Mexico. Adapted from García de Alba et al. (2006).....	67
Figure 4. Scatter plot of unconstrained core treatments showing two dimensional MDS results (n=28).....	201
Figure 5. MDS map of unconstrained pile-sort for core treatments showing PROFIT line derived from cultural consensus analysis of constrained core treatments.....	204
Figure 6. Cluster analysis results for unconstrained pile-sort of core diabetes treatments (n=28).....	206
Figure 7. MDS map for unconstrained food pile-sort (n=17).....	207
Figure 8. Cluster analysis for unconstrained pile-sort in domain of diabetic foods (n=17).....	209
Figure 9. Cluster analysis for categorically ranked foods (n=17).....	210
Figure 10. MDS map for behavioral and emotional components of diabetes treatment	211
Figure 11. Cluster analysis results for emotional and behavioral aspects.	212
Figure 12. Cultural competence and residual agreement graphed for cultural consensus in the food domain.	213

Figure 13. Cultural competence and residual agreement for food rating task.....	214
Figure 14. Cluster analysis for the limited food model.	215
Figure 15. Plot showing the distribution of agreement with cultural competence and residual agreement scores.	222
Figure 16. Diabetes food pyramid versus actual consumption.....	253
Figure 17. Scatter plot of mean blood glucose by cultural consonance in treatment.....	265
Figure 18. Flow chart showing significant relationships between key variables in type 2 diabetes treatment	270

CHAPTER ONE: INTRODUCTION

There are a number of ways to to introduce the topic of this discussion. It appears that the best way is to move in gradually so that the reader has time to consider the concept being developed. It may be best to start where the idea started, in an undergraduate bio-psychology class. The topic of the discussion that day was pharmaceuticals and dosing standards. The professor had just explained that a minimum pharmaceutical dose is equal to an amount that is effective in half of a population. What struck a chord in the discussion was that a few minutes earlier she had been talking about placebo responses in clinical medical trials. She stated that one third of participants in clinical trials respond positively to placebo treatment. This minimal difference (about 17%) between placebos and pharmaceutical doses meant that either minimum doses are very weak, or placebos are very strong.

Having a keen interest in mind-body interactions already, the placebo question offered an opportunity to apply slightly esoteric academic interests in a concrete way. In seeking answers to the placebo problem, the argument made by Daniel Moerman (2002) seemed the most reasonable. Moerman argues that placebos are not inert substances, as they are commonly conceived, but rather symbols that are loaded with meaning. He concludes that a more descriptive name for the phenomena observed in clinical trials would be “meaning response.” Moerman argues that such responses are not simply individual idiosyncratic responses. Rather, he lays out evidence demonstrating socially conditioned, culturally patterned responses. The meanings wrapped up with placebo treatments involve symbols that are shared by a social group.

What Moerman (2002) suggests is that the impact of meaningful symbols on medical practice is not limited to biomedicine and the clinical setting. It extends to all medical practices in all societies because there is symbolic value in all socially legitimized medical practice. The placebo effect and biomedical practice offer good starting points because of the demonstrated physiological power of pharmaceuticals and other biotechnologies. However, the effective power of biomedical protocols has become blinding, causing many to assume that all medical efficacies are related to physiological interventions.

This reinforces the false dichotomy between mind and body and questions any medical system that does not utilize biological reductionism to treat sickness. Treatments that make people feel better but that do not have known statistically significant biological correlates get categorized as sham treatments or as less powerful “mental” health effects. Where there are positive treatment effects that cannot be attributed directly to the physical properties of some treatment, the effects are labeled non-specific. However, as noted by Caspi and Bootzin (2002) it is more likely that the effects are specific, but specific to a non-specified aspect of treatment. For example, the specified treatment in some clinical trial could be a measured dose of some pharmaceutical. A non-specific aspect of the treatment may include the delivery method of the pharmaceutical, such as the use of shots rather than pills. Further, these non-specific aspects of the clinical encounter take on a great many forms and often extend beyond the boundaries of the clinic.

Studying the impact of cultural meaning in clinical biomedical settings is especially interesting precisely because of the assumed power of biomedicine. Many tend to be impressed that even after powerful treatment, socially constructed meanings are still impacting clinical outcomes. If this can occur in carefully controlled clinical settings, then, where the setting is not

carefully controlled, such meanings could have huge impacts. While this kind of thinking is common, it is erroneous. Since there is symbolic meaning in all medical encounters, the effects of powerful physiological action is added to the naturally occurring meaning effect, not vice versa. Therefore, the half of the population that responds to a minimum dosage of some pharmaceutical is composed of twice as many meaning responders as physiological responders (33% placebo plus 17 % physiology). While this is an oversimplification of the placebo-meaning situation, it highlights the value of solving the problem.

This approach to the problem of symbolic healing has been criticized (Thompson et al. 2009). In particular, these critics cite the use of the term “meaning” as being too loose, and the use of cognitive research methods as too heavy. They (Thompson et al. 2009) want to replace the concept of meaningfulness with what they call a biocultural model. Their appeal to biocultural processes is highly agreeable, though they have difficulties incorporating the cultural into their biological rhetoric. One goal of this project is to examine the implications of Moerman’s (2002) argument within a cognitive biocultural framework. Here the framework will follow Dressler’s (Dressler 2003), anthropological definition that conceptualizes human beings irreducibly as organisms linked in systems of shared meaning.

The systems of meaning linking human organisms are explicitly cultural (D’Andrade 1984) and related to unique human cognitive capabilities, which represents information about the world to the self in the form of cognitive schemas. These are structured, cognitively and socially distributed pieces of information that can be combined for various thinking tasks. Schemas work with scripts, which are representations of action sequences. Together schemas and scripts form cognitive models of the world. Where these models are widely shared, they are called cultural

models (D'Andrade 1995; Shore 1996; Strauss and Quinn 1997). Cultural models represent the cultural side of biocultural research (Dressler 2003).

Through this biocultural lens, Moerman's (2002) argument about what is meaningful can be re-conceptualized as what is cultural. The problem becomes one of separating cultural models that are cognitively linked with unconscious biological processes from those that are not. Prior to the cultural models approach, it was difficult to measure cultural factors. One tool that has been especially useful in operationalizing cultural variables has been cultural consensus theory (Romney et al. 1986). Consensus theory suggests that where informants agree about some knowledge, their agreement is based on mutual participation in a cultural knowledge system. By identifying the degree of shared knowledge within some domain, cultural models of that domain and their symbolic correlates can be mapped. Furthermore, using Dressler's concept of cultural consonance (Dressler and Bindon 2000) these cultural maps can be used to locate individuals, including their attendant biological status, within cultural space. This enables a clear understanding of the relationship between cultural variables and health status.

Applying the cultural models approach to placebo effects suggests that the key to understanding placebo responses lies within the domain of treatment. Where a patient believes that they are receiving treatment, there should be a greater tendency to experience improved health outcomes. Identifying essential symbols has been the greatest challenge in placebo research so far. This problem can now be resolved. Symbols can be elicited using cognitive techniques and they can be measured and mapped.

The approach is not completely unlike Kleinman's (1980) explanatory models approach. In Kleinman's description, medical systems are cultural systems. The cultural system is subdivided into three parts, professional, traditional, and lay domains. The three domains

overlap, and individuals draw from each when constructing meaning around their clinical experiences. Each individual's aggregate understanding of their clinical experiences is their explanatory model. The explanatory model is the frame individuals will use to interpret experiences and generate appropriate behaviors. Where the current project intends to expand on Kleinman's (1980) approach is by expanding the explanatory models approach beyond the limits of the clinic. That is, where Kleinman, and many placebo researchers, focus on how meanings are constructed in the clinic and subsequently carried forward, this project will focus on how meanings created outside the clinic are carried into the clinic and subsequently impact clinical behaviors. It is a subtle point, but one with serious implications. Ultimately, it asks whether the medical system is a source of cultural production or cultural distribution.

Specific Project Aims

In order to measure the impact of cultural meaning on physiology a salutogenic (Antonovsky 1979; 1987; 1993) approach was adopted. Salutogenesis searches for the origins of health rather than sickness. It seems that placebo responses are salutogenic effects and that such a frame may be helpful in pinpointing health promoting symbols. This project does not closely follow Antonovsky's original work, since salutogenesis was intended to understand why healthy people stay healthy. However, it does contribute to salutogenic thinking. The project asks what it is about treatment, other than physiological potent interventions, that moves sick persons towards the healthy end of the sickness-health continuum.

The project focus is on type 2 diabetes treatment in Guadalajara, Jalisco, Mexico. Because type 2 diabetes involves a broad spectrum of clinical aspects, self-care behaviors, and lifestyle choices, it should be ideal for constructing a broad model of treatment. The clinical issues involved with type 2 diabetes management extend far beyond the boundaries of the clinic.

Urban Mexico provides an ideal location for studying type 2 diabetes because the disease is widespread and well-studied in the area.

Participants were recruited from within and around a Mexican Social Security Institute (IMSS) sponsored health care clinic. The medical center provides specialty services for the western portion of the country and is centrally located in the city of Guadalajara. Guadalajara, with a population of about 4 million people, is a major metropolitan area and is considered one of the most modern and industrialized cities in Mexico.

Data collection was carried out in three parts. The first part consisted of cultural domain analysis. The second part included a test of cultural consensus for a cultural model of diabetes treatment, and the third part included an epidemiological survey along with relevant data mining from medical records. The goal of the first research stage was to elicit a local cultural model of type 2 diabetes treatment. The initial sampling frame was guided by Kleinman's (1980) professional, folk, and popular health sectors model. The popular sector sample includes both diabetic and non-diabetic persons. The folk sector includes homeopathic pharmacists and herbalists. The professional sector includes doctors, nurses, and nutritionists. The samples were drawn conveniently from IMSS medical staff and from within the general population. Methods included participant-observation, formal and informal interviews, free-listing, pile-sorting, and rating and ranking tasks.

Open-ended interviews and participant-observation were used complementarily with cognitive tasks by providing contextual information and guidance for proper task phrasing and for appropriate theme selection and analysis. The exploration of the treatment domain was influenced by Kleinman et al.'s (1978) approach to eliciting explanatory models, where a patient-centered model of sickness and its treatment are allowed to emerge. As opportunities

arose, participants were encouraged to discuss such things as their relationship with food and exercise, their physician and family, their treatment related hopes and fears, treatment successes and failures, economic difficulties related to treatment, work relations and their ability to self-treat on the job, and other issues related to health services.

Cognitive free-listing was used to elicit domain content from each sample sector. Elicitation items were open-ended. Free-list protocols evolved during recruitment, so that later informants were asked to make more lists than early informants were. Lists were pooled for analysis where possible. Overall, 28 informants were recruited for the free-list task. Pile-sorting and rating and ranking tasks were used to understand the shape and defining features of the domain. Participants were asked to perform three unconstrained and two constrained pile-sorts using one of three sets of cards. This included asking informants to provide a label for each pile (category) they chose to create. Overall, 29 informants were recruited for the pile-sorting tasks.

Open-ended interviews along with the cognitive tasks provided a robust ethnographic description of the diabetes treatment domain. Ultimately, this description was used to construct a quantified survey instrument suitable for cultural consensus analysis (Romney et al. 1986).

In the second stage of research a test of cultural consensus was carried out to triangulate the qualitative data, and to quantify the cultural model as an integral aggregate model in the form of a consensually agreed upon series of propositions. The consensus survey presents participants with a scenario created from first stage ethnography and cognitive tasks. In this case, scenarios involved reading a series of brief statements to each participant. Each scenario generically summarized some ethnographic point as a simple statement. Participants were asked if they believe that, in general, other local people would agree or disagree that the statement could be true or factual. Participants were then asked if they agree or disagree somewhat or if they agree

or disagree strongly. This procedure resulted in a four-point Likert scale. This two-step questioning reduces judgment errors by asking participants to make multiple dichotomous choices.

By compiling a consensus model, the tri-sector sampling strategy useful in the first stage was no longer useful. Rather, for the second stage consensus survey, a sample of 56 participants was recruited from among type 2 diabetics being treated at the IMSS family clinic. The sample was not systematically stratified, but it included both men and women, and a wide range of ages. All participants had had diabetes for at least three years, ensuring that participants had ample time to learn the treatment model.

The resultant cultural consensus answer key (Romney et al. 1986) describes the features of type 2 diabetes treatment, and was used to inform the cultural consonance measures for testing hypotheses in the third stage of research. The consonance survey presents a particular scenario from the consensus survey and asks participants how applicable the activity is to their own lives.

Additional data were collected in order to control for clinical treatments. For example, adherence to pharmaceuticals was measured using a scale created by Morisky et al. (1986). Food intake controls involved combining a free-list exercise with Willett's (1990) semi-quantitative food frequency questionnaire and adapting them for use with the National Institute of Health (2009) diabetes food pyramid. Participants were asked to list the typical foods they eat for each meal of the day and snacks. They were then shown examples of serving sizes for each type of food they listed and were asked if they eat more or less, until a correct quantity was identified. Other important questions included frequency of food consumption along with beverage intake. This procedure has the benefit of being brief and powerful, since the survey results are immediately comparable with the recommended diet, leaving a measurable distance

(number of servings) between dietary prescription and individual consumption. A similar procedure was used to control for individual activity levels. Activities were divided into categories, general activity, walking, exercise, sports, and dance. Participants were asked how many times each day they engage in 15 minutes of exercise from each exercise category.

Some demographic information was retrieved directly from informants, for example education, occupation, and annual household income. Other data, such as body mass index (BMI), blood pressure, and fasting blood glucose (FBG) test results were extracted from participants' medical records.

It was hypothesized that individuals who are able to live according to cultural norms, that is those who are consonant with the cultural model of treatment, will have better diabetic outcomes such as lower BMI, good diabetic control, and better general well being. Good control was defined as FBG below 110 (mg/dl). Only those using hypoglycemic medications were included. Pregnant women, people under 18 years of age, and those who had been diagnosed less than one year prior were excluded.

Analysis of diabetic control was conducted using logistic regression analysis to distinguish between good and poor control groups. Regression analysis provides a method of controlling for a wide range of variables. The logistic regression equation is:

[group membership] = a + b1 [covariates] + b2 [adherence] + b3 [cultural consonance in treatment model]

A series of least squares regression equations were also used to examine linear relations among other outcome variables such as cultural consonance in treatment, BMI, FBG, and general wellbeing.

The results of the regression analyses indicated what proportion of the overall variance was explained by each variable. Once adherence and other covariates were controlled, the proportion of variance that can be attributed to meaningfulness had been isolated as the cultural consonance variable. It should be reiterated that cultural consonance is a measure of correlation between group models and individual beliefs and behaviors. In other words, consonance represents a degree of social integration, the degree to which individuals participate in the shared local system of meaning. Therefore, the regression coefficients identify the degree of impact of the meaningfulness of treatment on each particular outcome.

Chapter Previews

The following chapter will introduce the problem in some detail. It will begin by introducing placebo effects as a special case of symbolic healing, followed by some discussion of various symbolic healing models. This will lead to questions about treatment efficacy and how it is determined. It will then lead back to a more thorough discussion of the placebo literature. In this discussion, one point of emphasis will be the division among placebo researchers about what exactly counts as a placebo effect. This will contrast views from neuroscience with views from anthropology, and contrast differing views from within anthropology. It will highlight the issue of meaning and what is meaningful in the world. The discussion will turn towards developing an operational model of meaning that may be useful in researching medical processes.

After developing a theoretical approach, the discussion will turn to preliminary research that identifies social roles as key aspects in meaningful clinical encounters. Especially important to these social roles are the sick role and doctor-patient interactions. Parson's (1991) concept of the sick role is discussed in some detail since it concerns an individual's rights and obligations in

relation to being sick. Parson's model suggests that individuals are obligated to participate in medical treatment, to become a patient, subjugated to the powerful doctor. Here, the patient must trust and cooperate with the doctor in order to have therapeutic success. The sociological model supports the notion that what takes place in a clinical setting reaches far beyond the boundaries of the clinic.

Finally, the literature review will conclude with a brief discussion of diabetes from a medical perspective, including the known causes and progression of the disease, known treatments, and complications. It will provide specific information about type 2 diabetes in Mexico, where diabetes is a serious public health concern. Finally, the review will turn to anthropological approaches to diabetes, which will highlight the known social and cultural aspects of the sickness.

The third chapter will describe the research location and develop the ethnographic context. The land and climate are described first. Part of this discussion revolves around experiences entering, leaving, and traveling around the field in a mini-van loaded with a family of four. These trips saw about two-thirds of Mexico's 31 states and provided a broader national framework for understanding life in the western highlands. After painting the landscape, the discussion turns to a historical and political-economic orientation as it considers long-term Mexican social patterns. The historical review sets the stage for a discussion of current social and political issues that penetrate everyday lives. These issues include political and economic imbalance, corruption, religion, holidays, families, and food among other things. Many of these issues divide social space and are indicative of social class.

The emphasis of the ethnography is the Mexican middle and working classes. Much literature focuses on the Mexican poor (Lewis 1961, Paz 1985) with little consideration for the

burgeoning middle class. Kinship, family and household structures are examined among this group. Furthermore, the sample of diabetics drawn later in this project was taken from these focal classes, so an understanding of their perspective is desirable. Social mobility and external markers of modernity are cherished within these groups, especially portable electronics and finer clothing. Shopping is a national pastime among the middle class (García Canclini 2001). The market system is an important productive and distribution system. The middle and working classes spend a great deal of time participating in local activities. In addition to shopping, there are many sports, parks, concerts and other social events. The ethnographic description then turns to the sensory experiences of Guadalajara itself. The city has an impact on the senses. In comparison with a large US city, Guadalajara is loud, colorful, and slightly chaotic. There is a style to life that is uniquely *Tapatío* (a self-reference for the people of Guadalajara).

The discussion then turns to the Mexican medical system, including some of the national influences that have shaped the system. One point that is often overlooked is the French influence in Mexico. This is clear in Mexican cuisine where French cooking methods are applied to local ingredients. Carbohydrates, fats, and sweets are central to this cuisine. Combined with modern sedentary lifestyles, this cuisine contributes to many health problems. The greater majority of Mexicans receive health services through the Social Security Administration (IMSS). IMSS services are nationally distributed based on population size, creating a hierarchy of facilities ranging from many simple family clinics to two major medical centers.

The ethnographic context chapter is followed by a short chapter of brief case vignettes highlighting individual experiences with diabetes. Many of these cases have unusual household

compositions, economic instability, and heavy disease burdens. However, there are also a few near ideal cases described.

Chapter five presents the first formal stage in the research, cultural domain analysis. Since the research progressively develops over several stages, the domain analysis is broken into multiple steps. The results of each method are used to develop the particulars of the following step. Therefore, domain analysis is presented as a series of methods and results. The first step is domain elicitation which used participant-observation and cognitive free-listing. This was followed up with a series of pile-sorting tasks to determine the shape of the domain. The results of these tasks were then used to compile a cultural consensus survey (Romney et al 1986; Weller 2007) that serves as the foundation for the following chapter on survey methods.

The sixth chapter continues much like chapter five. First, the survey methods are presented, followed by the results. The results are divided into a section on descriptive statistics and a section on hypothesis testing. Descriptives are included for the overall sample, as well as each scale and subsection of the survey. Chapter seven turns to the discussion of results and the implications of those results. The project is then summarized and concluded in chapter eight.

CHAPTER TWO: LITERATURE REVIEW

One of the questions addressed in this work is treatment efficacy. The project is interested in understanding what moves people toward the health end of a sickness-health continuum. Clearly, biotechnology is part of that answer, with increases in treatment efficacy being one of biomedicine's major accomplishments. However, biotechnology may not be the most interesting aspect of health promotion when one considers the little studied but naturally occurring health promoting effects of social integration.

Biomedicine's advances have been possible because it places treatment efficacy in the forefront of medical practice. However, in the development of the clinical trials process, non-physiological aspects of treatment have been left unexplored or unexplained. In literature describing clinical trials, these things are labeled as non-specific effects and often include phenomena such as the placebo effect. Researchers are not interested in these effects because they are often thought of as small or insignificant. Efficacy is allocated to powerful physiology and pharmaceuticals only. A correction of this oversight will involve careful consideration of how various biological, psychological, social, and cultural elements each contribute to the overall efficacy of a treatment.

Symbolic Healing and Death

From an anthropological perspective, the non-specific effects of treatment are attributable to powerful symbolism. This approach takes into account a broader range of therapeutic contexts (Csordas and Kleinman 1996), which have been notoriously elusive from the standpoint

of measurement. Only recently have the theoretical concepts and adequate assessment tools been available to approach this problem. The reason for the elusiveness is the difficulty in operationalizing and measuring symbolism in its psychological, social, and cultural reality.

The idea of symbolic healing is usually reserved for traditional healers like shamans and *curanderos*, where powerful physiological forces are largely, but not completely, absent.

Symbolism is used to explain what otherwise appears to be magical power to heal or harm.

Some research in this area focuses on magical death because the process and outcome are clear.

For example in Cannon's (1957) description of voodoo death, once an individual is magically cursed, the individual and their social network begin to act accordingly. The individual and the supporters all believe the person is dying. This belief becomes a self-fulfilling prophesy as the person endures great fear and physical stress as they pass their last days of life. In Canon's account, what has been manipulated is the socially constructed space. The context has been changed and the new context precipitates death. Elkin (1994) describes similar episodes of socially induced death among Australian aborigines. In Elkin's description, a sorcerer kills by pointing a bone at the victim. There is no physical contact or other physical explanation. It is the socially constructed meaning of pointing the bone and attendant social behaviors that appear to be lethal.

Magical healing is attributed to traditional medical practitioners and is often called symbolic healing. Symbolic healing is more difficult to study because the outcomes are not always as clear as death. However, some effort to clarify this problem has been made. For example, Finkler (1985) takes a direct approach to the problem by comparing biomedical treatment outcomes with spiritualist treatment outcomes in Mexico. This comparison makes sense because of the reputation biomedicine has for being efficacious. Finkler (1985) uses a

symptom checklist as a health gauge. She then uses a pretest-posttest design to compare symptom changes in relation to biomedical and spiritualist procedures. Her results show comparable symptom improvement for both biomedical and spiritualist treatment groups, thereby supporting her hypothesis that spiritualist healers do in fact heal. Here, Finkler was able to achieve a relative measure of efficacy. Assuming that biomedical treatment works, which is not problematic given evidence from clinical trials, then, spiritualist healing must work also. The issue that cannot be fully clarified by Finkler's (1985) study is how spiritualist healing works.

A Universal Model of Symbolic Healing

Dow (1986) was among the first to attempt a universal model of symbolic healing. His approach emphasizes a relationship between psychotherapy and magical healing. His approach borrows Chomsky's (1965) idea of deep structure in drawing parallels between magic and psychotherapy. His objective is not to reduce symbolic healing to psychotherapy, though this is ultimately the case, but rather to show that all forms of symbolic healing have universal structures. He identifies four universal components of symbolic healing. The first component highlights the context, or culturally embedded nature, of therapeutic encounters. Using a structural approach, he describes cultural context as generalized experiences of symbols from the cultural myth. It appears that what Dow (1986) intends to say is that the context of any therapeutic encounter is constructed from cultural materials such as learned, shared symbols.

The second component in this model is defining and naming the sick person's problem. Here Dow (1986) describes a suffering patient seeking out a healer. The healer persuades the patient to conceptualize his or her problem in terms of the shared symbols. This interaction takes

a number of forms including conversation, diagnostic tests, and other forms of communication. In Dow's terms, this interactive event is an emotional transaction.

The third component of the model is more difficult to penetrate. Dow (1986) describes a healer as attaching a patient's emotions to transactional symbols. One can assume that these are the transactional symbols described above. Dow states that these symbols have been particularized from the general myth, probably meaning that the symbols have been manifest in reality. It is possible that Dow (1986) wants to say that people are motivated to action through emotional attachments to changes in the culturally constructed symbols. However, this statement may be too similar to the motivational persuasion outlined in the first component. Regardless of how one understands the details, it is clear that Dow (1986) intends the motivation-action element to be a central theme.

Dow's (1986) fourth component supports the motivational process. As he describes it, a healer helps a patient transact his or her own emotions. It is not clear exactly what Dow means by transacting emotions other than there is a change in emotional states, presumably from negative to positive. This is an area where Dow's (1986) model becomes too murky to follow. There is no evidence or inclination for how a healer can invoke emotional change in others. This is especially true if, as Dow (1986) intends, the process is treated separately from the healer's initial persuasive communications. In relation to his notion that magical healing is like psychotherapy, he develops something that resembles Freud's idea of projection as a psychological defense, except it works in reverse. The healer projects positive emotions on the patient, and somehow the patient accepts. Overall, one thing that can be taken from this model is that if healers are helping sick persons change their emotional states, that is, helping sick persons locate themselves in socio-emotional space through symbols, then healers are culture brokers.

What this model does not help illuminate is which symbols are important to the process, and how the process actually works.

A Psychobiological Critique of the Universal Symbolic Model

While a liberal reading of Dow (1986) is interesting and somewhat informative, the overall model is too focused on psychology and emotional catharsis to have great explanatory power. Dow cannot link individual emotional conditions with their social and cultural construction. Kirmayer (2004) attempted to update Dow’s argument using a more bio-psychological approach. He constructed a universal hierarchy of stages through which symbols can act on biological and psychological states. His model (Figure 1) compartmentalizes symbolic meaning in hierarchical levels and equates each level with a mediating process and mode of healing. This model is an improvement over Dow’s (1986) since it better addresses the interaction between biological, psychological, and social processes

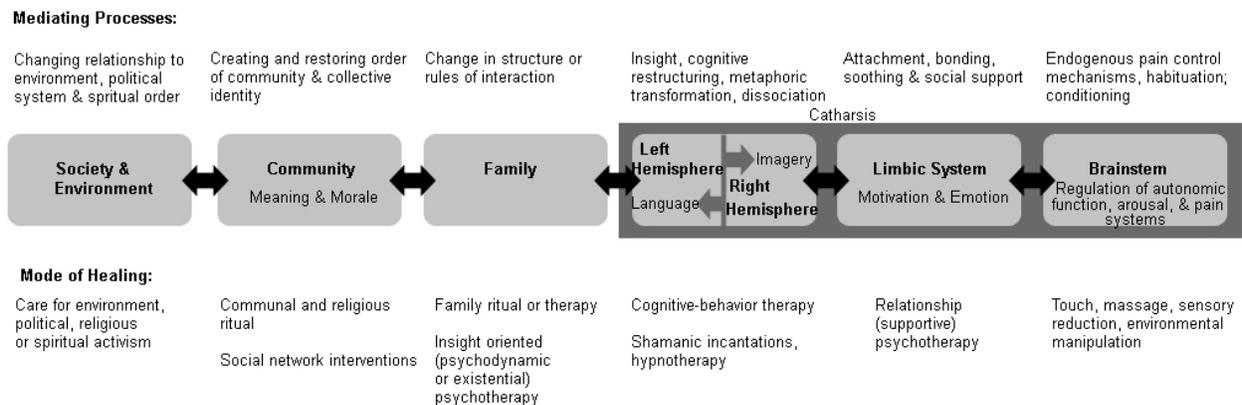


Figure 1. A bio-psycho-social model of symbolic healing. Adapted from Kirmayer (2004).

Kirmayer’s (2004) contribution advances an understanding of symbolic healing but does not fully unpack the concept. The model is a series of black boxes that creates a “just so” story of how symbolic healing works. All of Dow’s (1986) elements are located in the biological end of the Kirmayer (2004) spectrum, being associated with language, imagery, motivation, and emotion. There is no description of how these internal psychological states interact or link to the

social side of the system. The model shows a link between individuals and families, but not between individuals and communities or society. The model is too linear and shows little concern for functional detail or descriptions of primary inputs and outputs. The process of symbolic healing would be better represented as a network of connections rather than a linear chain. In a philosophical critique of biomedicine, Foss and Rothenberg (1987) called these non-linear relations nested parallel processes or cybernetic relations.

Culture in Clinical Context

Studies of symbolic healing all point toward the importance of cultural factors in the healing process, but none are able to articulate exactly what it is about culture that matters. This is even more fitting for studies of symbolic healing in the biomedical clinic, which will be the focus of discussion from here forward. A point of interest in examining clinical phenomenon is the infamous placebo effect. The placebo effect is the socially accepted form of symbolic healing known to biomedicine. Looking at placebo effects offers the opportunity to better understand therapeutic efficacy in particular cultural terms, but also more broadly as a universal social phenomenon.

One of the foremost issues to examine in placebo effect research is social roles. Especially important are doctor and patient roles and their interactive relationship. More generally speaking, the sick role is also very important in grasping the context in which sickness alters normal roles. Kleinman's (1980) explanatory models framework has been a major contribution to understanding how doctors and patients construct meaning in clinical settings. Kleinman offers a three part explanation of health care systems, where professional, folk, and lay understandings overlap to inform explanatory models of health and health care. The three parts vary in their influence over any individual health care system. In the current project, the

professional sector is expected to have a more influence because of the emphasis on biomedicine.

While Kleinman's (1980) model has been a major step forward, the model still has some limitations, of which, a static nature is most obvious. Kleinman (1980) explains that explanatory models of sickness and treatment develop through experiences of particular sickness episodes and particular clinical encounters. These clinical experiences are embedded in social and cultural systems that reach beyond individual experiences. The explanatory models framework is stuck in an ambiguous analytic frame because the model lacks an explicit theory of culture. While it is undoubtedly true that particular experiences contribute to cultural models, it is also clear that the social construction of a clinical encounter includes far more cultural material than what is located within the clinical space. For example, local economic policy will certainly play a role in the structure and function of the clinic, but economic impact extends far beyond the unique clinical setting. Even the intimate doctor-patient relationship is impacted by larger cultural patterns that govern issues like power and prestige, interpersonal communication, emotional involvement, and a great deal more.

Placebo Effects

Placebo effects have been characterized as confounding variables to be controlled in clinical trials, something of clinical value to be cultivated by the medical practitioner, and something present in all medical encounters regardless of cultivation (Hoffman et al. 2005; Kirsch 1999; Price et al. 2008; Thompson et al. 2009). These are often called the non-specific, incidental aspect of therapy. Caspi and Bootzin (2002) argue that placebo effects are not non-specific effects as suggested by clinical researchers, but rather specific effects of several non-

specified elements of treatment. Brody (2000) and Caspi (2003) conclude that placebo effects are present to varying degrees in all therapeutic encounters.

Those that study the placebo effect generally agree that it is important to distinguish between placebo responses and placebo effects. A placebo response is the change in symptoms or conditions resulting from placebo-related psychobiological activity. A placebo effect is the total unaccounted change in symptoms or conditions resulting from placebo responses. This includes any kind of return to the mean within the group, spontaneous remission, fluctuation in symptoms, habituation, observer bias, patient bias, interacting medications, misjudgment, or false assumptions (Benedetti 2009).

Views from Anthropology and Neuroscience

Placebo literature, while focused on medical issues, is actually generated from a number of disciplines peripheral to medical practice. Primarily the phenomenon is studied by neuroscience, psychology, sociology, and anthropology. Opinions and methods vary by discipline, especially between the biological and social sciences. The biological sciences (Amanzio et al. 2001; Benedetti 2009; 1996; Petrovic et al. 2002; Price et al. 2008; Wager et al. 2004) focus on neural psychology. Their approach is favorable to understanding placebo responses. They attempt to understand the internal processes of individuals interacting with their environment. The social scientists (Ader 1997; Bootzin and Caspi 2002; Brody 1997; 2000; Brody and Waters 1980; Caspi 2002; Caspi 2003; Caspi and Bootzin 2002; Conboy et al. 2010; De Pascalis et al. 2002; Kaptchuk 2002; Kaptchuk et al. 2009; Moerman 2002; Stewart-Williams and Podd 2004; Thompson et al. 2009; Walach et al. 2005) on the other hand focus on the placebo effect. This includes understanding the broad context of placebo responses and how that affects individual beliefs and behaviors.

Benedetti's (2009) recent review of the subject offers an excellent example of the neuropsychology approach. Benedetti concentrates strictly on biopsychological phenomena. He defines the placebo effect in very narrow terms by giving a detailed account of what it is not. For example, it is not a spontaneous remission or a return to the mean. He downplays the contextual relations between what he considers legitimate placebo effects versus counterfeits. None-the-less, he notes several pathways that enable placebo effects, such as learning (conditioning) and expectation, which both involve the processes of evaluation (Lazarus 1991). As will be seen, this evaluative process is important, as it is the key area where the biological, psychological and social can no longer be individually articulated.

Neuroscience and the Clinical Trial

Benedetti (2009) argues that the clinical trial is not a good place to study the placebo response. He states this because he finds that clinical trials do not offer a well-controlled environment, because they have too few control arms. This makes it difficult to identify the genuine psychobiological placebo response among other forces moving the patient toward well-being. What Benedetti is trying to do is separate the treatment act from its context. He is especially concerned with what he considers pseudo placebos such as spontaneous remission, regression to the mean, and biased patient or physician reporting. His argument is supported largely on the findings of Hrobjartsson and Gotzsche (2001; 2004) who altogether oppose the notion of a powerful placebo response.

In a meta-analysis (Hrobjartsson and Gotzsche 2001) of reported placebo outcomes in clinical trials, these authors examined the relative power of the placebo effect on physiological versus subjective self-reported outcomes. They used an elaborate set of inclusion and exclusion criteria to test the effect of placebos. They conclude that placebos are not very powerful,

especially in relation to affecting physiology. They have been criticized for their method (Brown 2007), which acquired only the narrowest set of placebo trials. Benedetti (2009) compliments their inclusion criteria though he recognizes that Hrobjartsson and Gotzsche (2001; 2004) have not been well-received by the larger community of placebo researchers. What these two research groups have in common is a love for tight control and narrow definitions. This is illustrative of the point where anthropology departs from neuroscience. Neuroscience wants powerful laboratory control and micro-level inquiry. Anthropology wants a holistic, macro-level understanding. Powerful insights will be found at their junction.

The work of Hrobjartsson and Gotzsche (2001; 2004) highlights one of the primary points of debate about placebo outcomes. That is, objective (biological or behavioral) versus subjective (self-reported) measures of efficacy. Reported placebo effects are stronger for subjective, self-reported measures. These measures rely on how a patient feels. From an anthropological perspective, learning what makes an ill person feel better is as important as learning what can influence metabolic function. Placebo effects based on objective measures are rare, but provide a better fit for the biological research paradigm. Benedetti (2009) warns the biological community not to simply dismiss the subjective reports though, because some of the findings from research using self-reported outcomes have been backed by physical evidence such as neuro-imaging studies.

To illustrate how neuroscience's narrowly defined placebo might affect study of the phenomenon, take the case offered by Braithwaite and Cooper (1981). This case would be excluded by Hrobjartsson and Gotzsche (2001) because it does not have a clinical component, even though it carries a great deal of explanatory power from the anthropological perspective. The experiment was conducted on the effect of advertising on the effectiveness of aspirin. The

effect of advertising is outside the inclusion criteria for neuroscience, but well within anthropological boundaries. In Braithwaite and Cooper (1981), a sample of headache sufferers was divided into five groups. The first group received no treatment. The second group received an inactive pill. The third group received an inactive pill with a branded aspirin label on it. The fourth group received an unlabeled aspirin. The fifth group received a correctly labeled branded aspirin. Participants were asked to rate their pain at the start of the study, then again an hour later. The group that received branded aspirin reported the greatest improvements, followed by the group that received unbranded aspirin. These groups were followed closely by the branded placebo group and the unbranded placebo group. The no treatment group reported the least improvements. In this experiment, the effects are cumulative. Here the active drug is enhanced by first taking a pill, which is a meaningful act, and branding which makes the pill more effective by adding additional layers of meaning. The cumulative effects are clearly recognizable in the shaded areas of Figure 2. The effects of treatment are not limited exclusively to branding, ingestion of active or inactive treatment, or ritual performance in the form of taking medicine, but rather a combination of them all. Here neuroscience is not interested, because the social and psychological cannot be clearly separated.

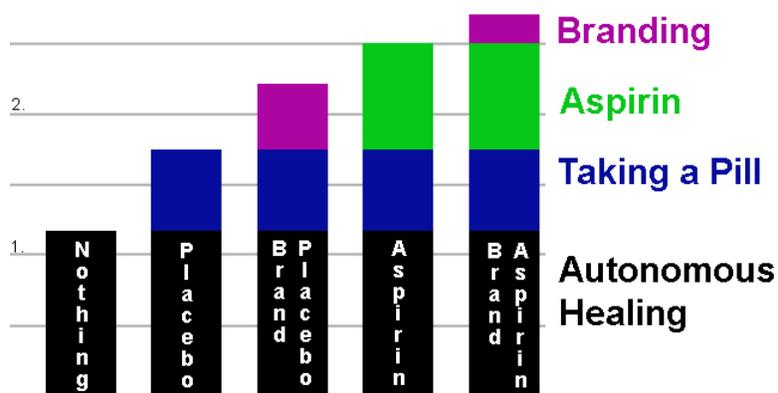


Figure 2. Effects of no treatment, taking a pill, aspirin, and branding. Adapted from Braithwaite and Cooper (1981).

Total Effects of Treatment

In the research context, placebos are used as sham replicas of active treatments. Such treatments are commonly active pharmaceuticals. They are used as baseline treatment measures. The prominent aspect of placebos in this context is the question of medical efficacy. By making the placebo-controlled clinical trial the gold-standard for medical research, the concept of medical efficacy has been altered. It is no longer acceptable that treatments simply work. It has become medically essential that treatments work better than placebos. This type of assumption removes subjective well-being from the equation and reduces a broad category of therapeutic effects to a narrow category of treatment effects. It also leads to the common misconception that placebos are inert treatments. Thus, in clinical trials, placebo arm results are dismissed at the end of the trial and not accounted for in the total therapeutic effect of a treatment (Kaptchuk 2002).

In some cases, the researchers are not interested in the total effects of therapy, only the specific effects of a specific treatment. However, others are interested in the more general therapeutic outcome. Many theorists have proposed that to measure the true or total effect of all the non-specific and incidental aspects of therapy, one would need to run a clinical trial with at least three arms. It would require an active arm, a placebo arm, and a no-treatment arm. Even in this case, the no treatment group may be affected simply by being measured, so additional arms may be needed. For example, Benedetti (2009) promotes using many trial arms, describing one trial that used as many as 12.

Interdisciplinary Movement

As Moerman (2002) has persuasively argued, in addition to the psychobiological, there is something else going on in the clinical trials. That something is clearly social and structural.

Moerman attributes this force to cultural systems and their influence on the production of meaning. Benedetti (2009) openly agrees with Moerman (2002), though he is far more skeptical and far more interested in identifying neurological mechanisms of action. The approach taken by Benedetti pays lip service to the notion of the meaningful context, but then attempts to control for it by removing it from the laboratory. The anthropological approach attempts to elaborate a model of the context and understand how that context affects physiology. Unfortunately, there is a gap between the two approaches. From the perspective of biocultural anthropology, the placebo effect is interesting, including both its psycho-biological and socio-cultural elements. The biocultural approach offers the ability to work toward interdisciplinary studies.

There is a general resistance to this kind of movement in clinical medicine. The resistance is not hostile. Clinicians are simply not motivated to integrate psychosocial factors into clinical practice. One study that aimed to understand this problem examined barriers to integrating psychosocial measures in clinical medicine (Astin et al. 2006). The project involved a survey, which, according to the authors, had received a low response rate (27%). Overall, the national sample of primary care physicians was large (1058 respondents) and valuable for making inferences. However, the authors noted that the low response rate could be indicative of a large disregard in the medical community for the problem as a problem. Of those responding to the survey, about one-third agreed that while psychosocial factors are important, their integration in clinical situations would only minimally alter, or not alter health outcomes at all. An additional fraction of the respondents noted their lack of professional training in these matters and an inability to handle psychosocial factors in the clinic.

Placebos in Clinical Practice

Brody and Waters (1980) encourage the cultivation of the placebo response in clinical practice to maximize therapeutic effects. In this case, a doctor may offer a patient some treatment with little or no known physiological relation to the problem, explaining to the patient that the treatment does not help everyone, but that some people have found relief in it. This explanation may be more or less truthful, with any falsification justified by therapeutic benefit. Along these same lines, Sherman and Hickner (2007) were interested in developing a better understanding of how placebos are used in clinical practice. They implemented a web-based survey and polled medical practitioners in medical schools near Chicago, Illinois. The pair discovered of the 231 physicians polled, 45 percent admitted using placebos in clinical practice, most commonly to calm patients and as supplemental treatment. Beyond actual use, 96 percent of the respondents agreed that placebos could have therapeutic effect. However, there was little agreement about a definition of placebo or its mechanism of action.

Brody and Waters (1980), along with Caspi (2002; 2003) and Caspi and Bootzin (2003) and Bootzin and Caspi (2002) argue that since placebo effects are contextual phenomena the physician-patient encounter is a particularly meaningful experience. This insight has been born out in recent research (Kaptchuk et al. 2009) where placebo effects were manipulated in a kind of dose-response similar to that found in Brathwaite and Cooper's (1981) aspirin and advertising study. In a study by Kaptchuk et al. (2009), the dose response was measured by having separate control arms for the physician-patient social interaction. In this case, there were two physician scenarios, one where the physician communicated very little, and an augmented segment where the physician interacted warmly, communicated a great deal and intended to build patient

confidence. Results showed that more intense social interaction, the augmented physician arm, corresponded with increased therapeutic effect.

In a follow up of Kaptchuk's (2009) study (Conboy et al. 2010), it was discovered that patients' personal social networks and prior experience in clinical trials affected the outcome. Patients with small social networks were labeled as reclusive. Reclusive patients received the greatest benefit from enhanced physician engagement. In addition, the same follow up study provided an opportunity for patients to discuss their illness experience. For those patients that did not participate in the augmented physician interaction scenario, discussion of the illness experience was related to positive health outcome in the study.

Bäärnhielm and Ekbal (2008) undertook a qualitative placebo effect study comparing the Swedish middle class in one clinic with a second local clinic that services a multi-cultural clientele. The aim was to better understand how meaning is constructed in the clinical encounter, especially how patients' expression of emotional distress using somatic symptoms was understood by physicians and staff. Additionally the researchers were interested in how physicians imparted their health agenda to patients. The study found that the body was used to facilitate communication for patients, physicians, and staff, though in the multicultural setting, caregivers had difficulty interpreting patients' use of physical symptoms. In this case, clinician priority was given to working toward building mutual understanding and trust, and avoiding insulting the patient. In some cases this meant gender matching caregivers and patients, and overall, being sensitive to gender and cultural issues. Physicians commonly referred patients to psychiatric services, though patients were also regularly refused because of insufficient resources. Patients often couched their distress in terms related to their work or work situation, demonstrating some of the social context that patients bring with them to the clinical encounter.

These same outcomes are discussed by Mendenhall et al. (2010) in relation to diabetic patients. Mendenhall's results are presented below in the section focusing on diabetes.

In addition, given their powerful position in the healthcare system, medical practitioners are primary sources of cultural information. When patients seek medical advice or medical information, they are seeking cultural knowledge. They want to know what “we” collectively know about a given problem, or at least what we collectively believe should be done about it. Interestingly, simply seeking this information can positively impact outcomes. Take for example the project carried out by Kaplan et al. (1989). They studied patient–physician interaction across a variety of clinical trials such as ulcer, hypertension, diabetes, and breast cancer trials. They recorded clinical interactions and assigned utterances to one of 30 classes. They used biological markers such as blood pressure and blood glucose levels as well as patient behaviors and perceptions like lost work days and a health self-rating as health outcomes. They were able to associate increased patient information seeking behaviors with fewer missed work days, fewer health problems, and reduced days missed from work,. Conversely, where physicians assumed an authoritative demeanor, thereby reducing information seeking by patients, the data reveal negative results for the same outcomes such as increased health problems, and greater functional limitations. This further demonstrates that not only is information important in the clinic, it is also important for the sick person to actively engage in information processing. In other words, it is important for the patient to participate.

Placebos in Discourse

The third area where placebo effects should be discussed is in the media and lay conversation. Thompson et al. (2009) rightly suggest that in the media, placebo effects are represented as the result of fake or sham treatment, where the placebo is something less than

genuine. Media characterization of drugs being ‘no better than placebo’ makes the drugs appear ineffective to the public. This has resulted in lost sales and even drops in manufacturer stock values as consumers lose faith in the power of the drug. Again, like the media representations, lay usage conveys a fake or sham quality to placebo effects. Often it is seen as something not harmful, and even potentially helpful, though there is little coherent use of the term.

Placebo: Theory and Critique

There are four major approaches to placebo research, the classical conditioning model, the expectancy model, the therapeutic relationships model, and the socio-cultural meaning model. Thompson et al. (2009) have recently attempted to push placebo researchers to more fully consider a biocultural approach. In doing so, they take an interesting, though ultimately not well-considered, approach. First, they acknowledge a relationship between the traditional models of placebo study, noting with little discussion, that some practitioners consider the four models complimentary. What the authors fail to observe about the four placebo models is that they represent the historical development of the cognitive perspective from its roots in behaviorism to its current incarnation as embodied meaning. What each step in theoretical development represents is the elaboration of cognitive modeling and greater integration of concepts like mind and body.

Classical Conditioning Model

The classical conditioning model rests on the idea that external stimuli and internal responses to it are the mechanism of action in placebo responses. The pairing of unique stimuli with particular responses through reinforcement was an achievement in behaviorist psychology and has some, but very little, application in contemporary placebo research (Stewart-Williams and Podd 2004). The classic conditioning model is far too simple to explain but a few cases of

placebo effects. Two primary faults lie with this approach. First, the placebo treatment does not mimic the physiological effects of drugs. Second, and more importantly, many people receiving a placebo treatment have no experience with it or with the active treatment it replaces. Conditioning cannot occur because there is no history of paired stimulus and response.

Expectancy Model

What became apparent from the conditioning approach was that participant's expectations were playing a role in the placebo effect, for example in the Braithwaite and Cooper (1981) branded aspirin study described previously. Those working within the expectancy framework found that verbal instructions were particularly influential on health outcomes. This extends to strong psychological models where "suggestive" personalities are more likely to respond to a placebo (De Pascalis et al. 2002).

Researchers have found ways to manipulate clinical trial outcomes by influencing patients' expectations. For example, some pain studies (Wager et al. 2004) use either low level electric shock or heat to induce pain in research subjects. Subjects are told they will experience pain. Baseline readings of pain are taken. A second experimental group receives the same treatment but they are first told that they will not feel much pain because the clinician is applying an analgesic cream. The analgesia cream is a sham treatment made of ordinary hand lotion. The suggestion of pain or analgesia has a significant effect on reported pain and neural activity. The intention of this kind of research is to alter patients' perceptions, and therefore their expectations of the treatment.

While the expectancy approach greatly expands the cognitive paradigm, offering a better foundation for further study, it has also proven to be too narrow to account for the wide range and patterns of effects attributed to placebos. Expectancy research illustrates at least three things

that can contribute to patient expectations. First is the context of treatment, where context cues cognitive schemas and scripts. Second is the therapeutic relationship that exists between patient and practitioner, where intensive social support and integration contribute to positive health. Third is other knowledge and meaning related to the treatment experience. The major questions that arise from the expectancy model are (1) which expectations matter, or matter the most, in clinical encounters, and (2) how are clinical expectations constructed?

Context and Meaning

All too often placebo-centered research does not address context in which treatment unfolds. The practice is to pay lip service to the importance of context, using it as a catch-all category. For example, in their assertion that the cognitive paradigm of placebo response is outmoded, Thompson et al. (2009) pay lip service to clinical context, but fail to describe contextual details or explain what role context plays in a placebo response or effect. This important oversight haunts their later assertion of a new placebo paradigm. As will be seen, the meanings constructed in a clinical encounter extend the notion of clinical context to include not only the immediate vicinity of the clinic and the relationships operating within that physical and social space, but also material and social forces operating far beyond. The contextual meanings of clinical experiences are broad and may interpenetrate other large domains of life like family, work, and voluntary associations. The contextual meaning of something involves the most mundane of situations and events.

Clinical Interactions

The concept of the therapeutic relationship is important and deserves additional consideration. Brody (1997), Brody and Waters (1980), and Caspi (2003) have all written specifically about the issue. These authors generally agree that the relationship between patient

and practitioner is the most important aspect of a placebo response. They assert that it is not the personality or traits of the doctor or patient that matter in a placebo response, but rather the interactive relationship. This assertion could be seen as somewhat misleading, since individual personalities do play a role in building trust (Brown 2007; 2008), an interactive aspect of the relationship, as well as other factors such as suggestibility (De Pascalis et al. 2002).

Thompson et al. (2009) note that a medical practitioner is in an ideal position to influence the meaning of the clinical encounter, though the authors would limit this power to the ability to name disease and create meaningful sickness narratives. While naming things and directing the sickness narrative are powerful factors, they are only a small part of a very complex system of meaning construction and reconstruction. In their assertions, Thompson et al. (2009) take the notion of meaning construction, even in the therapeutic relationship, as something overt. They believe that meaningfulness is something that occurs through conscious attention, as if people construct meaning in everyday life, as they would while critiquing Shakespeare. They also fail to observe the cases of symbolic healing where patients and practitioners have little or no relationship with their patients (Finkler 1985; Kleinman 1980). Such studies indicate that the medical practitioner is not the only one to help a patient elaborate meaning around a medical encounter, which points toward a broader development of meaning within the treatment context.

Meaning Model

The most contemporary approach in placebo research can be said to encompass all of the previous approaches under the moniker of meaning. The meaning model was originally championed by Moerman (2000; 2002). Moerman argues that while placebos are conceptualized as being inert, they are loaded with symbolic value (i.e. meaning). Moerman has been criticized on a number of levels, but his insights make a great deal of sense and have lead to additional

advancements, improved methods, and more refined theory (Brown 2007; 2008). The most serious criticism against Moerman's claim is his misuse of the term meaning. Critics insist that Moerman uses the term as an *ad hoc* catch-all category for everything that cannot be otherwise explained about the medical encounter (Thompson et al. 2009). Furthermore, such critics believe that Moerman's theory focuses too much on conscious knowledge, citing his uncritical structuralist interpretation of meaning and its effects in the body.

Embodiment and Performativity as an Alternate Paradigm

Thompson et al. (2009) recommend moving away from the cognitive paradigm and toward a paradigm of embodiment and performativity. Their intention is to escape a socio-cultural framework and employ a biocultural framework. They want to bypass cognition as an explanatory mechanism because of what they see as an overemphasis on language and consciousness in the cognitive approach.

“We must stress that the explanatory mechanisms that have been discussed from a dominantly psychological and cognitive perspective are neither solely, nor predominantly, conscious. We find that overemphasis of conscious awareness in these explanatory mechanisms has left the field experientially starved - that is, this perspective has overlooked direct sensory and embodied experience (or implicit perception).”

(Thompson et al. 2009:128)

Clearly, there is a need to develop more powerful non-linguistic research methods, but this need does not warrant disposing of meaningfulness as a theoretical construct. Performance is going to have a great influence on placebo outcomes because performances are meaningful. For Thompson et al. (2009) performativity starts with embodiment. They follow Scheper-Hughes and Lock's (1987) concept of a mindful body. A mindful body is conceptualized here

“(1) as a phenomenally experienced individual body-self; (2) as a social body, a natural symbol for thinking about relationships among nature, society, and culture; and (3) as a body politic, an artifact of social and political control” (Scheper-Hughes and Lock 1987: 6). This definition does not exclude cognition and suggests that the body can be constructed in many meaningful ways.

The argument for the performativity paradigm relies on the philosophical grounding of Merleau-Ponty (1962; 1964) who saw the body not as a passive stimulus receptor, but rather as an active energy transformer. The aim in adopting his point of view is to paint the body as a non-cognitive sensory device. It is an attempt to distinguish cognition as something separate from memory and emotion. To illustrate their point, Thompson et al. (2009) use the example of smelling a fresh baked apple-pie as something non-cognitive and non-meaningful, the smell they say, has a direct effect on the body, making us feel warm and secure. The authors do not explain how this experience lacks meaning. It seems that to get warm and secure feelings from apple pie, one must have an elaborate understanding of apple pie, including ideas of the American Dream, mom, and maybe even Chevrolet. There is a context to the smell of apple pie that, for some people, has a great deal of meaning.

Thompson et al. (2009) use another example drawn from dentistry. Here the authors claim that the sound of the dentist’s drill has a direct affect on the body, making us feel fear and dread. The authors claim

“...the feelings associated with the sound of that dentist’s drill may be clearly linked to the memory of a specific appointment when the Novocain wore off too early.

Alternatively, the sound may just make you cringe and tense your body, without connection to any specific memory. In this case, the sensation (the sound of the drill) and the emotion (fear and dread) leapfrog conscious cognition (memory or meaning) and

language (narrative) to trigger a direct reaction at the site of the body.” (Thompson et al. 2009:129)

Consider what this passage reveals. First the authors believe that meaningfulness is likely associated with a particular past experience. This equates the meaning paradigm with classical conditioning. Classic conditioning has already been refuted as an explanatory mechanism and does not offer a robust model of placebo activity. Secondly, the authors believe that feelings and emotions can be experienced without cognitive processing. Associating a sound with a feeling is a cognitive task. Unless the sound is completely novel, there will be an association in memory. A sound being loud and shrill, even for a person who had never been to the dentist, would only instill fear or dread if it were associated with something negative or dangerous. The sound would lead to a feeling (an inference) only if it has meaning. We arrive at a feeling of fear and dread precisely because the sound is meaningful, reminding us of pain or danger. If we feel the feeling without being directly aware that the feeling was associated with the sound, we have still had a meaningful experience. The association may bypass consciousness, but it is available to the conscious mind in principle. That is, there is an intentional state, a state of being about something, associated with the experience.

The attempt made by Thompson et al. (2009) to move to away from a cognitive biocultural approach to a paradigm based on embodiment fails to truly appreciate the cultural aspect of the biocultural approach (Dressler 2003). It has the effect of constructing the body as a mystical entity beyond scientific grasp, or as a black-box that simply operates as it operates. The meaningfulness paradigm on the other hand, in its proper conception, fits the empirical biological, psychological, and socio-cultural evidence. Using the meaning paradigm, the

process(es) of mind-body can be mapped. While making that map, we as researchers can also come to appreciate, in a qualitative sense, the many ways that human life can be experienced.

Additional data levied by Thompson et al. (2009) as evidence of direct embodiment is the case of Clive Wearing. Wearing was a brilliant musician who suffered encephalitic amnesia and lost the ability to maintain memory for more than a few minutes at a time. Despite his loss of memory and inability to record new memories, Wearing retained his musical ability. The authors attribute this ability to having the skill embodied directly upon the muscles and sinews of his body. While there is a role for muscle and sinew, this description oversimplifies a complex process of practice and learning through sensory feedback. The muscles and sinews worked cooperatively with nerves and neurons to embed and embody the actions. The skill is encoded in a dynamic system, part of which is conceptualized as cognitive, and part of which is conceptualized as somatic. The conceptual separation of the body into various organs and into material and non-material components does not need to be problematic, as long as we realize that they are only conceptually distinct.

As evidence for direct embodiment, Wearing's case demonstrates a naïve grasp of cognition. This is evident in that it ignores the distinction made in cognitive science between declarative (related to language and categorical thought) and procedural memory (related to sense-perception, body movement, and spatial-imaging). Wearing's case is a common example for the distributed encoding of memory. While one area was damaged by encephalitis causing a loss of conscious access to certain memories, other areas remained intact. Note that victims of amnesia seldom forget learned habits like walking.

Performativity and Meaning

Thompson et al. (2009) prefer the notion of performativity in placebo research. The concept of performativity is borrowed from philosophy of language, particularly Austin's (1962) idea of performative efficacy. In this theory, performative utterances have real power and create real circumstances in the world, because "saying it" makes it so. Take for example, 'I quit,' or 'I now pronounce you husband and wife.' Thompson et al. (2009) want to extend the concept beyond language alone, so that it includes the body more generally. This is a very good idea, since doing so often makes it so as well. For example, auction bidding stops at the crack of the gavel, lunch hour at the factory begins with the strike of a bell, and six points are scored when the football crosses the goal line. Such performances are the pinnacle of meaningful. The actions, whether in the form of speech, or some other performance, constitute symbolic space, regulate events, represent internal and external conditions, and evoke feelings; they are meaningful.

Thompson et al. (2009) distinguish between external and internal performativity. External performativity is not only representational, it is constitutive of social and cultural life. They follow Goffman (1959) and Butler (1990) in constructing notions of role performance as social and cultural construction. This is not to say that role performances are not meaningful or important, they certainly are, but they are not sufficient to be "culture." As both Searle (1969; 2006) and D'Andrade (1984) point out there are certain aspects of society and culture that cannot be resolved by enacted social roles. Marriage for example is more than simply acting the role of husband and wife, or acting out getting married. Marriage is a symbolic entity, what Searle calls an institutional fact.

Searle explains that institutional facts are created through group intentionality, where we as a group agree to a constitutive rule such that something X, counts as something Y, within some context C (Searle 1969; 2006). Institutional facts have real consequences and often appear as natural parts of the environment. An excellent example of this kind of institutional fact can be found in the struggle anthropologists have faced in demonstrating that concepts like race and kinship are socially (institutionally), not biologically constructed.

For an explanation of internal performativity Thompson et al. (2009) turn to Bourdieu (1977) and the notion of habitus. They equate practice and rehearsal to habitus, while simultaneously denying it any meaning. They write about learning and internalization while denying cognition its prominent role in that process. They support the notion of internal performativity by citing the plasticity of the brain and its ability to be self-shaping. They deny meaning and cognition, and import meaning and cognition to support their argument.

Thompson et al. (2009) have a problem with the centrality of language in anthropological research. Their argument is about the dominance of language over behavioral observation. The authors find that language creates bias in the data in a way that other observations do not. However, language is likely to retain dominance in research methods because it is useful for getting at meaning. Language not only has meaning but it also conveys meaning. Language is a very special tool for humans, but it is only one tool. Mauss (2006) wrote about techniques of the body, which are the acquired habits people pick up as part of society. He noted social influences on such things as walking, swimming, and digging. There is a culturally informed technique for performing these activities. Even spatial perception is culturally conditioned (Segall et al. 1963). It could be argued that language, as speech acts, are an elaborate technique of the body, where cognition and motor function work simultaneously to produce a result. However, language is like

all other acts, having two halves interlocked in a structured coupling (Foley 1997). As De Saussure (1959) wrote, the relation between thought and action (speech and language) are like the plane of contact between the atmosphere and the ocean, both moving in constant locked step. The action and the thoughts attached to it are inseparable. Actions are meaningful.

Meaning and the Gap in Theory

Thompson et al.'s (2009) assertions illustrate a gap not only in placebo theories, but also in anthropological theory in general. What is meant by meaning? This paper proposes that meaning is any information that contributes toward making an inference. That makes meaning a broad term, but it does not indicate a catch-all category. It is likely necessary to distinguish types of meanings. For example, we could talk about perceptual meanings or the sensory cues that inform us about the environment. We could also talk about symbolic meanings that constitute the things and institutions that make up our lives. We could also talk about semantic meaning that we attach to language or regulatory meaning we attach to events. Meaning is all of these things and requires a robust conceptualization.

In this view of meaning, the habits formed in daily life, the most mundane events are the most meaningful. While those mundane things are not in our consciousness, their absence would send off terrible alarm signals, alerting consciousness to the fact that something is not right. This view of meaning addresses the issue of context in medical encounters (or any other encounter). The context constitutes the situation. If we have a medical need, we must think about how we recognize that we are receiving treatment. How does this building with these people and other items constitute a doctor's office? We infer the context through learned criteria. The sign on the door may list the physicians name and credentials, but the inscription on the door does not create

the doctor's office, it only enables an inference. We know among other things that inscriptions on doors are indicative of the occupants and activities found inside.

Such inferences are so quick and unthinking that they appear as naturally occurring elements, but without an elaborate cognitive model of the world such inferences cannot be made. As an example, in research about what is meaningful in a clinical encounter, informants described hospitals and other clinics as having a unique "hospital smell" (Brown 2007). When pressed to describe the smell in more detail, informants said it smells sterile. Sterility is a concept not an odor. The informants moved directly from the memory of the smell to what it means, skipping the notion that it smells like disinfectant. Oddly enough, upon entering a hospital with an eight-year-old boy, the boy commented "it smells weird, like hand sanitizer." The boy does not have the elaborated cognitive model that includes germ theory, so he was unable to jump directly to the concept of sterility. Direct bodily sensation is meaningful, and can be expressed in language, though the language alters the meaning very subtly. Since we cannot get at the meanings directly, we must rely on language to facilitate research, at least until replicable methods for measuring non-linguistic meaning can be developed.

Meaning in Evolutionary Context

This theory of meaning is more easily understood in its biological and evolutionary context. It is not difficult to imagine that an organism's ability to heal itself has adaptive value and therefore would be under strong positive selective pressure. An organism that can self-repair will live longer and experience more opportunity for reproduction. Among a social species such as humans, it is reasonable to believe that social behaviors that contribute to healing, such as ritual performance, would also be positively selected.

Part of the argument for social influence on biological process rests on evidence from psychoneuroimmunology. Thompson et al. (2009) assert that through brain-body processes social influences bypass meaning and cognition to affect the body directly. Such conclusions demonstrate that the authors do not appreciate the extent and complexity of the neuro-cognitive system, including the nature of communication between nervous and immunological systems. Blalock (2005) for example discusses the psychoneuroimmunological process as a system of internal sense-perception. His point is that the nervous system and immune system talk to each other reciprocally, where the immune system informs the nervous system about internal conditions, and the nervous system informs the immune system about needed actions. In a situation like that, cognition and meaning are not bypassed; on the contrary, they are so highly integrated as to appear unimportant.

To understand the power of meaning, and the relation of meaning construction to self-healing, it helps to consider the evolutionary development of the capacity to make meaning as derived from sensory-motor apparatus. To do that, one must first consider life on Earth in the big picture. While we recognize a great diversity of environments on Earth, that diversity exists within a narrow range. For example, the solar-lunar cycle has a regular pattern. Light travels in predictable ways through the Earth's atmosphere, so does kinetic energy in the form of sound. Temperatures are relatively stable; at least they do not vary by hundreds of degrees over a day's time as they do for some planets. Gravity and barometric pressure and density are similar all over the earth's surface. Four mediums support life, earth, air, water, and sunlight. The point is that sensory perception developed in stable environments. Readers are encouraged to consult Gibson (1966) for an excellent description of perceptual development. The ability to sense stable aspects of the environment allowed early organisms to take actions that sustained life. For

example, some algae are attracted to sunlight and will move toward it. Take note that the sensory system and motor system (if they can be called that for algae) are intricately linked in a way that makes them only conceptually separable.

Another important fact in understanding how perception works is to realize that bodies are not passive receptors of environmental stimuli. Organisms actively seek out information about their environments. Sensory neurons do not absorb a continuous stream of energy, but rather absorb small bits repeatedly. The feedback received with each sample is used to guide selection for each successive sample. This successive sampling strategy at the cellular level indicates that sensation and action are a unified event, and has serious implications for the function of a complex organ like the human brain.

We must not forget that the brain is part of the body. As bodies became more complex, they needed more complex strategies to acquire daily needs. Specialized tissues evolved along side each other. Muscle, bone, gut, and nerve are complimentary components of a whole system. The perceptual system is the organism's interface with the environment. Through this interface, the organism makes inferences about what is in the world in order to extract what it needs from the environment. Different perceptions mean different things and information gained through the senses are fed to various parts of the body simultaneously.

In complex organisms, information is passed through evolutionarily old portions of the brain that have been associated with the production of emotion. For example early psychological experiments with animals demonstrated that the fear/anger-aggression complex could be elicited by electrically stimulating certain brain regions. Evolutionarily newer portions of the brain, such as the frontal cortex, 'control' or override the emotional system. The case of Phineus Gage, a mild mannered worker is a good example of how reason can override emotional output. Gage

suffered a severe brain injury in the frontal cortex when a six-foot steel tamping rod penetrated his skull during an explosion. Gage had a major shift in personality and became known for emotional outbursts after the accident (Pinel 2003). It can be reasonably speculated, based on this kind of evidence and the operation of stimulatory and inhibitory neurotransmitters, that emotion is evocative while reason is inhibitive. Reason allows intentional states of arousal to be narrowed to a sharp focus.

Sensory-perception is a distributed cognitive process, where information is processed in multiple regions simultaneously. In humans, part of that cognitive processing links the perceptual meaning system as described above, with a learned, socially constructed symbolic meaning system of the X counts as Y in context C type. Y is then associated with a complex set of norms that regulate the function of Y, including attendant obligations and consequences. In order to carry on such elaborate abstract meanings, we must be aware of shifting contexts. To be aware of shifting context we must employ both perceptual and symbolic meaning systems. While both meaning systems are active, they are not necessarily held at attention or within conscious thought. Because contexts are relatively stable, once the context is recognized it does not need further thought. It becomes a given and requires less cognitive effort (saving high energy costs in an evolutionary sense). In this way, environments become meaningful in a number of ways, including symbolically. When we go to the doctor's office, we can infer certain facts about what we encounter. At the doctor's office, we can smell the disinfectant, a brute fact, but we infer that the building is sterile, an institutional fact.

Meaning as a Cultural System

For humans, this complexity of meanings is organized into shared systems that we call culture. D'Andrade argues that meaning as cultural systems have four functions. Meaning is

constitutive, where X counts as Y in context C. Meaning is representative, allowing us to know what is in the world we inhabit, including both brute facts and institutional facts. Meaning is regulative, ordering events and explaining the order of events that are not under human control. Meaning is also evocative. Being evokes actions and emotions, which are socially channeled (socialized), creating a habit of mind-body activity (habitus). This conditioned pattern of cognition is literally the embodiment of thought and action. It is the conditioned state of “normal,” the baseline patterns against which other sensory-symbolic patterns are measured.

The deep social conditioning of sensory-motor and symbolic systems cannot be overemphasized. We become our social system through habitualization, we embody the capacity to interpret our environment and generate appropriate behavior. We cannot bypass sense-perception, emotion, and symbolic value in this process any more than we can deny the eyes that see or the muscles that propel our bodies and control our speech. We need to understand the whole biocultural system including the meanings that organize and structure our lives and the psycho-biological processes that support symbolic capacity.

Implications of a Theory of Meaning in Anthropological Research

An anthropological theory of meaning needs to include not only those extraordinary forms of meaning that we attribute to language but also more fundamental forms that affect how we perceive the world. By conceptualizing meaning as information that contributes to inference, we are able to distinguish the various levels across which inferences are made. Doing such an analysis allows biocultural processes to be conceptualized as distinct processes, which in turn facilitates research.

This theory of meaning has implications for a broad range of anthropological topics, particularly medical anthropology. It has immense import for placebo research. Under this type

of meaning system, the placebo effect is not problematic, but actually anticipated. One would expect self-healing to be associated with the health symbols that the group values. Those who experience the symbols experience the healing, except where other material or institutional constraints exist. Dense symbolism is likely to evoke the greatest volume and intensity of sensory-motor activity, making dense symbols the most easily observed in relation to health outcomes. Primarily what is indicated is that researchers need to rethink how they conceptualize the context of a medical encounter and to hone available methods while developing innovative techniques for measuring meaning. The project at hand aims to take a step in that direction.

Placebos and Salutogenesis

It could be argued that placebo effects are salutogenic effects. Antonovsky's (1987) theory of salutogenesis conceptualizes health on a continuum from health and ease on one end to illness and disease on the other. Individuals move along this continuum based upon their successful coping or lack of coping with socio-environmental stressors. These stressors may be physical in nature such as rhinovirus or they may be social like racism. In the face of strong stressors or weak coping resources, individuals move towards the illness/disease end of the spectrum.

Biomedicine as it is commonly practiced attempts to disrupt this pathogenic process, largely through surgical and pharmaceutical means. The method of intervention is to search for the roots of disease and remove the pathogen or disrupt its cycle of development. Rarely does biomedicine take the salutogenic approach and search for the causes of good health, determining what factors move individuals toward the health and ease end of the spectrum. In a clinical sense, the problem is what moves people toward better health if it is not the physiological properties of medications and other technical interventions.

Antonovsky originally formulated his salutogenic theory after working with Jewish holocaust survivors. He wondered how it was, that in the face of such extreme stressors, some individuals managed to remain healthy. “What predicts a *good* outcome?” (Antonovsky 1987: 6 italics in original). He found that individuals have “generalized resistance resources (GRRs) such as money, ego strength, cultural stability, social supports, and the like... immunopotentiators to magic” (Antonovsky 1987: xii) that help one cope. They contribute to a sense of coherence (SOC) because “they facilitated making sense out of the countless stressors with which we are constantly bombarded” (Antonovsky 1987: xiii). The SOC is the core concept in Antonovsky’s work. It is “a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one’s internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to one to meet the demands posed by these stimuli and (3) these demands are challenges worthy of investment and engagement” (Antonovsky 1987:19).

Antonovsky explains that the concepts of SOC and GRR together provide one with a repeated set of life experiences characterized by consistency, participation, and load balance. He goes on to name these characteristics comprehensibility, manageability, and meaningfulness. In this model, development of a SOC will vary, depending first, on whether or not the world is comprehensible. Comprehension includes finding internal and external stimuli as ordered, consistent, structured, and clear. These are opposed to incomprehensibility where stimuli are chaotic, disordered, random, accidental, and inexplicable. Antonovsky ties a high level of comprehensibility with an expectation that the future will be predictable or at least one will be able to order and explain what happens. If one can comprehend the world, then one is able to

manage one's affairs with greater and lesser degrees of success. Specifically, Antonovsky intends the term manageability to refer to an individual's perception that there are adequate resources available to meet the demands one confronts. Such resources may be under one's direct possession or control, or may be distributed and embedded in one's social network, so that they are in the possession or control of a trusted other. Finally, Antonovsky refers to the aspect of meaningfulness. Here, Antonovsky's definition is substantially narrower than the ideas developed earlier in this chapter. Antonovsky takes meaningfulness to be the emotional-motivational component of life, that which makes things worth doing.

Movement across the continuum from health to illness depends on a system of resources and deficits. Stressors are deficits. Where one has greater resources than deficits, one moves towards the health end of the spectrum. More deficits than resources can move one to the illness end of the spectrum. This credit-debit scheme plays out in broadly defined domains such as wealth, ego strength, and cultural stability. Having and successfully using resources provides individuals with life experiences of successful coping. Lacking resources, or not being able or willing to use them, results in negative life experiences and illness.

Antonovsky's theory has had some success (Antonovsky 1993, Lindström and Eriksson 2006), but has been limited in its popularity. One reason it has been limited is its strong relationship with measures of depression, where high SOC is inversely correlated with depression (Lindström and Eriksson 2006). Another less frequently articulated reason for its limited use is that there is limited capacity to operationalize concepts like GRRs. Some resources are directly and frequently measured, such as income and education variables. Issues like ego strength and cultural stability are far more difficult to measure. In addition to the

difficulties in measuring these aspects, it may be impossible to identify all of the general resources that individuals use to cope, even in very narrow domains.

A way to help Antonovsky's theory would be to reconsider the GRR concept. While Antonovsky hoped to identify general resources used to cope, this generality presented a problem as it reduces predictability. What Antonovsky really needed was to identify specific resistance resources. At the time he developed the salutogenic model, the structural-functional social paradigm was highly influential moving him to look for universal coping factors. The notion of identifying culture specific stressors and coping resources had not yet developed. By developing a culture-specific model researchers can get a better understanding of the social distribution of resistance resources. The tools of cultural domain analysis, cultural consensus analysis and measures of cultural consonance would aid in explicating specific resistance resources that could be brought to bear against specific or generalized stressors. The research project described in upcoming chapters builds onto salutogenic theory, though it does so largely without Antonovsky's SOC. Instead, this project will utilize cultural consensus theory and methods to identify the culturally meaningful therapeutic treatments, hypothesizing that participation in such treatments will predict better illness and disease outcomes.

Cultural Consonance

Like the SOC, cultural consonance was developed from the health and stress literature. One of the major shortcomings in the stress model as it was formulated during the 1970s and 1980s was the inability to link individual behaviors and health outcomes with group level variables like stressors (Dressler and Bindon 2000). Thus, even sociological approaches to the problem, like the SOC concept, take on a strong psychological character. The epidemiological literature was filled with attempts to link social structures to individual risk factors in disease.

Dressler and Bindon (2000) working from Kasl and Wells (1985), Adler et al. (1994), and Berkman et al. (1995) and others, were looking for ways to explain two major findings consistently reported in the literature. The first problem is the relation between lower or higher socioeconomic status and more or less disease, and the second is between greater or lesser social integration and better or worse health. Study after study reported these findings even after attempting to control for numerous factors. Since the relations could not be explained away as known risks, it became evident that something more complex was at play.

Writing about socially constructed risk factors Dressler and Bindon state, “the failure of these kinds of variables to undo the risk associated with status-role positions was what fueled much of the work on the psychosocial stress model. The reasoning was that if there were social variables associated with disease risk, and these social variables were not indirect indicators of or confounded with "known" risk factors, then some psychosocial process must be operating.” (Dressler and Bindon 2000:245) Regardless of how risk factors were measured they could never explain status-role associations indicating that the socially constructed status-roles themselves were likely impacting health.

Dressler and his colleagues (Dressler 1994; 1995; Dressler and Bindon 2000; Dressler et al. 1997; Dressler et al 2007a; 2007b; Dressler et al. 2004), inspired by Cassel, Patrick, and Jenkins (Cassel et al. 1960) and the idea that the social factors impacting health can be explained as culture, began working on an integrated biocultural explanation for status-role relations to health. Cassel et al (1960) had suggested that role incongruence created stress. By this, they meant that the stressors inflicting biological dysfunction were the degrees of congruence or incongruence between individuals and the world of socially constructed meaning they live in. Taking advantage of then recent advances in culture theory, specifically, cultural models theory

(D'Andrade 1984; Shore 1996; Strauss and Quinn 1997), and cultural consensus theory (Romney et al. 1986), Dressler and colleagues were able to test the insights offered by Cassel et al. (1960) in ways not previously possible.

The cultural consensus model has been especially important since it provides a way to model cultural knowledge as a shared, distributed aggregate. The outcome of a consensus survey is more than simply a collection of individual responses but an integral aggregate of all responses (Jaskyte and Dressler 2004). As such, it can be used as a baseline measure of culture. The models created are not the culture, but it is assumed, where there is adequate sharing (Romney et al 1986; Weller 2007), that all individuals are drawing from a single, shared source of knowledge (Dressler and Bindon 2000; Weller 2007).

There is a great deal of variation in translating cultural models into behaviors, including the behavior of uttering statements for the inquisitive anthropologist. Dressler and Bindon (2000) describe three kinds of variation. There are those related to incomplete sharing of cultural models, those related to systematic differences in meaning, and those related to differential ability to enact cultural prescriptions. This third area is where the idea of cultural consonance comes in, since it measures the congruence between the socially created world of meaning and individual experience. The additional step of comparing individual beliefs and behaviors to the aggregate cultural model of appropriate beliefs and behaviors makes the leap between standards of measure, the individual and the group.

When the concept of cultural consonance is applied to the theory of placebo effects as meaning responses, an entirely new approach to placebo effects research emerges. Just as status-roles could not be explained away by association with known risk factors, placebo effects cannot

be explained away by known treatment factors. What is needed is to measure cultural aspects of clinical encounters in order to identify the shared symbols that lead to better health.

The Patient-Centered Meaning of a Clinical Encounter

The theoretical perspective underlying cultural consonance was applied to the notion of ideal clinical encounters. The project sought to explore patient-centered meanings of clinical encounters (Brown 2007) in west Alabama. Assuming from literature reports that increased placebo effects would be associated with positive clinical experiences, the research set out to discover what constitutes a positive clinical experience. Narratives were collected and analyzed for recurrent themes. Cultural consensus analysis was then used to measure the degree of sharing for the model. A highly shared and widely distributed model was identified along with a notable degree of intra-cultural variation.

What is important in the clinical encounter is an appropriately organized, sterile appearing facility that is segmented into front and rear spaces, representing public and private zones. The public area will have entertainment such as TV and magazines. The private area is further segmented into individual rooms where patients wait for and interact with the physician.

Within such a facility, a series of scripted interpersonal encounters unfolds. The process begins by engaging the gatekeeper, the front desk personnel. Then one is “called back” to the private area where one engages a nurse. The nurse initiates the diagnostic process. Finally, one must wait in a private room until the symbolically powerful doctor arrives. The doctor asks questions, usually performs a physical exam, and renders a verdict in the form of prescriptions or more tests. Naming the problem usually brings some relief as does receiving a pharmaceutical treatment or other intervention. Ambiguous verdicts raise reports of anxiety. Ultimately, the project revealed that informants felt positive about clinical encounters when they were

“comfortable.” In addition, it was discovered that comfort was an idiom for emotions like trust and hope. Patients can have trust and hope in the system as well as in the individual doctor and both are central to the experience. Both elements are interrelated, as values (D’Andrade 2008; Morris 1956) and emotions are pegged to social roles. The attachment of values and emotions means that social roles are themselves meaningful. Within the roles themselves, patients come to have expectations that their doctor should have two skill sets. The first is technical competence. The second is a caring attitude. The doctor will have technical and moral competence so that the he or she will apply his or her skills in the patients’ best interest. This supports the findings of Good and DelVecchio Good (1993).

The Sick Role: A Sociological Perspective

Being consonant in the treatment model will include being consonant in specific roles, especially the sick role, patient role, and family roles. Parsons (1991) considers these social relations in his discussion of healthcare as a social system. One of the most famous concepts to emerge from Parson’s work is his formulation of the sick role. The sick role is part of a larger three-pronged social systems theory called action theory. This theory was based on a structural-functional paradigm, which attempted to account for cultural and psychological systems. Parsons description is meant to exemplify the systemic nature of the theory.

The issue of motivation plays a central role in Parson’s action scheme. He views sickness as a form of deviance, but not motivated deviance like criminality. Society needs to deal with such deviance because it threatens the functioning social order. This leads Parsons to the idea that the healthcare system is a socially institutionalized coping mechanism. The criminal justice system is a similar coping mechanism, differing on the issue of motivation.

Criminals are motivated to deviance, but sick persons are not. The health system is built for dealing with disturbances to the health of individuals that threatens the overall social order.

Parsons builds his argument on a foundation of social roles. The medical practitioner is put forward as the key role, followed in a common-sense sort of way with that of the sick person. The physician is an institutionalized role including standards for role criteria and technical competence. Importantly Parsons describes the role characteristics as achievement oriented, universalistic, functionally specific, affectively neutral, and collectively-oriented rather than self-oriented. This pattern, he insists, is strongly emphasized by cultural tradition.

Upon approaching the sick role, Parsons ponders the issue whether or not being sick constitutes a social role rather than simply a condition. He argues that the answer is yes, it is a role, if there are institutionalized expectations and corresponding sentiments and sanctions. He goes on to describe four institutionalized expectations. The first is an exemption from normal social role responsibilities. However, this exemption must be legitimized by and to others (alters), with physicians being the ultimate judge in their institutionalized role as legitimizers. This exemption is something that can be petitioned by the sick person or by others, marking an individual in denial as sick.

The second institutionalized expectation is that the sick person must receive help because they are incapable of returning to normal on their own. This is deduced from the maxim that the sick person is deviant but inculpable. If they were culpable, sickness would be a motivated behavior and therefore like crime. Sickness is therefore incapacitating. Once given this second institutionalized right to assistance, a third expectation is formed, this being the obligation to get well, or return to normal functioning. The fourth and final expectation, is “the obligation – in proportion to the severity of the condition, of course – to seek technically competent help,”

(Parsons 1991:437) usually a physician, and to cooperate with the prescribed therapeutic regimen. Parsons claims that this is where the complimentary doctor-patient role structure becomes articulated.

The patient and physicians roles are mutually articulated yet still independent roles. First Parson's believes these roles to be collectively oriented so that the patient and physician each do their part to fulfill their obligations. Part of this obligation for the patient is to be loyal to the physician and not seek other opinions without including the physician, for example "shopping around" for an opinion. Parson's believes that this is a point where the healthcare system parts from other areas of economics. The healthcare system should not be aimed at profits, and should not be carried out like other commercial transactions

Another main point presented by Parsons regards what he calls secondary gain. Secondary gain refers to the benefits of receiving an exemption from role obligations, which once again involves the motivational disposition of the sick person. Since there are positive aspects in being relieved of social obligations, as well as in receiving social support, some people may be motivated toward assuming the sick role illegitimately. Therefore, the system must have institutionalized controls on such behaviors. Parsons does not consider the notion that the system itself may be responsible for creating illness circumstances in the first place.

Furthermore, the sick role is conceived as both contingent and temporary. Anyone may enter and all must eventually abandon the role. Parsons also views it as inherently universalistic because he believes there to be objective criteria to measure if one is genuinely sick. It is also functionally specific being confined to the sphere of health, as well as affectively neutral "in that the expected behavior, 'trying to get well,' is focused on an objective problem not on the cathetic

significance of persons, or orientations to an emotionally disturbing problem, though this may be instrumentally and otherwise involved” (Parsons 1991:425).

This theme is repeated later in his discussion of the patient role, which he describes being characterized by helplessness, technical incompetence, and emotional involvement. Emotional involvement and technical incompetence seem to work synergistically in this scheme, and together represent a highly meaningful aspect of a clinical encounter, namely clinical care (Good and DelVecchio Good 1993). Parsons addresses this issue directly, describing the inability of sick persons and their lay associates to evaluate a physician, relying largely on referrals and qualitative aspects of the doctor’s personality.

Parsons says that since a person is suffering or disabled and helpless they are entitled to help. The help they receive is based on the type and severity of their sickness. In turn, he notes that the severity of sickness will influence the degree that a patient and his or her lay associates accept, or cooperate with, the doctor’s advice. Parsons argues that while patients will evaluate their condition and act in what they believe is a rational way, their lack of technical competence and emotional involvement does not allow them to see what is truly rational. In addition, he writes, the lack of emotional involvement on the physician’s part is protective for the patient and physician both. This lack of involvement places the physician-patient relationship outside of normal social relations. This aspect, while not discussed further by Parson’s could be conceptualized, in Turner’s (1967) general terms, as a ritual relationship, with the physician acting as the cultural guide for a patient who is in liminal space.

Parsons (1991) asserts that physicians do not function on the same value systems found in other professions such as business. While business is individually-oriented, medical practice is collectively-oriented. This orientation is supposed to deter physicians from pursuing profits.

This orientation also makes it possible for patients to develop trust in their physician, as they can be assured the physician is working in their mutual interest. Parsons recognizes that patients must develop trust in their physician for there to be therapeutic success.

While much of Parson's argument has been called into question, which will be discussed further in relation to the results of the current study, no one has been able to offer an improved model. Given Parsons overall argument and his specific conclusion about therapeutic success, the efficacy of any treatment is necessarily influenced by a wider social and cultural context beyond any particular technical intervention. How one enacts the sick role and patient role should have a measurable impact on health outcomes. What remains is to apply adequate measurement models to medical treatment, defined in broad, cultural terms. We also need to develop a model of meaningfulness around the sick-patient role(s).

Diabetes

The project at hand uses the case of type 2 diabetes treatment as its focal point. Diabetes mellitus refers to a set of related diseases marked by insufficient insulin activity. In the case of type 1 diabetes, often called childhood onset or insulin dependent diabetes, the typical case is linked to failure of the pancreas and the absence of, or underproduction of, insulin. Type 1 diabetes, is sufficiently different from type 2 that the two are often investigated in complete isolation. Type 2 is far more prevalent, accounting for 90 percent of all diabetes mellitus cases (ADAM 2006). This project focuses strictly in type 2 diabetes, often referred to as adult onset or non-insulin dependent diabetes.

Heuristic markers such as age of onset and insulin dependence status are losing much of their categorical imperative for distinguishing types of diabetes. Research has increasingly demonstrated a great deal of variation in diabetes so that these traditional lines have become

blurred. Part of this can be attributed to changes in type 2 diabetes over the last three decades, which have seen increasingly younger ages of onset and increasing reliance on insulin for effective management (ADA 2010).

Type 2 diabetes represents a deviation from normal insulin-glucose cycles. Normal digestion involves breaking down carbohydrates into sugar molecules like glucose, as well as turning proteins into amino acids. Glucose and amino acids are absorbed directly into the bloodstream. This causes circulating blood glucose levels to rise, triggering pancreatic beta cells to secrete insulin. Insulin secretion occurs rapidly, peaking in about 10 minutes. Insulin allows the circulating glucose and amino acids to penetrate cells and helps direct nutrient processing. Glucose is either burned for fuel within the cell, or is stored for later use. Typical type 2 diabetes begins with insulin resistance (ADAM 2006), where the insulin molecule can attach to the cell, but fails to assist the glucose molecule into the cell as fuel. The pancreas often attempts to produce even more insulin in response to high levels of circulating glucose, which initially compensates for the problem.

Over time, resistance increases and the pancreas cannot produce enough to compensate. This leads to one of the most damaging aspects of diabetes called postprandial hyperglycemia. This is where glucose levels have abnormally high spikes immediately following food consumption. The pancreatic beta cells can eventually shut down altogether, causing fasting hyperglycemia and forcing external insulin dependence or risk complications and early death.

From a biological perspective, type 2 diabetes involves abnormal hormone function, part of which is related to genetic variables, such as genes that code for protein synthesis or pancreatic beta cell activity, and part of which is environmental, such as obesity and a combination of eating and activity habits. Risk factors typically include age over 45, family and

personal history of the disease (eg., gestational diabetes), overweight, obesity, low birth weight, ethnicity, smoking, hypertension, dislipidemia, metabolic syndrome, polycystic ovary syndrome, acanthosis nigricans (dark, thickened skin especially near armpits or neck), history of blood vessel disease in the heart, brain, or legs, history of impaired fasting glucose, and impaired glucose tolerance (ADAM 2006).

Typical diabetes symptoms include excessive thirst, increased urination, fatigue, blurred vision, weight loss, gum problems, itching, unusual sensations like tingling or burning in the extremities, erectile dysfunction in men, and among women, vaginal yeast infections or fungal infections under the breasts or in the groin. Short term complications typically include hypoglycemia and ketoacidosis. While short-term complications are more often associated with type 1 diabetes, they are increasingly found in type 2 cases. Hypoglycemia can be caused by interactive effects of anti-glycemic pharmaceuticals and glycemic reducing foods like nopal cactus (Bush et al. 2007). Long-term complications are severe, including neuropathy related blindness, amputation of the extremities, kidney failure, cognitive decline, depression, and increased risk of heart disease and respiratory infections.

The gold standard for diabetic diagnosis and control is an individual's plasma concentration of glycolated hemoglobin (HbA_{1c}). For diagnosis levels over 6.5% are indicative of diabetes and levels at or below 7% correspond with adequate glucose control (though recent evidence suggest that these levels are too low (Kreiner 2011)). The hemoglobin standard has only been in place for a few years. Prior to HbA_{1c}, the standard for diagnosis was fasting plasma glucose levels and 2-hour glucose tolerance. According to the American Diabetes Association (2010), while HbA_{1c} offers a longer term perspective (about 90 days) on glucose control and reduced vulnerability to daily perturbations, the previous standards are not obsolete measures. In

many places in the world, the HbA_{1c} standard has not been adopted. In these places, such as is the case in Mexico (Gaytan-Hernández et al. 2006) not only has the hemoglobin standard not taken hold, national standards are still at or above acceptable fasting blood glucose control levels of 120 milligrams per deciliter. The standards for acceptable fasting glucose had been lowered to 110 milligrams per deciliter by 2006 in the US (ADAM 2006) and by 2010 had been lowered again to 100 milligrams per deciliter (ADA 2010).

Diabetes is typically treated through lifestyle intervention, and if sufficiently severe, pharmaceuticals. There are several classes of pharmaceuticals available to treat type 2 diabetes. The most commonly prescribed drugs are biguanides, most often metformin. These drugs work by reducing glucose production in the liver and by sensitizing tissues to insulin. Biguanides are particularly good for overweight diabetics and those with dislipidemia as they also help reduce adiposity. Other oral drugs include sulfonylureas, such as glipizide, as well as meglitidines, thiazidinediones, and alpha-glucosidase inhibitors. These drugs are often prescribed in combinations with each other and with insulin replacement or other injectibles like exenatide or pramlintide. Sulfonylureas and meglitidines both stimulate insulin production, though the newer class, meglitidines, more efficiently reduces post-ingestion glucose spikes. Alpha-glucosidase inhibitors reduce the rate of carbohydrate absorption in the bowel.

Type 2 diabetes is a prevalent and rapidly growing problem. Currently it affects millions and will likely increase to affect millions more throughout the industrialized world over the next decade (ADA 2010; ADAM 2006; Barquera et al. 2003). At the beginning of the millennia, diabetes was identified as a priority problem in the U.S. government guide Healthy People 2010 (U.S Dept. Health and Human Services 2000). As such, diabetes has received a great deal of research emphasis. Much of that emphasis has been on advancing biological interventions.

Even where interventions are aimed at lifestyle changes, the emphasis remains on biology such as increasing physical activity and reducing sugar and fat intake.

While initially diabetes is marked by physiological alterations, such as an increasing cellular resistance to insulin and a resulting increase in circulating plasma glucose, social and cultural factors have been shown to affect the disease trajectory. This includes evidence that blood sugar levels can be impacted through conditioned response, especially to food (Benedetti 2009), emotional states (Kaptchuk et al. 2009; Wilkinson 1987), and a host of other socially constructed factors. For example, clinic attendance (Garcia 2008), race and ethnicity (Eldeirawi and Lipton 2003), gender (Daniulaityte 2002; 2004) and socioeconomic status (Eldeirawi and Lipton 2003) have all been associated in some degree with differences in clinical diabetes outcomes.

Health Effects of Modernization

One of the more powerful influences on health in Mexico has been modernization. In this case, modernization refers to the changes in social organization made to accommodate an industrial mode of subsistence. This includes a shift to wage labor, rural to urban migration, changes in family such as women working outside the home and a reduction in offspring. It also includes shifting patterns of food consumption, especially the consumption of packaged or prepared foods. Finally, it includes the adoption of sedentary lifestyles.

Modernization has been shown to have a number of deleterious health effects. One of the foremost bodies of evidence of the effects of modernization on health has been constructed by Paul Baker (Baker et al. 1986; Bindon 1997; Bindon and Baker 1985) and his associates. These studies examined patterns of modernization among Samoans in Samoa and regions common to Samoan migration, such as Hawaii and California. Samoa was an excellent case study because

the geographic distribution of Islands, migratory routes, and political control overlap with levels of modernization. Western Samoa is highly traditional, while American Samoa to the east became modernized during and after World War II. Hawaii is more modern than American Samoa, but still has not reached the level of modern urban industrialization as that found in California. This pattern also fits increasing disease rates for obesity, diabetes, and hypertension.

Bindon and Baker (1985) and others (McGarvey et al. 1989) have related the link between modernization and increased chronic disease with changes in lifestyle. Changes from traditional horticultural food production and consumption, toward prepared foods and wage labor employment are at the center of the problem. These researchers associate the rapid increase of type 2 diabetes in the second half of the twentieth century with an interaction between genes and an altered cultural environment. This interaction has been especially noteworthy in indigenous American populations (including Mexicans) as well as Pacific Islanders, where the rate of modernization has been more rapid than that for European groups.

The Anthropology of Diabetes

Diabetes is particularly problematic in Mexico, where it affects over 8 percent of the population (Aguilar-Salinas et al. 2003), and accounted for nearly 600,000 deaths between 1980 and 2000 (Barquera et al. 2003). Barquera et al. (2003) estimated that at the time of their study, there were approximately 3.6 million cases of diabetes in Mexico. The increasing prevalence of type 2 diabetes in Mexico and elsewhere has been linked with shifts in food consumption, reduced activity, and other behaviors associated with modernization and urbanization (Barquera et al 2003). Mexicans all over North America are at an elevated risk of developing type 2 diabetes and diabetes-related complications. Hispanic ethnicity and disparities in diabetes outcomes has been labeled a priority in the U.S. (U.S Dept. Health and Human Services 2000).

In Mexico, diabetic complications are high due to the small fraction of cases that are considered in good glucose control (Aguilar-Salinas et al. 2003), with glycolated hemoglobin at or below 7% ($HbA_{1c} < 7\%$). Diabetes and its associated complications represent one of the leading causes of adult death in some Mexican states, particularly those with greater industrialization and urbanization (Barquera et al. 2003). Furthermore, some estimates have suggested that as early as the 1990s diabetes accounted for three-fourths of all Mexican national health care expenditures (Phillips and Salmeron 1992).

The project described in the following chapters hopes to understand treatment in a broad context. It focuses on type 2 diabetes and unfolds in Guadalajara, Jalisco, Mexico. In addition to answering questions about the impact of meaning on health, it hopes to contribute to a better understanding of type 2 diabetes and chronic illness more generally. Mexico is a place dealing with rapid modernization, including increasing rates of chronic disease like obesity, diabetes, hypertension, and coronary heart disease. Chronic disease goes beyond classic models of the sick role or clinical treatment and touches every part of sick persons' lives. This extensive impact requires a broad therapeutic approach, including non-clinical self-care behaviors.

The approach taken here asks what can be done to treat diabetes. What is the actual range of treatment? While this question has been answered frequently by the biomedical community, the answers often ignore all but the most central therapeutic factors. The peripheral factors get absorbed into a seemingly abstract realm of culture or context and are never measured. These factors are part of what makes diabetes treatment an excellent choice for studying treatment as a broadly construed set of behaviors. Diabetes requires a great deal of self-care. The care can be guided by professionals, but necessarily unfolds outside of the clinical setting, blurring the lines between clinical care and lifestyle. Even when the biomedical gaze

falls toward self-care behaviors, the concentration is on pathology and not salutogenesis. After eating and activity, the emphasis is on foot care and eye exams, not on social relationships or institutional constraints, or anything of the kind. This latter interest falls into the sphere of anthropology and anthropologically informed public health.

In looking at self-care, Hunt et al (1998) collected narratives about diabetes illness experiences and self-care treatment behaviors from self-identified Mexican-American diabetic patients. They describe a situation where informants mention generally accepted biomedical causes of diabetes as causative of their own diabetes. However, informants elaborated on their causal narratives, adding causal factors intimately linked with their personal history. The authors compare their results with a straight-forward locus of control model. The locus of control model suggests that those with an internal control orientation take personal control of their diabetes treatment while those with an external orientation will have someone else take responsibility for their treatment, or they will go without treatment altogether. Hunt et al. (1998) write that their data could not support the locus of control argument. For patients, it appears that what motivates participation in treatment is the individual meaning of the treatment, especially the individual successes and failures patients associate with treatment. The authors suggest that those whose treatment effort is rewarded with control tend to develop internal controls and feel they can impact their treatment and are therefore motivated to participate. Those who do not get rewarded develop ideas that effort makes no difference and they therefore discontinue treatment. This reverses the causal direction for participation, so that participation in the cultural system conditions the psychological state, rather than the psychological state motivating systemic participation.

The ideas presented by Hunt et al. (1998) are very similar to that presented by Antonovsky (1979; 1987). Where Hunt et al. look at successful treatment motivating participation, Antonovsky sees successful coping motivating repeated coping. Those who learn to cope well have the best health outcomes. In a sense, Hunt et al (1998) are operating from a narrow definition of treatment, as can be expected when working in close proximity to biomedical clinics. Antonovsky is at the other end of the scale and offers the widest possible approach to treatment, using a universal model. The project at hand aims at the middle road between these concepts. In this project, treatment is conceptualized more broadly than the biomedical model, but at the same time, it will be constrained to specific structures, rather than generalized psycho-social characteristics.

Daniulaityte (2002) used cultural consensus analysis to explore meanings of type 2 diabetes within a Mexican population in Guadalajara. One portion of her results addressed treatment, especially self-care. A primary problem reported in the study deals with emotional disturbances and their effects on blood glucose levels. For example, in Daniulaityte's consensus survey, she asked informants to rate their agreement or disagreement (on a three point scale) that a brief statement she had read to them could be considered true by the local general population. Two of the top three most agreed upon items were related to calmness, worry, and anger. Informants agreed that one should remain calm and try not to get worried or angry because such things increase blood sugar levels.

Other studies on Mexican and Mexican-American populations also report a large emotional component in diabetes beliefs (García de Alba et al. 2007; Hunt and Arar 2001; Hunt et al. 1997; Hunt et al. 1998a; Scheder 1988; Schoenberg et al. 2005). For example, Scheder (1988) attributes the emotional stress of loss of loved ones and property with the development of

diabetes. García de Alba et al. (2007) used a case-control design to compare treatment beliefs between well-controlled and poorly controlled diabetic patients. They found that, among other things, emotional issues were related to being in the poor-control category. Daniulaityte and others (Hunt et al 1998b; Mercado-Martinez and Ramos-Herrera 2002; Poss and Jezewski 2002; Schoenberg et al. 2005) draw an association between diabetes and the stress related cultural syndrome *susto* (Rubel 1985). The most recent studies (Rodriguez-Mejia et al. 2011) argue that Latino beliefs around avoiding strong emotions in the general health context influence diabetes specific beliefs, so that diabetics ought to avoid strong emotions including among others, *sustos* (fright) and *corajes* (anger).

In a study comparing Mexican diabetic patients in Guadalajara with those in Tepic, Nayarit, García de Alba et al. (2006) found a shared cultural model of diabetes causation. The model includes the above emotions as primary diabetes causal factors. The local cultural model differs from the biomedical model. The authors argue that there is a recurring process patients go through as they experience their illness and attempt to control the disease. The process is bi-directional leading from the assessment of outcomes to framing, complications, doubt and questioning, and action strategies. It also moves from perceptions that success will break the monotony, which leads to change or new experience, to the need to understand what is going on, and the recovery of social capital to a standard one is accustomed, and a construction of meaning around what had happened and the causes and circumstance of the disease. These then lead to searching for information and indicators for interpreting the situation and planning courses of action, as does interacting with significant others in order to interpret and understand what has happened. This is illustrated in Figure 3.

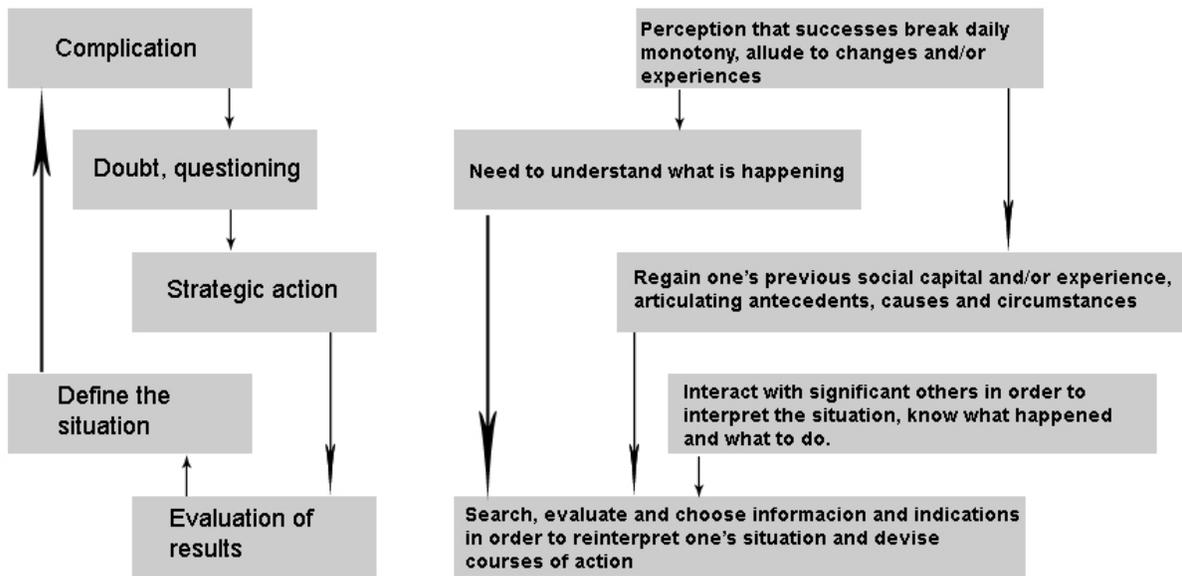


Figure 3. Cognitive structure of diabetic patients in Mexico. Adapted from García de Alba et al. (2006).

Following a similar line of thinking, Mendenhall et al. (2010) describe diabetes as an idiom of distress. They cite heightened emotions in causal explanations, as well as an increased association between diabetes and depression and increased incidence of diabetes among lower socioeconomic classes within modern developed nations. They argue that physical symptoms are easier for distressed individuals to talk about, so that they can avoid the turmoil and stigma involved in emotional or psychological problems. In the analysis, this means that in addition to chronic stressors affecting physiological functioning, cultural idioms of disease are affecting the experience of illness.

Another interesting diabetes treatment theme identified in Daniulaityte's survey is social relationships, especially within the family. The relationships appear to be particularly important where they relate to social support and treatment motivation. The family element traverses several other themes and treatment concerns. For example, some informants said that they had difficulties following an appropriate diet because of family based restrictions and compulsions such as being financially limited to eating what the entire family eats, and being compelled to

participate in family celebrations, including eating what had been prepared for the group. Some informants claimed that family was the motivating factor in attempting to maintain diabetic control. Also, among their worst fears were debilitating diabetic complications that might interfere with informants' ability to work and provide for their families.

Social roles and relationships are important in diabetes control (Brok-Kristensen 2007; Daniulaityte 2002; 2004; Hunt and Arar 2001; Hunt et al. 1997; Hunt et al.1998a; Scheder 1988; Weller et al. 1999). In addition to family relationships, research has indicated that the role of health care providers and the relationship between the diabetic patient and his or her physician (Hunt and Arar 2001; Hunt et al. 1997; Hunt et al. 1998a) affect clinical outcomes. Once again, there is an interesting cross-tie with studies of symbolic healing, where the doctor-patient relationship is highly relevant to positive health outcomes (Brody and Waters 1980; Brown 2007; 2008; Dow 1986; Moerman 2002; Kleinman 1980).

Working with a Mexican-American population, Hunt and Arar (2001) were able to contrast disease models held by physicians with those held by diabetic patients. They argue that each group constructs meaning of the disease differently. They state that Kleinman's (1980) explanatory models framework has penetrated clinical medical practice, noting that the result in the clinic has been a distortion of the original intent. Kleinman had meant for physicians and patients to negotiate a "mutually" meaningful experience. Unfortunately, all too often the physicians' model is left implicit and is assumed "correct" while patient models are considered "incorrect" where they do not meet physician expectations (Finkler 1991; Hunt and Arar 2001; Trostle 1988). From this one-sided perspective, patients are seen as non-compliant, non-adherent or openly resistant when their beliefs are not in alignment with the medical authority. Failure to reach a mutually meaningful relationship may have broader effects, such that from a

patient's perspective, a diagnosis or treatment regimen may appear meaningless, or worse, it may appear harmful. Lack of meaningful diagnosis and treatment is likely to lead to poor clinical outcomes (Brody and Waters 1980; Moerman 2002; Hunt et al. 1998a).

Among the most important observations made by Hunt and Arar (2001) is that physicians and patients often hold contrasting goals: where physicians aim to lower glucose levels, patients aim to feel better. Differences in understandings of diabetes and formation of treatment goals are not limited to differences between patients and physicians. The issues extend to differences between physicians, and between physicians and other healthcare providers (Anderson et al. 1992), especially along lines of medical specialty and age. Treatment goals will affect patients' choices on an ongoing basis, and have a major impact on self-care behavior. Furthermore, evidence presented (Hunt and Arar 2001) suggests that patient motivation, cooperation, and trust are problematic from the physicians' perspective. Motivation, goal formation, cooperation, and trust have all been associated with clinical meaningfulness (Brown 2007; 2008).

CHAPTER THREE: THE ETHNOGRAPHIC CONTEXT

Mexico is a major country on the North American continent. It has a great deal of diversity in its land, climate, and human population. The project reported here unfolded in Guadalajara, a major urban area in the west-central Mexican state of Jalisco. Guadalajara is a growing metropolitan area composed of five conjoined municipalities. Guadalajara proper is centrally located blending directly into the city of Zapopan to the west. In the south-southeast is the municipality of T'laquepaque and in the east-southeast is Tonalá. In the far southwest is Tlajomulco. While ethnographies of rural Mexico are easy to come by, the same is not true for much of urban Mexico. Much of what has been written about urban contexts has been largely focused on the *Distrito Federal (DF)* or Federal District of Mexico, better known as Mexico City (Finkler 1985; 1991; Lewis 1961; 1975; Lomnitz and Pérez-Lizaur 1987). These works form the background of this contextual description, along with a few ethnographies focused on Guadalajara (Logan 1984; Diaz 1966), and select works from the large corpus of publications produced by historians and political scientists (Blouet and Blouet 2006; Buckman 2007; Pilcher 1998; Turner 2000). The remainder is derived from the first hand experiences of a year in the field.

The reader will first be oriented to the land, the landscape, the geography and climate in Mexico and Guadalajara. This will be followed by a brief review of pertinent history and pre-history to give the reader a sense of the long term patterns that represent deeply entrenched social patterns. The effort will then turn toward describing contemporary Mexico, its government and

economy, its struggle toward modernization and the effects of industrialization and globalization. Details will then focus on social structures, such as the family, and religion, along with issues that divide the society, such as class, gender, ethnicity, and urban and rural residence. The next section will focus on the metropolitan area of Guadalajara, especially the intense sensory experience of daily life and how it is lived by the middle and working classes. Finally, the ethnographic description will consider issues of health and nutrition, such as the structure of the Mexican medical system, local cuisine, and local engagement in physical activity.

Mexican Geography and Climate

Mexico is the largest and northernmost of the Central American Countries. It is bordered by the United States of America (US) in the north, the Gulf of Mexico (Gulf) in the east, Belize to the southeast, Guatemala in the southwest, and the Pacific Ocean in the west. Mexico is geographically characterized by a high central grassland plateau settled between two large mountain ranges, the Sierra Madre Orient and Occident, to the east and west respectively. Overall, this gives Mexico the sense of being mountainous. The far north and central plateau is dry desert. It is arid, dusty, and sparsely covered with succulent plants. In the south, the mountains converge as they form the spine of Central America. As the elevation drops, the climate and local vegetation shift. In the east, the mountains step down to the low, flat limestone of the Yucatan peninsula. The peninsula and much of the Gulf coast are covered in thick tropical forest with areas of tropical savannah and dry, shrubby grasslands. Coming across the Sierras from the east to west there is a notable change from tropical rainforest to coniferous forest and then arid desert. The western Sierras area is dotted with shallow lakes, with the exception of Lake Chapala in Jalisco, which is the largest lake in the country. This region drops to the south into a narrow shelf of tropical savannah. In the northern Pacific areas, the mountains fall directly

into the Pacific Ocean. This is a visually stunning effect in areas like the coastal city of Puerto Vallarta, where the ocean front city is built into the mountain landscape.

The western zone of the country enjoys warm clean air arriving from over open seas. The local people take advantage of their marine resources, not the least of which is fresh seafood. In some areas, the seafood being served in the afternoon was taken from the sea late in the morning. Even in places as far as Guadalajara, the three o'clock afternoon meal can be supplied with today's catch if one is willing to travel to the central seafood market to buy it. There are distinct differences in climate and culture as one ascends the Western Sierra. At the beaches, shipping, fishing, and tourism abound. Cities like Mazatlan attract tourists from around the world, giving parts of those cities a carnival-like atmosphere. The highlands are more divided into rural agricultural areas and urban industrial centers. In the rural highlands farming and indigenous-styled craft production contrasts with urban areas like Guadalajara, where factories pour out computer parts, televisions, and other consumables like beer. Jalisco itself is known for its poultry industry and is Mexico's largest egg producer. With its various industries, the state accounts for up to 7 percent of Mexico's gross domestic product (Moreno 2011).

The year is divided into a wet season and dry season, and temperatures vary between daytime highs of 65°F and 90°F and nighttime lows of 35°F and 65°F. The local population is socially and economically diverse, though the majority of *Tapatíos* could be classified as middle or working class, occupying many production and service oriented positions. The region just south of Guadalajara, near Lake Chapala, is an area known for its large European and US expatriate populations. The area is attractive to retirees who want to enjoy the weather and climate while maximizing the luxuries they can afford on their retirement earnings.

Ethnography and the Family Road Trip

Part of the ethnographic content presented here is drawn from literature review and part from first person experiences. Entering and exiting the field by automobile provided some unique material that rounds out an understanding of Mexico as a whole, not just the city of Guadalajara. Cross country travel helped inform an understanding how local and regional differences may have affected the research location in Guadalajara, Jalisco. Since the ethnographer went into the field with his wife, nine-year-old son and three-month old daughter, the experience took on the flavor of a family road trip. The trip began with a visit to distant relatives in New Mexico, followed by a visit to the Grand Canyon and border crossing in Nogales, Arizona, entering Mexico through the state of Sonora. The trip from the border, down the Pacific highway and into Guadalajara took three days.

The initial crossing was confusing due to poor orientation on the ethnographer's part. Eventually all the official offices were located and visa import fees paid for the vehicle and household items taken along. The roadways are not as well marked as US highways. Toll roads are in better condition than free roads and offer more direct routes and less travel time, but they are expensive. The trip to Guadalajara would cost about MEX \$1200 (US \$100) on toll roads alone. On the third day of travel in Mexico the free road was selected. The free road travels slower and winds up and down through mountain passes. There are few safety rails and the roads are narrow and difficult to pass. In comparison to highways in the south of the country, the Pacific road is in good condition. The final stretch of highway runs across a volcano where one turns a corner and the landscape changes to barren slopes covered in large black rocks. The areas between are filled with small pieces of the same volcanic pumice. Soon after the slopes are covered as far as the eye can see with agave cactus, which is used to make the famous beverage

tequila. The town that originated the drink (Tequila) is a short drive north of Guadalajara and lies along the free highway that runs between Nogales and Guadalajara.

A second substantial road trip was initiated six months into the project. This trip was required to renew the vehicle import registration. The nearest border agency was located in Nuevo Laredo in the state of Nuevo Leon, across from the state of Texas. The highway northeast out of Guadalajara through Jalisco towards Monterrey and Nuevo Laredo is narrow and winding. The winding and frequent changes in altitude alter the ratio of driving time to distance traveled on the map. After landing on the central plateau, the road is mostly flat and straight. The landscape is covered with nopal cactus and desert palm, but little else. Areas around the cities of Saltillo and Monterrey are more industrialized than Guadalajara and show a greater US influence on architectural style than Guadalajara's European flavor. At food and fuel stops along the road passing conversations focused on border violence, with locals providing ample warnings to take care.

A third family road trip involved a long journey from Guadalajara to Merída, Yucatán and back. The 2010 Society for Applied Anthropology Conference was hosted there. The road from Nogales bends around Guadalajara and heads toward Mexico City (DF). The journey from Guadalajara to the capitol takes about six hours on the toll road. Anyone driving in DF will need a detailed map. Road signs are less obvious than other major cities in Mexico. All the big cities have a roadway that loops around the outer perimeter of the city. This is usually named *Anillo Periferico*. In Guadalajara, *Anillo Periferico* is like a highway, in that once one is on it one must intentionally exit. There is no way to lose the road accidentally. This is not true in DF, where it is an easy road to find from the incoming highway, but not an easy road to follow using (non-existent) road signs. Having a good sense of direction and asking select locals helps if one gets

lost. In this particular occasion there were about three hours passed experiencing off-the-beaten-path DF.

Having promised the family a trip worth sitting in the car for days, the beach at Vera Cruz, Vera Cruz was on the agenda. Vera Cruz was so windy during the visit that our, by then 10-year-old, boy could stand into it at nearly 45 degrees without falling over. The family truckster was caked with beach sand in the morning. The sand buildup on the vehicle was reminiscent of a fresh Indiana snowfall. The gulf route was attractive since it offered great scenery and a somewhat direct route to Mérida. The landscape is low brush forest and small flat limestone plains. The city, *Ciudad del Carmen*, located on a barrier island in the south shore of the Gulf of Mexico played host the following two days. This part of the country does not see many American tourists. Ultimately, the group arrived in Mérida and passed an afternoon in the Gulf city of Progreso.

Ruins were a highlight of the eastern tour. A visit to Chichen Itza was disappointing, as a great deal has changed since a previous visit several years prior. Two of the notable changes include the relocation of vendors into the park surrounding the local archaeological features. Second is the restriction placed on all of the features disallowing foot traffic. On the previous visit, visitors were allowed to ascend the main pyramid. An employee at the park stated that there were too many accidents and that someone had died from falling. Ruins south of Mérida, near Guatemala in Palenque, Chiapas were more available to explore. Palenque is built atop and alongside a rainforest covered mountain. There are many stairs up and down through the city, many streams, waterfalls, and enormous trees that serve as home to monkeys in the canopy. It is a primate paradise.

The return trip to Guadalajara was planned through the western and southern part of the country, but news of escalating drug violence in Acapulco and surrounding areas were a deterrent. An alternate, central route was planned through Oaxaca. To make the trip interesting an out-of-the-way visit to the city of Taxco, Guerrero was planned. Taxco is home to the world's most productive functioning silver mine. The roads running through Chiapas and Oaxaca are extremely dangerous. At one point a small sign reading "slow" stood in the road. Around the corner, the outer lane of highway had washed down the side of the mountain and all traffic had to pass partially off of the road against the mountain wall on the other side. These highways, while not featured as the worlds most deadly roadways, are not far behind in their element of danger.

The final long-distance family road trip was upon leaving the field. The road out was first and foremost filled with emotion, the sadness at leaving behind dear new friends and a fantastic adventure conflicted with the joy of an anticipated homecoming and the anxiety of a long and in some senses, arduous trip across Mexico and the US. Nuevo Laredo was the target crossing point, though the area had just been hit with a major hurricane, which had flooded the Rio Grand and halted international traffic. A different route was selected for returning than had been used in the document renewal trip. This time the road taken ran through the central city of San Louis Potosi. The road is under construction and difficult to follow. The first night on the road was marked with flat tire followed the next day with the spare going flat over night in the hotel parking lot. Changing a tire in the dark on a highway with no shoulder was somewhat nerve-racking, but served as a parting reminder of the conditions Mexicans live their lives in every day; on the brink of catastrophe, but seldom over the line. The floods subsided somewhat

as the border drew nearer. The limited crossing capacity and ongoing construction made border crossing confusing and time consuming, but ultimately successful.

A Brief Political Economic History: The Distant Past

It is important to start the exploration of contemporary Mexico in recent pre-history because of the lasting influence of indigenous cultures on the modern state. Mexico played a central role in the development of the New World. Prior to Hernan Cortez's arrival in 1519 Mexico had been dominated by predatory conquest states for nearly 2000 years. The Olmec, Toltec, Maya, and Mixtec (later known as the Aztecs) bullied and brutalized any neighbor not willing to assimilate into their empires (Berdan 1982). The elites demanded tribute in the form of labor, food, raw materials, and finished goods. They built large urban centers complete with intricately detailed stonework accurately aligned for interaction with the celestial bodies. They developed writing systems and mathematics and many other sophisticated technologies.

The focus for this section is the Aztecs, the last fully indigenous group to hold power in Mexico. The Aztecs are interesting in this discussion for several reasons. First is their assimilation politics and dualistic religion. The empire was built one assimilated group at a time. They had a worldview in which nature had a dualistic quality. Quetzalcoatl for example, their high god, was a twin deity, part bird and part serpent. Their assimilation policy combined with the principle of duality allowed for some absorption of European culture, ultimately leading to the blended mestizo society seen today.

The second interesting point about the Aztec legacy is the family and class structure of the society. While there was not a broad range of classes, there was some variation. For example, the elite class was divided into powerful and lesser elites. Elites composed the government, the priesthood, and much of the military. The middle class was small, composed

mostly of soldiers, but also included some merchants and craftsmen. The lower class was large and was made up of agriculturalists and other laborers. The lowest class was made up of captured slaves from neighboring groups. While this is a class system, the system was tight, with little social mobility. The little mobility available came largely through the priesthood and the military (Berdan 1982), a situation that remains mostly intact today.

A third interesting point about the Aztecs is their food. Especially interesting is that the diet was based on maize, chilies, beans, turkey, and seafood. These aspects of the diet remain, though reliance on turkey and seafood diminished with the introduction of pork Pilcher (1998). Diet, as will be discussed later, is still a marker of ethnic and class identity.

Political Economy: European Arrival and Integration

Additional holdovers exist from ancient times. For example, dress is still a class and ethnic marker. Time is conceptualized as circular, and fate plays a role in everyone's life. When the Spaniards arrived they befriended Aztec vassal groups, turning them into allies. With their large number of allies, a small group of Spaniards was able to seize power from the empire. However, because of their small number, they were not able to displace the local population. Only later, as more Europeans arrived and disease had time to wreak its havoc, did the balance in demographics shift toward European cultural dominance. By that time, the European and indigenous groups had mixed substantially, creating the first generations of a growing mestizo population that embraced both its European and indigenous heritages in a single integrated identity (Buckman 2007). Mexico began to take on its current unique character.

The process of integration was neither quick nor pleasant. New Spain, as it was called, was rich with deposits of gold and silver and its central plateau is fertile. These attributes attracted Europeans. The arriving colonists displaced the natives, confiscated their lands, and

enslaved the former inhabitants primarily as mining and agricultural laborers. The majority of the wealth extracted was shipped back to Europe. What remained became concentrated in a few hands between the owners of the haciendas, large plantation-style ranches, and the bureaucrats that ran the colonial government.

What seem to have accelerated the Euro-indigenous integration are the inroads made by the Catholic Church in converting locals to Christianity. Especially important in that process was the miracle of the Virgin of Guadalupe. It is said that the Virgin appeared to an indigenous peasant boy named Juan Diego, then performed a miracle through him to convince a doubting bishop to build a cathedral in order that The Lady may embrace all of the children of Mexico. The Lady of Guadalupe became the patron saint of the region, providing a bridge between cultures. The church became powerful through and with the people, and has played a significant role in Mexico's development.

Political Economy: Colonial Rule and Independence

Colonial rule was dominated by exploitative, coercive policies. With the exception of the 30-year rule of Carlos III, New Spain existed only to enrich the Crown. A return to coercive policies brought on by the ascension of Carlos IV to the throne marked the beginning of calls for an independent Mexico. Carlos IV was despised in Spain and soon abdicated the throne. His son Fernando VII ascended and was quickly lured to Paris by Napoleon where he and his father were incarcerated, leaving Napoleon to fill the power void in Madrid. The political wars in Europe provided an opportunity for Mexicans to execute their plans for becoming independent (Blouet and Blouet 2006; Buckman 2007).

On September 6, 1810, Father Miguel de Hidalgo, a Mexican-born priest of European descent, called upon his Indian and *mestizo* parishioners to raise arms against the Spanish Army.

Father Hidalgo's army was soon defeated, but the rebellion had ignited a movement that could not be extinguished. Leader after leader stood up in repeated uprisings. European politics again shifted, restoring the Spanish monarch, only to have him reluctantly abdicate the throne in favor of a popular government. The Spanish elites concocted a plan in cooperation with some powerful Mexican political leaders where Fernando VII would leave Spain and resume ruling as monarch in an independent New Spain. The King did not have success, but the locals did. On September 27, 1821, General Agustín Iturbide took control of an independent Mexico. However, Iturbide did not maintain power either. After declaring himself emperor and spending lavishly on the trappings of monarchy for a few years he was dethroned and exiled, and eventually shot.

Independent Mexico was marked by a struggle between the conservative minority, composed of the Church, landed elites, and the military, and against the liberal majority composed of the working and peasant classes. Military rule was imposed. Elites found it easy to buy privilege with the unstable military government. The voices of the liberal common folks were silenced, often with a sword. Generals who could not extract enough financial support from elites would be ousted by their own troops, bringing new leaders to the front. Often old leaders would return in times of crisis. For example, the famous General Antonio López de Santa Anna fell in and out of favor several times, each time holding supreme power in Mexico. In his first run, Santa Anna dissolved the constitution and made himself dictator. In response, the liberals of Zacatecas and the Anglo-Americans of the Texas province rebelled. The Zacatecans along with some of the Texans were ruthlessly put down. However, Santa Anna's army was defeated by the Texans at the Battle of San Jacinto. He was forced to grant Texas independence, and returned to Mexico City disgraced, retiring from government. He was

recalled to duty when the French later landed military forces aimed at collecting old debts. He was again a war hero, and again proclaimed himself dictator. This time, he spent faster than he could impose taxes, leaving the military coffers empty and the army unpaid. He was militarily exiled to Cuba. Five years later a border dispute erupted between the U.S. and Mexico, and Santa Anna was again restored to power. He was defeated in battle against the U.S. but sent word of victory to the Mexican capitol. He was again in a position to assume dictatorial powers, until the U.S. military under General Winfield Scott captured Mexico City. The militarily and economically defeated Mexican government was in a poor bartering position, relinquishing huge tracts of land in California, Arizona, and New Mexico for 25 million dollars.

The restored Mexican government had a very brief liberal rule, which included moves to suppress the power of the Church. The liberal government was overthrown and civil war erupted. Two leaders emerged from the civil war that would influence Mexican politics for a long time. One was Benito Juárez, a Zapotec Indian who was governor of the State of Oaxaca. The other was a liberal General named Porfirio Diaz. Juárez and Diaz were able to temporarily restore the liberal constitution with the support of the U.S. military. Unwilling to admit defeat, and with the U.S. suddenly distracted with its own civil war, the conservatives launched a plan that would have a European monarch resume power over Mexico. With the aid of the French Emperor Napoleon III and the Archduke Maximilian, brother to the Emperor of Austria, French troops marched on Mexico City. With the exception of a stinging defeat at Puebla on May 5, 1862 (Cinco de Mayo) the plot successfully supplanted the constitutional government. The victory was a major point for promoting nationalism, since the Mexican army had suffered a series of losses, including having ceded massive tracts of land to the US. It is interesting that May 5th is thought of in the United States as a major Mexican holiday, but in Guadalajara the day

went unmarked. When informants were questioned about the lack of local enthusiasm, they stated that celebrations are usually more localized to the state of Puebla. Speculation was that the inflation of Cinco de Mayo in the US is associated with the marketing campaign for Corona beer, part of which currently operates from Guadalajara. Maximilian's reign, like so many others, was cut short when French troops withdrew under threat from the U.S. Maximilian and his generals were executed by firing squad.

Benito Juárez soon took power as constitutional President, and is credited with having one of the most honorable and enlightened administrations Mexico has ever known. Juárez made unprecedented moves toward improving the lot of Mexico's poor majority. Juárez died of a heart attack during his fourth term and was succeeded briefly by a Vice President Sebastián Lerdo de Tejada. Tejada won reelection but was immediately ousted by General Porfirio Díaz, who then implemented Mexico's longest running, 35-year, dictatorship. Díaz abandoned the liberal nationalist agenda, preferring to rule with a policy of *pan o palo* (bread or club) (Buckman 2007). Díaz ushered in modernization and huge shifts in economic development, including large foreign investment from the U.S. and Britain. Díaz established a technocratic government that benefitted the middle and upper classes with unprecedented income and capital but ignored or exploited the lower classes. The growing gap between classes primed Mexico for social and political revolution.

Political Economy: The Mexican Revolution

The Mexican revolution involved a complex series of events and a number of factional leaders backed by regional armies. In 1910, Díaz was opposed by Francisco I. Madero in the general election. Díaz was 80 years old and had developed a system for rigging elections in his favor. Díaz first overlooked Madero's challenge in order to make the appearance of openness.

He secretly had Madero arrested on trumped up charges until the election passed, and Diaz was able to secure victory. Upon release from jail, Madero fled to the U.S. where he spoke out against Diaz. Madero's supporters in Mexico included Francisco "Pancho" Villa in the north, and Emilio Zapata in the south. Both of these men organized small armies and began an assault against Diaz. Diaz escaped to Paris with a share of the national treasury. He died there four years later. Madero was installed as interim President.

The counter-revolutionary *Porfiristas* did not give up the fight when they lost the government. They gathered armies and melee ensued between them and Villa, Zapata, and Madero's generals. Madero was overthrown when the U.S. ambassador, angry over Madero's restrictions on foreign business, threw his support to the counter-revolutionaries, allowing Madero's General Victoriano Huerta to seize power by murdering Madero and Vice-President Pino Suárez. Huerta's power play brought outcry and led to the involvement of additional armies. One such army was led by businessman-turned-general Alvaro Obregón. Obregón, along with Villa and Zapata ousted Huerta and put Venustiano Carranza into power. Zapata was assassinated in 1919, though the spirit of his populist movement still lingers in southern Mexico. Villa continued to be a threat to the powerful and was assassinated in 1923. Carranza attempted to circumvent the constitution by installing a mock President, and was himself assassinated, leaving Obregón, along with his small army, to fill the vacancy, putting an end to the 10 year revolution in 1920.

Political Economy: The PRI Years

While the revolution had officially ended in a liberal constitutional government, Mexico's social and political struggles were far from over. Obregón began implementing sweeping social changes aimed at providing relief for the poor and working classes. Among the

most important of his contributions is the Indian land redistribution plan that created communally owned *ejidos* (DeWalt 1979). Another important move he made was to step down from the Presidency at the end of his term, though maintaining a powerful behind-the-scenes presence. Obregón paved the way for his associate General Plutarco Elías Calles to take power. The two men co-ruled for 10 years. Calles term as President saw official reversal of the more liberal aspects of Obregón's reforms. It also saw the official suppression of the Catholic Church, including confiscation of Church property, expulsion of foreign priests, and the defrocking and political disbarment of the local clergy. After much political wrangling that resulted in the murder of Obregón at the hands of a Church radical, Calles was forced to open the chamber of power to another, Emilio Portes Gil. Together, Calles and Gil founded a new political party that would, under various names, dominate Mexican politics until the year 2000. Today that party is known as the PRI or *Partido Revolucionario Institucional* (Institutional Revolutionary Party).

The PRI is known for a practice called *el dedazo* or the finger tap. In this practice, a President selects a successor from among a small group of close advisors, then the entire party rallies behind that heir. The practice may be based on ancient Masonic rites, and has been compared with the selection of a new Catholic Pope (Buckman 2007).

On the surface, it appears that power is transferred between Presidents legitimately. However, the election process itself was so corrupt that PRI candidates always won landslide victories. Over the 71 years that PRI held power there was a tendency to vacillate between leftist and centrist leaders. For example, Lázaro Cárdenas was elected in 1934. He was responsible for redistributing 45 million acres of land to peasant owners and nationalizing the Mexican oil industry (*Pemex*) in a state monopoly. He allowed the formation of a rival political party, the PAN or *Partido Acción Nacional* (National Action Party). He was the first President of Mexico

to willingly transfer power at the end of his term, though he kept it within the PRI by instituting *el dedazo* and remaining complicit with a corrupt electoral system. Cárdenas's successor Manuel Avila Camacho was a centrist and a devout Catholic. He slowed land redistribution to a halt, reversed the anti-clerical policies instituted under Calles, and reestablished relations with the U.S. during World War II (WWII) by producing needed war materials.

The Mexican economy continued to grow after WWII. Land redistribution continued to shift with every other president stopping or restarting the *ejido* program. Eventually a national University was created and women won the right to vote. With each election stolen by the PRI, the popularity of the PAN grew, and on occasion, the PAN mounted serious challenges to PRI legitimacy (Buckman 2007).

The late 1960s marked a critical point in social conflict in Europe and North America, and Mexico was no exception. Mexico hosted the 1968 World Olympics. On the eve of the opening ceremonies, a student protest arose at a state sponsored university. The student uprising, also known as the Tlatelolco Massacre, was dealt with in typical PRI, hard-handed military fashion under direction of Interior Secretary Luis Echeverria. As many as 300 people were killed and hundreds more wounded when the military opened fire on the students. More than 1000 people were arrested. Military leaders claimed to have been fired upon by snipers, but no evidence surfaced to support that claim (Buckman 2007).

When Echeverria was given the office of President, he moved far to the political left. He freed political prisoners, nationalized 700 industries, promoted liberal newspapers, established relations with communist China, spoke out against the Vietnam War, supported Fidel Castro, and refused to recognize the military dictatorship of Augusto Pinochet in Chile, allowing thousands of Chilean political refugees into Mexico. His successor, López Portillo moved back to the right,

reestablishing relations with the U.S. and international monetary institutions. Portillo and his successor were left to deal with radical monetary changes and high inflation. He initially had success because of huge oil reserves discovered in Mexico's southern territories. However, when oil prices collapsed in 1982, Mexico fell into deep economic trouble. Inflation and unemployment ran out of control, and by 1988, the country was strapped with US \$105 billion in debt. Even with a rapidly growing population, it was one of the world's highest debts per capita.

Compounding the economic turmoil was a natural disaster and social erosion of the status quo. An earthquake hit Mexico City in 1985 killing 10,000 people and causing billions of dollars in damage. The high toll was blamed officially on shoddy construction standards and unofficially on disregard for the poor and working classes. Political corruption became a central discourse, leading to the organization of a third, far-left, political party the PRD or Partido de Revolución Democrático (Party of the Democratic Revolution). The late 1980s and early 1990s saw sweeping political change around the world. The Soviet Union failed, China began economic reforms, and Latin American dictatorships one by one gave way to liberal democracies. Once again, Mexico was swept into the trend, and real democratic moves began. For example, the state control and subsidy of newsprint paper had long been used as leverage against free press. The state simply withheld paper from news outlets that were unfavorable. The PRI was forced, through world-wide embarrassment, to relax its manipulation of the electoral process, which led to the PRI's loss of many state and municipal positions.

The elections of 1994 saw two high profile assassinations, and the eventual implication of former President Carlos Salinas de Gortari through the conviction of his brother Raúl for one of the murders. Salinas escaped to Ireland, which has no extradition treaty with Mexico. There he died. His brother's conviction was overturned by an appeals court. That same year the North

American Free Trade Agreement (NAFTA) took effect, opening the economic borders between Mexico, the U.S., and Canada.

Electoral reform in 1994 ushered in the first fair elections in Mexico's history in 1997. Mexican voters were supplied plastic ID cards with their thumbprint and private polling booths. After casting ballots their thumbs were marked with indelible ink. Each party was allowed five poll watchers. The PRI lost control of its congressional majority. President Zedillo formally disavowed *el dedazo* in favor of a primary election. The primary results left many wondering if *el dedazo* was truly defunct. The 2000 election saw the election of PAN candidate L. Vicente Fox Quesada. In a rally running up to the election Fox is said to have told the crowd "If you are tired of the PRI, if you are sick of the corruption, if you want a government that is pluralist and inclusive, the only choice is to vote for the Alliance for Change! Give me 10 seconds of your time and I will give you six years working to give you a Mexico of grand opportunities!" (Buckman 2007: 244). The reporter translating the quote went on to write that after Fox's statement "the crowd cheered as though Mexico had won the World Cup" (Buckman 2007: 244). For some, the victory finally put an end to the Mexican revolution.

Political Economy: A Summary

To summarize this brief historical overview, a few key points can be made. Throughout Mexican history, and even some prehistory, there has been a strong dichotomy between classes, with powerful elites dictating life for the numerous working peasants. Military service has been an option for distinguishing oneself, and for gaining social and political capital. Power has been fleeting for all but a few elites, and many historic leaders have met violent ends. Much of the political struggle revolves around the large-scale integration of very different and evolving European and indigenous socio-cultural systems into a single system. Another major theme in

Mexico's history is greed and corruption. The Aztecs made heavy tribute demands on their neighbors. The Spanish extracted as many precious metals and as many other raw materials as they could carry. After independence from Spain and France, a system of praetorianism set in reminiscent of early Rome, where military might held the greatest political sway. The Mexican urban centers entered into the modern world, while the rural areas remained tied to subsistence lifestyles. Overexploitation of the masses led to revolt and a revolution that some say lasted 90 years. During the post-revolutionary period, starting in 1920, the struggle has been on implementing a liberal constitution and redistributing wealth from its concentration in a few hands.

In many ways, this history involves the actions of a few leaders. Telling the story from this perspective rather than the perspective of the people who lived these struggles emphasizes the kind of cult of personality common to Mexico. The cult of personality can be seen in the naming of places and roads, where a substantial portion of cities, buildings, and roadways are named after famous social and political leaders. Furthermore, this discussion sets the scene for reviewing a contemporary Mexico - a Mexico that is constructed in dual spaces like male and female, rich and poor, and urban and rural. These are not true dichotomies but rather continuums drawn between polar extremes. This is indicative of the struggle that is part of the Mexican cultural heritage. Issues like race take on a different character than in many other places in the world. There is a blending of worlds and a continuous distribution that must be well-considered.

Contemporary Mexico

Mexico's European legacy includes a strong concentration of people in large urban centers. The countryside is sparsely populated, consisting mostly of small peasant villages. The federal system of government includes 31 administrative states and one federal district (Mexico

City) where the strong central government resides. The central government is broken into three branches, administrative, legislative and judicial. Mexico's economy is based on a free market system and relies heavily on manufacturing, especially in the northern states bordering the U.S. and the larger cities like *DF* and Guadalajara (Blouet and Blouet 2006).

The rural areas of the north and central plateau are agricultural producers. The Eastern region consists of the Yucatán peninsula. The east and west coasts thrive on tourism. The southern region is the poorest region, but is well known for its traditional craft production, especially stoneware and textiles (Wood 2010). Mexico has a thriving petroleum industry (*Pemex*) that is controlled by the federal government. Government control of oil, with its exclusion of private investors, has been a controversial point in Mexico's attempts to modernize. It has been especially difficult with dealings with the U.S., where northern investors want to trade fiscal aid for private access to the energy markets. Unemployment and underemployment are problematic all over Mexico and there are strong wealth disparities (Blouet and Blouet 2006).

As described above, Mexico has a poor track record for making smooth power transitions (Buckman 2007). Traditionally those who achieve powerful positions are reluctant to hand over control. The 2006 Presidential election is illustrative of Mexico's struggle. The election was closely won by Felipe de Jesús Calderon (35.89% of the popular vote) over López Obrador (35.31% of the popular vote). Obrador and his congressional supporters refused to surrender the election. In an unprecedented move Fox retired his presidential position as agreed, leaving the Presidency vacant for half a day as Obrador's supporters blocked the doors to congress. By Mexican law, the president must take his oath of office in the congressional chamber. Physical violence broke out between members of congress. During the melee, Fox and Calderon slipped

in through a hidden passage, took the oath and departed within minutes (Buckman 2007). The elections of 2012 will be another test for Mexican democracy.

One important aspect of Mexican culture that is evident in the political arena is a tendency to glorify individuals through a cult of personality. For example, one day during normal fieldwork, a special news broadcast was made over the radio. The special broadcast involved a landmark case of state government reforms. The program lasted several hours, but did not include any coverage of the legislation being passed, only the individuals involved in its development; an extensive program of, according to one local informant “patting each other on the back for not really doing anything.” Paternalism is strong and leadership tends to fall to charismatic men. This cultural trait permeates the medical system as well, where charismatic male doctors are held in high esteem (Finkler 1991).

Problems with Modernization

Over the last 100 years, Mexico has been moving toward modernization including industrialization and globalization. In the last few decades, those moves have been accelerated, making Mexico a land of natural experiments in rapid social change. One major component of modernization has been industrialization. The federal government has pushed the development of transportation and communications infrastructure. Participation in the North American Free Trade Agreement (NAFTA) led to increased manufacturing and foreign investment. The increase in manufacturing, energy production and petroleum extraction, and changes toward industrial agricultural practices has been hard on the environment. Especially problematic is air and water pollution and desertification of previously arable lands. The lack of fresh water is considered a national security issue by the federal government (Buckman 2007). Even in large

modern cities like Guadalajara, outlying areas do not receive adequate supplies of water, in the recent past, often going days without access (Logan 1984).

Many of Mexico's residents attempt to make ends meet through a combination of subsistence activities, wage labor, and profiteering. For example, urban dwellers often supplement their wages by raising crops and animals like chickens, turkeys, and pigs on their rooftops and in their courtyards. These can be used within households, as well as being sold on the street. Because of the way land and resources were distributed under the colonial system (and never completely or fairly redistributed), even the poorest of the rural peasants cannot live without some kind of wage-income. The wage based economy has forced and continues to encourage rural to urban migration. People go where the jobs are. This factor has been attributed to the enormous growth of Guadalajara (Arroyo-Alejandre and Valazquez 1990).

The War on Drugs

Recent high profile results of Mexico's imbalanced economy are the drug wars (Payan 2006). The drug wars are complex, involving disputes between multiple drug cartels and between the cartels and Mexican and U.S. governments (Kellner and Pipitone 2010). The cartels, concentrated along the U.S. border, facilitate the transportation of Columbian cocaine and heroine into the U.S. They also organize and facilitate local production and international distribution of marijuana, especially into the U.S. The combination of insatiable U.S. demand for these drugs, political corruption, and the need for cash income among the poor (especially rural) keep the drug trade proliferating (Steinberg 2011). Drugs are produced in distant rural areas and transported to the northern border-cities for distribution. The profits from drug production and distribution are so immense that for many the rewards of participation in drug activity far outweigh the risks.

The drug problem was brought to attention in the U.S. when the mounting violence reached the popular U.S. tourist destination in Cancún in late 2008 and early 2009. Violence has also increased in Mexico City and other areas traditionally south of the troubled border zone. The crackdown against drug trafficking through Mexico started in the early 1990s and increased in the new millennium under president Fox. Fox's efforts to curb the activity included the creation of several special branches of law enforcement and dispatching of thousand of federal military police (Blouet and Blouet 2006). The Fox crackdown disorganized the main cartels, leaving them struggling over turf. This has resulted in even more violence, including the deaths of law enforcement officers, drug traffickers, and investigative reporters. Current President Calderón has increased troops even more as the violence has become more gruesome and more public (Steinberg 2011). Calderón's war on drugs has been the most intense yet and violence continues to increase. As cartels get killed off, new ones fill the distribution void. The extreme violence is intended to send messages to government and the public – do not interfere with the illegal behavior.

The city of Guadalajara has been spared most of the violence, but has not been entirely free from it. In 1993, Cardinal Juan Jesús Posades was shot to death in the airport in Guadalajara. Some believe that the Cardinal was an unfortunate bystander, but others assert that he was an intended victim, since he knew too much of official complicity in the drug trade (Buckman 2007). No other large scale drug violence had been reported for Guadalajara until 2010. During fieldwork, there was a lot of discussion of the escalating drug violence, especially around three high profile local killings. Reports among lay folk were that the killings involved rival gangs from Zacatecas to the north east and Michoacán to the south. Both gangs had

members killed to send a clear message that a third gang controlling Guadalajara was intolerant of their dealings. Bodies were left in open sight in middle class neighborhoods.

Moreno (2011) describes the increasing violence in Guadalajara as the time leads up to hosting the Pan American Games. Over 34,000 people died between the beginning of Calderon's cartel crackdown in 2006 and the time of Moreno's writing in early 2011. The drug related murder rate in Guadalajara doubled over the previous year in 2010, topping out near 600 murders (Moreno 2011). The government maintains that despite the escalation, Guadalajara remains well below the national average murder rate of 14 per 100,000. Moreno (2011) writes that President Calderón cannot afford too much violence in Guadalajara, as it is one of the last areas keeping investors reassured that Mexico is safe for business. He also points out the importance of limiting violence in the state of Jalisco in relation to economic activities.

In 2006, the Mexican congress drafted legislation that legalized possession of small amounts of marijuana, cocaine, heroin, and peyote. The legislation intended to divert drug enforcement resources toward the traffic problem. The move was meant to appease U.S. officials and buy the Mexican government some negotiating power over the issue of border-controls and U.S. immigration. Loose borders are good for big business and trade, but bad for drug enforcement. The Mexican government hoped to use resources aimed at controlling drug use for traffic control, leaving the border more open. The move backfired, when U.S. drug enforcers claimed that the law encouraged drug trade, moving the U.S. congress towards tighter border control.

Another problem with porous borders between the US and Mexico is the flow of munitions into Mexico. As President Calderon emphasized in an address to the US congress, there is a concentration of weapons dealers along the US side of the border. Most news sources

describe 70 percent or more of Mexican drug violence being committed with US arms. The experience of being stopped at a security checkpoint included the common question “do you have drugs or guns?”

The push against drug trafficking is highly visible in Mexico’s transportation arteries, airports, harbors, and highways. Airport security includes the active use of drug sniffing dogs, as well as tighter security with carry-on luggage. Harbor areas have overlapping checkpoint security so that local police, state police, federal police and military, especially the navy, operate checkpoints within a few kilometers of each other. Areas near the Gulf of Mexico were heavily covered with routine stop points. After having traveled by automobile through 21 of Mexico’s 31 states then ethnographer developed a sense for the routine stop. Some checkpoints are simply pass-through gates; some include active selection for questioning and document review. Others have full document review and spot searches. Checkpoints officers are well armed; even pass-through zones are extremely intimidating.

The problem with the drug trade will only be solved by focusing on the key issues. The primary issue is economic. The question needs to be posed as to how living conditions in Mexico can be raised to a standard that no longer encourages people to endanger their lives for the profit. Yes, there will always be those few, but a few can be managed through law enforcement. The situation now pits everyday people against the authorities. There is too much to gain for some to not participate in the drug trade. The official position in Mexico is that the US must do something to reduce the demand for drugs. It is unlikely that US authorities will be able to cut demand, indicating that the solution to the international drug violence could be decriminalization and market regulation.

Modernization and Migration

Mexico's push for modernization has resulted in various kinds of migration (Cornelius 1991), but two moves have been especially important. One is the move from rural areas to urban centers (Silvers and Crosson 1980). The other is the move from Mexico to the US. Both moves are related to jobs and labor markets. Urban industrial centers attract rural workers seeking wages. Some of these workers migrate back and forth between cities and towns carrying out a seasonal transhumance. Others move to the U.S. looking for work. Many of these workers move back and forth across the U.S-Mexican border, often illegally. It is easy to find people in Guadalajara who have previously lived illegally in the US, or who currently have relatives doing so. Legal or not, the people of Mexico rely on the monetary remittances of cross-border laborers (Fomby 2005). Based on informal discussions with immigrant workers in Tuscaloosa, Alabama, and former immigrants in Guadalajara, Jalisco, the worldwide recession of 2009 has had an impact on migratory labor, with many on the U.S side returning to Mexico. They return because they can not meet daily living expenses in the US and continue sending money to Mexico.

Modernization and Land Rights

Mexico has a growing population and underemployment is a major problem. Jobs are most common in the city. The countryside is characterized by small scale craft production, agriculture, and subsistence farming. One of the main problems in the rural areas is adequate land (Sandstrom 1991). The colonial system had appropriated indigenous lands for hacienda use (Krantz 1991). The hacienda system concentrated land tenure into the hands of a few people. The native *ejido* system of shared communal lands was nearly destroyed. Since Mexico's Revolution, land redistribution has been a key political issue, with right leaning administrators attempting to privatize more lands and left leaning administrators trying to re-implement the

ejido system. Lack of access to arable land contributes substantially to rural poverty and one-sided urban-rural migration (Cornelius 1998; Krantz 1991; Sandstrom 1991).

Lack of land and fights over land rights have led to non-drug violence in Mexico's streets (Harvey 1991). Fighting broke out in the south in the 1990s when locals took up arms as paramilitary troops and demanded government action. These groups, such as the *Zapatistas*, a group named after revolutionary Emilio Zapata, were labeled terrorists by national governments (Ross 2006). Like many such groups, they were supported at the local level (Mentinis 2006). While armed rebellion over land has quieted, the struggle for access continues. Areas in the south of Mexico such as the state of Chiapas, the Zapatista presence is still clear (Ross 2006). Posters and warnings dot the highways and plaster some small towns.

People and Politicians: Us versus Them

Mexico's long history of political turmoil has developed a cultural attitude of negative expectation (Foster 1973; Paz 1961) and distrust of the government (Ross 2006). Corruption is widespread and much of Mexico's economy is gray market. Gratuities are expected in many facets of life and institutional operations. Violence is another tool used by the status quo to enforce their will, including systematic killing of political and commercial opponents. Mexicans have been described as having an 'us' versus 'them' philosophy about government and authority (Buckman 2007). Pilcher (1998) for example describes this as developing into a shared pattern of negative expectation, something that might have severe consequences for some health conditions, especially those related to stress.

Mexico has a strong police and military presence, and corruption is still common (Buckman 2007; Ríos 1983). Police are heavily armed and armored and commonly move in groups of up to eight. Some officers travel in pickup trucks four in the front and four in the bed.

During a police stop, a target vehicle is sometimes swarmed by officers. During fieldwork, there were two clear instances of abuse of power and several borderline cases. In one case, the officers made a stop and removed cash directly from the suspect's pockets then set him free. The second case involved taking a bribe in lieu of a ticket for a minor traffic infraction.

Driving with foreign registered car tags appears to attract police stops. Importing a vehicle requires a special process and must be done at a border crossing point. Visitor visas can be renewed at a regional federal office such as the one in Guadalajara, but officials there insisted that vehicles could only be renewed at special offices located along land borders. Import duties must be renewed every six months. The fee is small, about MEX \$420 (US \$1= MEX \$12), but the process is inconvenient. Some people fail to renew the registration (personal communication from a Guadalajara Metro Traffic Officer), leaving their vehicle vulnerable to federal confiscation. This offers big opportunities for corrupt officers, since people are willing to pay substantial bribes (Ríos 1983) to avoid having their vehicles seized. Not all police are corrupt and there were legitimate police encounters including a minor traffic accident. During interactions with the police, they were usually very helpful and cooperative. This seemed especially true after having acquired greater mastery of Spanish. It also appeared more important that a person has their paperwork in order. In Mexico, documentation is a high priority.

A Role for Religion

Religion plays a major role in Mexican life. The majority of the population is Catholic, though there is a great deal of variation of practice within the Mexican church. In rural areas, Catholicism can be practiced as a syncretic religion, blending Christianity with indigenous beliefs (Sandstrom 1991). The Church has played a role in Mexican society for centuries, and

prior to the church, indigenous religious cults were responsible for monumental architecture and facilitated empire building. The church had a difficult start in Mexico, as the role of the priests was to convert the natives, largely against their wills. Tensions were eased with the appearance of Our Lady of Guadalupe, signifying Christian acceptance of indigenous people. Juan Diego who first saw The Lady was an especially lowly and poor person, so when the Virgin worked miracles through him it provided the masses with hope. Our Lady of Guadalupe is still the most revered Catholic deity in Mexico. The Cult of Guadalupe has become even more widespread since the saintly canonization of Juan Diego.

Eventually warm relations between the Church and the common people developed. Mexico's icon of independence is Father Miguel Hidalgo, who led a short and unsuccessful uprising against the Spanish crown. With the later revolutionary government, the church began to have official struggles. The government and church viewed each other as a threat to the others' authority. The government took a strong position in the separation of church and state and made official moves to undermine the Church's power, including confiscation of church property. The conflict between church and state eased under the presidency of Vicente Fox, when Fox made the unprecedented move of kissing the Pope's ring. This bow to Catholic authority sent a shockwave through the Mexican population (Buckman 2007).

The contemporary clergy, not only Catholics but protestants as well, play a significant role in Mexican social movements. Individual priests and ministers lead neighborhood campaigns for equal rights and better access to social services, including clean water and minimal health care. As social leaders, clergy spend a great deal of time interacting with their parishioners. This is clear with the religious themes of many public events such as saints' days and other holidays, and an accompanying clerical presence. Clergy are also present at non-

religious (mostly state-sponsored) public events and many actively facilitate public meetings of all types (Logan 1984).

The Mexican Family

The family is the basic building block of Mexican society. Lomnitz and Pérez-Lizaur (1987) and others (Fomby 2005) argue that the three generation grandfamily is most important. Intergenerational solidarity is achieved through a network of reciprocal material and ideological obligations. As described in the literature (Lomnitz and Pérez-Lizaur 1987; Selby et al. 1990) and as can be observed through participant-observation, much family unity is achieved through economic relationships. Wealthier family members often support less wealthy members by providing jobs or business opportunities. Sometimes older family members take on greater household responsibilities so that younger family members have greater opportunities, for example, at acquiring a better education.

In Guadalajara, the ethnographer's home neighborhood was exemplary of these family networks. The house to the east of the ethnographer's was occupied by a woman near 70 years old. She lived with her youngest, and still unmarried, adult daughter. The pair made extra money by preparing home cooked meals for other family members and a small group of family friends. The female family head has more than 70 grandchildren. A number of the grandchildren also participate in the food preparation business. Many borrow their grandmother's equipment and set up a makeshift restaurant under the covered patio in front of her house. Often they serve simple foods like the local sandwich favorites called *tortas*. The family business sets up an irregular but frequent flow of family visitors as patrons or producers.

The building to the west contains a number of businesses on the first level and apartments above. The business on the far west corner is a tortillaria. It is owned by a man in his forties. It

is operated by his wife. Their teenage daughter and niece assist. On the far eastern end is a business that sells dairy and fresh butchered chickens along with sausages and a limited number of other food items. This owner of the shop had been an employee in his older brother's dairy. When he started his own shop, he purchased, or shared, from his brother's inventory. He still acquires some items from his brother. Their business interactions keep them close. The brothers have another sibling who is a restaurant owner. She employs additional siblings, cousins, and nieces and nephews.

In the house directly north lives a couple in their fifties. They live with one of their adult sons. They have an older son who does not live in the house but visits daily. They also have a daughter who had been residing in the home, but recently moved out. She visited frequently as well. The man of the house owned several properties along the street. He started with a metal fabrication business that focused on gates and fencing (common add-ons to the plastered brick buildings of the city). One of his properties housed the fabrication shop. A few lots away, between his home and shop, he possessed another property. This property was regularly rented out for kids' parties. It is a grassy lot with a covered patio in the rear and a piñata pole in the middle of the lot. The business is managed by the eldest son. The younger son is a cab driver. In Guadalajara, cabs are owned by individuals, not companies. It was rumored that the father had purchased the son's cab.

In addition to economic concerns, Lomnitz and Pérez-Lizaur (1987) describes ideological components of the Mexican family as well. For example, they describe family recipes being strictly guarded and handed down through maternal lines. Daughters-in-law are excluded from the knowledge. This leaves sisters to satisfy brothers and other relatives' craving for family dishes. Lomnitz and Pérez-Lizaur (1987) describe broader patterns of family ideology, such as a

putting family loyalties ahead of other concerns, including economic interests. They (Lomnitz and Pérez-Lizaur 1987) argue that such ideology is related to kinship structure and the emphasis on the grandfamily.

In contrasting Mexican kinship with that found in the US and England, Lomnitz and Pérez-Lizaur (1987) point out a difference in emphasis between consanguineal and affinal relations. In the US and England the emphasis is on affinal relations, where parent-child bonds are weakened or dissolved upon marriage of the child and the establishment of a new nuclear family. In Mexico, the emphasis is on consanguineal relations, where the parent-child-grandchild relationship takes priority over the husband-wife relationship. In addition, descent relations are more important than lateral relations, so that in the US and England, individuals are members of two separate families, first that of their parents, and then that of their spouse and children. Membership in the family is limited to the lifetime overlap between two generations. In Mexico, individuals are members of two grandfamilies simultaneously, that of their mother and their father. This extends membership over the lifetime of two generations, so that everyone belongs to a permanent group. This permanence reinforces group loyalty. As Lomnitz and Pérez-Lizaur (1987) explain, unconditional solidarity among the grandfamily is a value ideal for the society, though social norms enacting the ideal vary depending on issues like social position, available resources, physical proximity, and personal histories. Overall, this makes interfamilial obligations the most powerful.

There is some competition between grandfamilies for loyalty. In some cases, such as obvious class differences, these competitions are not strong. In general, Mexican family structure, like the rest of society, is artificial. This is sometimes expressed as machismo. Machismo appears to be expressed more strongly among rural groups and those who have

recently migrated from rural areas. Urban informants denied valuing machismo and emphasized mutual respect between the genders. Nonetheless, individuals are expected to follow the wishes of the oldest male in the family. This includes participation in symbolic rituals designed to reinforce solidarity. For example, spending holidays together, attending weddings, funeral, birthdays, and visiting the sick and elderly (Casique 2006; Lomnitz and Pérez-Lizaur 1987; Selby et al. 1990). It may also include things like taking family trips together or having reunions in the country. Participation in these events builds family unity, a prized outcome. Not participating in such events fully, even where participation is detrimental to the individual, could be interpreted as outright defiance, and may lead to censure.

The ideal Mexican household is composed of a nuclear family including a husband and wife and their offspring. Extended households are also common, though slightly less than ideal. Female headed households are not uncommon, but they are not highly valued. Single individual households are not common. In a 10-city study of urban households, only 2.4 percent of households contain single individuals (Selby et al. 1990). Within nuclear families women and children are expected to be abnegating, putting the male head above others. Selby et al state that an ideal Mexican household “is organized around an authoritative, hard-working, permanently employed, nondrinking father, handing over his wage packet to a self-abnegating, altruistic suffering mother, whose children, seeing her sufferings and appreciating the nobility of the paternal example, help in the household from the earliest age (girls earlier than boys)” (Selby et al. 1990:54).

This ideal appears to be holding as Selby et al. (1990) report that 74.4 percent of their sample reside in nuclear family households. Only 6.2 percent are matrifocal and 12.9 percent are extended families. Only 4.2 percent have outsiders living within the household. This

information will have great import in relation to the case vignettes presented below. Aside from household composition, increasing numbers of women in the workforce is impacting the ideal family (Casique 2001). Casique (2001) examined women's power, autonomy, and household division of labor among dual earner families in Mexico. She found that wage-earning women had greater autonomy than non-wage earners. This was not true for greater power in household decisions, where both groups were near equal. It also did not alter the division of household labor, leaving women to fulfill their traditional household duties and to participate in wage-earning activities.

Family is the primary source of social support. One way this became clear throughout the research period was through various offers to "adopt" the ethnographer and his family. These offers often came at times of need, when individuals were providing assistance. One offer came through close and frequent interpersonal relations with a particular family. The issue of adopting the US family became especially important upon the suggestion that the ethnographer's daughter become baptized in the local Catholic Church. Several genuine offers were made to be the girl's godparents. There is clearly an idea that an individual must belong to a family so that they have sufficient social supports. This cultural attitude is easily anticipated through the *compadrazgo* system (Mintz and Wolf 1950). *Compadrazgo* is a system of ritual co-parenthood that entails a strong sense of reciprocal obligations (Foster 1967). In essence the system alters social relationships in a way that non-ideal real relations can take on the characteristics of ideal (familial) relationships (Mintz and Wolf 1950). For example, an employer may take on the role of godfather for an employee's child. This may simulate the ideal structure of the grandfamily.

Another custom that highlights the importance of family is greeting friends. It was observed that *Tapatíos* ask after each others' families. After some observation a pattern was

identified, for which the ethnographer was repeatedly congratulated for perceiving. The ritual greeting after not seeing someone for a period of time is to ask about the individual's condition, about their health or state of mind. Then one asks about their family. One may ask about a particular issue, if there is a known issue. After these questions, one begins to ask about each individual person in the family, often based on the degree of familiarity the questioner has. After going through the known family, roles are reversed. With well acquainted individual's this exchange can be rather lengthy. It became clear that individuals appreciated having their families asked after.

Holiday Culture

Holidays in Mexico are common and help mark the tempo of life and provide opportunities to express social identity (Napolitano 1997). Feasts are given in remembrances of saints and each person named after that saint has a special celebration. Saints day celebrations birthdays, and special fifteenth birthday's are celebrated year round. Ancestors are revered, as are military, social, and political leaders. Holidays offer opportunities to develop family unity (Lomnitz and Pérez-Lizaur 1987; Selby et al. 1990) and give the poor and working classes an opportunity to indulge a little bit and forget about life's troubles. During birthday celebrations, workers will often take some time out of the day to enjoy a slice of cake or gelatin and a beverage while socializing with each other. Feasts and celebrations also serve practical purposes in distributing scarce resources. For example, the poorest Mexicans eat little or no meat outside of festive contexts, and have an overall narrow range of typical food consumption (Pilcher 1998). The feast cycle helps them maintain more balance by occasionally providing more calories and greater variety of nutrients (Pilcher 1998). Holidays also offer an opportunity for family unity

and social network maintenance, since holidays are largely structured around extended family and friendship networks.

Late Winter and Early Spring Holidays

Mexico celebrates many holidays by closing banks, schools, and other professional and government offices. Many holidays pass unnoticed, yet some high profile festivities are not on the official holiday records. The calendar year begins and ends with New Year celebrations. The outgoing year is celebrated with late night parties, food, music, and socializing. The New Year arrives to a quiet dawn that gives way to a quiet day where little public life stirs. The first holiday of the year that draws attention is *Día de los Santos Reyes*, known as Feast of the Magi in English. It is the final Christmas celebration. It takes place on January 6, each year. The day celebrates the arrival of the wise men to the Christian nativity. The day is marked with gatherings of friends and families and the sharing of food. The prominent food at these celebrations is a sweet bread roll (*rosca de Reyes*) that has small objects baked into the bread. The objects are meant to represent the baby Jesus and contemporary celebrations use small plastic molded children in the bread. The bread itself is about 10 centimeters wide and a meter long if laid out straight. The bread is flavored with various fruits, nuts, and sugar based frosting. Pieces are cut and distributed. The first person to discover a Jesus-object is obligated to host a feast on February 2, the day Catholic *Candlemas* is celebrated. On *Candlemas* no specific foods are prescribed, though in Guadalajara it appears popular to grill on an open fire and enjoy the fresh spring air outdoors.

Late Spring Holidays

Candlemas then leads to carnival, Lent, and *Santa Semana* (holy week) which includes Good Friday and Easter. Holy week is marked with religious processions and a great deal of

eating and socializing. Several informants explained that holy week marks the beginning of the spring vacation season, since most Mexicans do not get to select personal vacation dates. There are fixed times of the year when vacations can be scheduled and many wage earners receive paid time off at Christmas and Easter.

Late Summer and Early Fall Holidays

Independence days take place in mid September and include a great deal of partying. The central squares all over Mexico are filled with vendors selling various foods and trinkets and offering rides and games for amusement. Locals issued several warnings that Americans are not safe in the city center during the celebrations, especially as the day closes. Informants suggested that the city center might get carried away with nationalist enthusiasm, including gunfire to accompany the fireworks display. Informants described one case where a grenade was detonated near the city square. They stated that foreigners were sometimes treated violently in the nationalist fervor.

The Case of Ciudad Guzman

The October festivals are often overlooked as holidays, though judging from the crowds at the festivals, middle class Mexican's seem to hold them in very high esteem. In Guadalajara, the October festival includes a large fair with rides, food and merchandise vendors of all kinds, a great many exhibitions and a wide variety of live entertainers. In *Ciudad Guzman*, a nearby city of about 100,000 people, the pinnacle of the October festivals takes on a religious flavor with *Dia del Senor San Jose*, the day that celebrates the city's patron Saint Joseph (Valdez Curiel 2001). On that day, the streets surrounding the city square are blocked off for a day-long parade. The streets are decorated with colorful paper displays and confetti is abundant. Throughout the day there are vendors selling all kinds of food and merchandise. There are costumed characters

lurking about, reminiscent of the US holiday Halloween. The ghouls and goblins crack whips and stir crowds.

This year the parade began with colonial flair, exhibiting horseback riders decorated in their finest gear. Silver adorns the richest riders and their horses, with some saddles and bridles being nearly encapsulated in the precious metal. Some riders perform tricks with their horses, while others are masters with rope. The traditional and modern meet in this parade. The convergence was well illustrated among the horseback riders. Many riders smoke cigarettes and drank canned beers as they rode by. Others pour drinks of tequila into disposable cups and passed them from rider to rider. However, the most notable mark of modernity was the frequent use of cell phones during the procession.

Dancers followed the riders. Most of the dancers made tribute to Mexico's indigenous heritage. Some took up the style of the peoples to the east and north, dressed in loin cloths and long radiant feathers. They had shell rattles attached to their waists and extremities. The others took on the style of the peoples to the south, dressed in brightly colored, highly patterned fabrics. They danced with instruments that look like small tambourines on a stick. Some believe that dancing in the parade for Saint Joseph will bring them supernatural health benefits (Valdez Curiel 2001). Interspersed between the groups of riders and dancers were religious floats that recreated various biblical scenes. There were also costumed characters snapping whips and a regular stream of vendors.

The feature float is the last through the parade. This includes the holy idols of Joseph and Mary. The float containing the idols is carried through the streets by a large group of men. Those leading the idol walk backwards so that they are not turning their backs to the objects disrespectfully. Occasionally the idols stop and there are loud crackling fireworks detonated,

followed by the hum of joint repetition of Catholic prayers. This solemn moment had a powerful effect on an outside observer, making the ever-present feeling of difference quite palpable.

Late Fall Holidays

Dia de los Muertes, or Day of the Dead arrives next. On this day Mexicans honor their deceased ancestors. They cut elaborate paper designs and decorate public spaces all over. They also build small altars to specific ancestors. Some altars recreate the deceased's favorite life events, or routine life scenes. Others contain items having belonged to the deceased. In the local public school, a portion of the schoolyard was covered in paper cuttings and miniature altars. Food is another important aspect of the celebration. Ritual sweet breads and other foods are prepared for the ancestors. Some take keen interest in making special favorite dishes in order to incur favors and blessings from the dead. This includes fat rich and high calorie dishes that health-conscious individuals ought to avoid. One informant joked that even diabetics can eat the leftovers from the celebration, since the ancestors had already eaten the essence of the food.

Winter Holidays

Navidad or Christmas brings the end of the calendar's festivities. The Christmas season takes things out with a bang because it is a long series of events leading up to December 25. There are nine days of parties called *posadas*. A *posada* is an inn and the celebrations recreate the story of the birth of Christ with an emphasis on the trip to Bethlehem and the search for lodging (Brandes 1983). Once the guests have arrived to the event, half the group leaves the party and walks a short distance away. They light candles and begin a pilgrimage back to the host's location while singing a song about being a weary traveler in the night. The song changes upon arrival at the host's door. The new song beseeches those inside to put them up for the night. Those inside then sing a song in response saying they having nothing and cannot take in

the travelers. The travelers then sing another song petitioning again for entrance. The travelers are eventually allowed to pass and there is much joy and laughter. Entry to “the inn” is completed by sharing a special drink prepared for the occasion. The drink is an apple cider based punch that gets boiled with other fruits, dates, and nuts. It is very sweet and calorie laden. Upon receiving a bit of the hospitality drink, everyone turns to a group recitation of the rosary. Following the prayers, which vary in length depending on the host’s disposition, food is served. The foods served are typical traditional foods. Steamed foods like tamales and *tacos al vapor* (steamed tacos) appear to be preferred. Tamales are served with *atole*, a sweetened beverage made from boiled milk and masa corn flour. After the food is served, there is a ritual breaking of candy-filled *piñatas*, a favorite event for all ages.

Piñata construction can be indicative of a host’s social class depending on whether modern and traditional forms of construction are used. The traditional style is more expensive and more durable. The shell is made of hand-molded clay and then covered with paper. Modern designs are cheaper, constructed with a heavyweight paper at the core. The very cheapest of *piñatas* have thin cardboard cores and tend to fall apart before they are ever struck. Extra precautions must be taken with the high quality *piñatas* as flying pieces of clay can be more dangerous than the crowd of children scrambling for the sweets.

Food and Holidays

Since this project takes type 2 diabetes as its focal point, holidays become especially interesting. One of the expectations at food centered holidays is that everyone must participate in the communal meal. The food prepared is not often diabetic friendly and diabetes patients struggle over the issue. The problem tears at their identity; while they want to be part of the group (or a good anthropologist) they also need to be a good diabetic patient. Even where one

participates, if participation is minimal, it is stigmatized. The issue has been raised in the past (Daniulaityte 2002), but little has been done to look at the problem more deeply. For example, a productive approach might examine the problem at the intersection of multiple social networks such as food acquisition and consumption, family relations, and diabetic patient roles. One important question to answer is why some social networks are more accommodating to diabetic members than others.

Other Popular Pastimes

Holidays are about more than just food and family. They include fun and the arts too. Central plazas are regularly full of vendors and sometimes games and rides. Music and theater are also highly appreciated. Musicians, alone or in groups, will serenade passersby, and crowds will come and go from small street-side theaters. Mexico is well known for its Mariachi music, which originated in Guadalajara. It is also well known for its overtly dramatic television serials, *telenovelas*. Sports also occupy a great deal of leisure time and *fútbol* (soccer) is wildly popular. The majority of people do not participate in physical leisurely activities, preferring a spectator's view.

Mexican Concepts of Time

Mexicans do not seem to worry about time the way their northern neighbors do. Time is not seen as linear and it does not have a strong association with money or productivity. Time is cyclical and generally orientated to the present. In part, this is how time is related to the duality of the Mexican worldview. It was recounted by one informant that the number nine is special in Mexican accounts of time and issues like life and death. It was pointed out that Mexican funerals have nine days of grieving, just as *Navidad* has nine days of *Posadas*. Some authors emphasize that the treatment of time is representative of fatalism. However, after experiencing

the situation, a more telling idea is that Mexicans generally believe that one cannot control enough of life to operate according to a clock. One must operate according to the real events in the world. The attitude is more realistic than fatalistic. Most Mexicans live by a principle that what will happen, will happen. Although in Guadalajara, informants also appear to believe that a person can influence events by being prudent in the moment. This idea came across in the diabetic sample as well, where fatalism played a much smaller role than had been anticipated by literature review alone (Chavez et al. 1995; Foster 1967; Hunt et al. 2000; Lewis 1975; Paz 1985)

Divisions in Social Space: Gender

Social space is divided into a number of dichotomies. One of the most prominent aspects is gender, with male and female roles being highly distinct (Daniulaityte 2002; 2004). The majority of men work outside of the house in some kind of wage labor job (Lomnitz and Pérez-Lizaur 1987; Selby et al 1990). They may also run entrepreneurial enterprises or aid in household entrepreneurship (Lewis 1975). Most women work inside the home, sometimes supplementing their income by selling foodstuffs or other merchandise. Women do all of the household work, with very few exceptions. Keeping a clean house in Guadalajara can be difficult because of the open style housing or indoor-outdoor living, and the fine dust, especially prevalent in the dry season. Refrigeration is not used extensively and the local custom is to go to the market daily for one's needs. This duty generally falls to women, offering the opportunity to socialize as well. Cooking in the Mexican style is time consuming too. Many of the vegetables get chopped very finely, and many dishes require long, low-temperature cooking.

Women frequently sufferer abuses by their husbands including abandonment and violence (Lewis 1961; 1975; Logan 1984). Women are not held in esteem by a large segment of

society (Blum 2009), but the opposite is true for a great many as well. The role of mother is especially valued, and women tend to gain greater household authority as they age (Fomby 2005). One major difference in families appears to be associated with male roles, where men who value family treat their wives with respect and do not, at least openly, pass time with other women. Men who are not strongly family oriented pass from one woman to another or circulate among a small group of women, passing time with whoever is most amiable at the moment.

Divisions in Social Space: Wealth

Another highly visible division of social space is between the rich and the poor (Gonzalez de Alba 2010). Mexico has one of the highest Gini coefficients in the world. The Gini coefficient is a statistic marking the distribution of wealth in a society. It examines the percentage of wealth held by the wealthier portion of society versus the poorest portion. Gini coefficients range between 0, perfect balance, and 1, complete imbalance. Mexico's score has, for the most part, steadily decreased over the last 40 years. At its most balanced point Mexico was still well over .40, which is higher than most European countries. Local elites live opulent lives and spend conspicuously. The poor and homeless actively pursue handouts, including going door-to-door in middle and upper middle class neighborhoods. The wealthy are spared the door-to-door activity through fences, gates, and security guards. One place where wealth differences are clear is in the various shopping districts. The traditional markets are crowded and dirty. A few US-styled shopping malls attract high-end clientele. These malls act as salient architectural landmarks when *Tapatíos* give directions.

Divisions in Social Space: Urban-Rural

A great deal of the difference in wealth can be seen in the rural urban divide as well (Gonzalez de Alba 2010). Urban people tend to rely more heavily on wage labor and living lives

far different from country folks. Municipal services such as electricity, water, and paved roadways make a substantial difference in urban versus rural lifestyle (Logan 1984). Much of the countryside is dusty and sparsely populated. Even rural populations are clustered into *rancheros* or *ejidos*, leaving much of the landscape relatively untouched. Urban Mexicans often blame rural folks for Mexico's social problems. One informant, one of the wealthiest, was adamant about this point. The informant claimed expertise in the issue, having been born and raised in a rural environment, and currently holding a job that requires spending time in agricultural areas. The informant had successfully immigrated to the city. In speaking of *campesinos*, or country people, the informant told a joke that reveals the attitude. He said imagine there are three jars filled with people. One is filled with Japanese and it has a lid. There is another full of US Americans, and it has a lid too. The third jar is full of Mexicans, but it does not have a lid. It doesn't need a lid he says, because anytime a Mexican uses his mind and tries to engineer a way out, the others pull him back in. "There is fruit growing on the trees in the streets and in the fields, and they [the poor] just sit there with their hand out." After several informal discussions with this informant, it was clear that his attitude reflected Oscar Lewis's (1975) assessment of Mexico as having a culture of poverty.

Markers of Modernity

There are not many ethnographic works dealing with the growing Mexican middle class. Most ethnography deals with the lower classes in rural or urban settings, or describes the elite within urban centers. The Mexican working and middle class is large, composing a majority of Mexicans. This is the segment of Mexican society that is content living in Mexico. The ones who do not want to migrate to the US or anywhere else. They have steady jobs, shop regularly, buy on credit, eat in restaurants, drive cars, participate in various kinds of entertainment like

theater and night clubs, and use their expendable incomes displaying markers of achievement like cell phones and new shoes.

One of the most important things Mexicans implicitly need in order to fit into the middle class is outward markers of modernity. One of the most common and simple symbols of success involves shoes. The first step toward modernity involves just having a pair of shoes. In the countryside, it is not difficult to find people who have no shoes. This is less common in the city because walking in the city without shoes is more dangerous. The city is littered with rough pavement, gravel, broken glass and bits of garbage and debris. Once one has acquired shoes, it becomes an issue of the quality, quantity and condition of the shoes. Having good quality shoes, which are taken care of, is important. Guadalajara is loaded with shoe stores, cobblers and shoe repair, shoe manufacturers, and shoe shine booths. In addition to having clean, good quality shoes, many locals coordinate their clothing in color and style. In order to coordinate, many pairs of shoes are required. For those women concerned with high fashion, high heels are a must. Even flip-flops come in a high-heeled variety. During a visit with a locally based professor of anthropology, the observation that Mexican's love shoes was brought up in conversation. The professor greeted the idea with firm agreement and the gleeful laughter of self-discovery.

Shoes are not the only way that clothing marks class locally. Other fashions also speak volumes. For example, some women in the city still wear traditional clothes made in the style specific to a particular village. The differences between traditional clothing styles are subtle and similar enough that an outsider might not notice specific patterns woven into fabrics or minor differences in the cut or fit of skirts or blouses. For others, men and women included, they wear clothing that is of the latest fashion. This is often expensive, made with finer fabrics or

bejeweled with sequins. Snug fitting clothes are fashionable as are hairstyles that require creams or gels and stiffeners. In the same vein, extraordinarily long thick fingernails and well groomed toes are a must for the fashion conscious. Elaborate designs, paints, jewels, and metal overlays are all popular for adorning middle class hands and feet.

Adornment is another marker of middle class success. *Tapatíos* tend to wear clothes with intricate and elaborate designs. For example, a common middle class fashion for men, a *guayabera*, is a square cut short-sleeved shirt that buttons in the front. The shirts are often adorned with extensive embroidery and a series of tiny sewn pleats all arranged vertically on each side of the central buttons. Gold and silver jewelry especially rings and chains are popular. Among young people facial jewelry, ear spoons, and other various body piercings are increasingly popular. Another important marker of success in Guadalajara is the cell phone. Cell phones are a better middle class marker because it implies a long term (month-to-month) engagement with modernity. Sometimes this is a false implication, since many people were observed to carry phones that do not have service plans. It is not uncommon for individuals to carry more than one cell phone, even if one or both of them have high usage restrictions or do not function at all.

Other electronics also serve as class markers. For example, one government sponsored health insurance program uses a series of questions about personal property to assess applicants' standard of living. They put an emphasis on modern conveniences like electronics. Specifically, such things as VCRs, DVD players, and microwave ovens mark class levels. As one reaches the full development of middle classness, things like MP3 players and other portable devices like laptop computers demonstrate levels of success.

Entertainment Lifestyles

Guadalajara has many activities available for those with a few extra pesos to spend. The city's parks are abundant and spread throughout the urban area. Many of the parks are free, though the larger better-maintained areas usually charge MEX \$3-5 (US \$0.25 - \$0.42) for entry. One of the grandest public parks is located in the northern part of the city, where the land gives way to a massive gorge. The park offers one of the best views of the gorge available in the city.

Some parks are dedicated to one or more sports, for example, there are many, many *fútbol* fields and few if any football fields. *Fútbol* (soccer) is the national sport and is implicitly understood as an important activity. During the 2010 FIFA World Cup season many employees, government workers most notably, were given a great deal of leeway for attendance and job performance during the month of the games, especially on days when Mexico played. Public places with televisions were crowded with fans. Offices with critical functions were often allowed a small television in the lobby, so that even those who went to work during Mexico's matches were permitted to enjoy the game and probably most importantly participate in national patriotism. Locally there are two popular professional teams, *Las Chivas* the most popular and successful and *Atlas* a well supported underdog. Estadio Jalisco, the stadium where *Chivas* have played, and will continue to play for a short while until their new stadium is complete is located in an area surrounded by mostly middle class neighborhoods, in the north central part of Guadalajara. There are also several popular college teams, other school teams, and a large number of public and privately organized groups. In the city streets, any area of at least two meters square is adequate for a group of boys to play *fútbol*.

Other sports are also popular, but nothing near the enthusiasm for *fútbol* is demonstrated. Many parks have basketball courts and general playground equipment. In select places, there is

handball, tennis, swimming, skateboarding, bicycling (track/trail/bmx), boating, rock wall climbing, and horse-back riding. Community theatre is also quiet popular and some parks have simple amphitheatres.

Water parks are also popular, but there are few located within the city. Many people consider the immediately available water parks as overpriced. Inside the city, water parks are more likely to be simple swimming pools rather than large entertainment facilities. Most entertainment driven water parks are located at the city's periphery, or in nearby towns where residents have commercially exploited local hot springs. In the larger facilities, large swimming pools are filled daily with water that is warm and fresh, and not chemically contaminated. Children's pools, two or three story water slides, playgrounds, food and drink, picnic facilities, and showers are available to those who have the MEX \$50-100 (US \$4-8) per person to spend.

Other large entertainment facilities exist as well. For example, Guadalajara is home to a theme park (*Selva Magica*) that has entertainment for people of all ages (roller coasters, bumper cars, fun houses, carnival games, and junk food). The theme park shares facilities with Guadalajara's zoo, which rivals big city zoos in the US. Especially notable about Guadalajara's zoo is the African safari tour, which uses an awning-covered flatbed truck to trek the mountainside "savanna." Unlike the popular trams used in many such rides in the US, the truck provides a great deal more reality as it travels an unpaved, uneven trail that jars and rocks the passengers seated on benches bolted to the bed of the one-ton Chevrolet. The most realistic point is when the truck crosses a creek, turning strongly on its side as one side of the truck passes on solid rock and gravel and the other through soft mud. It is almost a safari swim and would surely be deemed unsafe in the US.

Some forms of entertainment are reserved for middle and upper class men. Mexico has a thriving sex industry. Central Guadalajara is a great example. Across the street from the main central market, *San Juan de Dios*, is a brothel. The streets in that area are littered with prostitutes and small stores selling pornography, sexual aids, and drug paraphernalia. There are several gentleman's clubs and other establishments that feature nude dancers. The English phrase "table dance" has entered official Mexican discourse. Another aspect of the sex trade that is less prominently displayed, are hotels that offer short term (hourly) rentals. For the more affluent patrons the hotels are very discreet, offering private garage parking and other anonymity-oriented services. One such hotel was discovered accidentally during a road trip. Since the evening had grown late, the first room available was sufficient. Inside, the room was decorated very modernly. The walls displayed vivid nude portraits, many mirrors, and a dial-up delivery menu for lingerie and sexual aids. Once alerted to the presence of these discreet hotels, similar establishments became more visible. They are common in Guadalajara and other large cities.

Social Class and Market Participation

The marketplace where one shops daily is important in middle class Mexican life. The market is where food is purchased, and in the case of many housewives, daily excursions to the market accounts for a great deal of a day's exercise. There are many differences in markets, but they can mostly be classified as belonging to one or the other of two kinds. The first kind is a traditional vendor market. The second kind is the modern corporate market. The vendor market is mostly unadvertised and composed of many small stores or stalls. Many of the stores and stalls are operated by individuals or families. In many cases, what appears to be a single small vendor is actually part of a large network of semi-independent vendors, or even part of a (family)

corporation. It is common for those selling items like boots, belts, and, clothing to have multiple points of sale so that what appear to be 100 competitors are really only representative of five competitors and a few secondary outlets. Primary competitors are those that own production facilities and use quasi-franchised vendors as their distribution network. Families often participate in this kind of business and when they do, they cannot be operationally distinguished from a legal corporation. This appears to be especially true for food items, where one group of vendors provide an outlet network for family or village produce.

A great many products are distributed through tiered distribution networks. Products are delivered from the producer to centralized city markets. In Guadalajara, there are at least five of these kinds of major markets. These markets often develop reputations for having the best or cheapest of some category of product. If one wants the freshest produce they go to one market, while lowest priced tools and work equipment are at another. From these central markets networked vendors haul away all types of goods, transporting them to regional markets. From there, a combination of networked and independent vendors supplies neighborhood stores.

The corporate market is the one more familiar in the US. Similarly, in Mexico multiple corporations gather in malls and shopping centers. Products move from producers to warehouses where they are trucked to retail storefronts. One of the best represented corporate marketers is Wal-mart. Wal-mart brand is high profile in Guadalajara. In addition to its brand stores and popular Sam's Club, Wal-mart also operates a higher-end clothing and home furnishing outlet called Suburbia, a limited and discounted version of their main brand called Bodega Aurrera, and several different American-chain-styled restaurant brands in the city.

The city has a central railway that provides public transportation along two main arteries. At one of the northern rail stations, *Atemajac*, one can get off of the central train and witness

each of these kinds of markets on opposing sides of the tracks. To the northeast is a vendor market and to the southwest is a corporate shopping center. The shopping center is complete with a *Bodega*, the local name for Bodega Aurrera, a Burger King, a Seven-11 and a BBVA bank. There are a few big but more regional players represented there as well. For example *Banamex* (Mexican National Bank), Price Shoes, a warehouse-like shoe distributor, *Elektra/Banco Azteca* a popular credit-purchase outlet, and *Farmacia Guadalajara* a locally based pharmacy with city saturation and a strong state and regional presence. This shopping center is not without its smaller independent businesses. There are several restaurants, a bakery, a travel agent, a fitness club, a small home furnishings outlet and a pet store. Most of these smaller stores have representatives in the traditional vendor market as well, but the plaza-based facilities are upscale.

The two sides of the street have very different subjective presences. They feel different in many senses of the term. The traditional market is a secondary market with a strong presence of food distributors, butchers, fish and seafood suppliers, fruit and vegetable dealers, dairies, spice booths, tortilla makers, and canned goods vendors. Other things like tools, toys, party supplies, shoes and clothing, various types of media from magazines to DVDs and video games, house wares and chemical supply, and many kinds of prepared foods. The restaurants in the market share a common second-story dining hall. Each vendor sets out tables and chairs or arranges a counter around their booth. Booths are arranged in small groups around the outer perimeter of the large single room and down a center row. Unlike the corporate restaurants that sell exotics like Japanese food and seafood, the food at the vendor market is all traditional, *tacos*, *tortas*, and the occasional *tamale*.

The vendor market is quite dirty in relation to the corporate market, including the restaurants. It also smells far worse because of the large number of butchers who wash blood and small bits of animal flesh into local sewer drains. It is common to see severed cow and pig heads, and whole skinned and gutted carcasses of goats, rabbits, and chickens. The vendor market is a plain concrete construction with a very fundamental lighting system. Corridors are open air on two ends, which provides much of the light. There are no signs to mark the market building, just a crowd and the sounds of street-vending.

In many ways, these two markets represent a conflict in everyday life in Mexico. The conflict is over maintaining traditional values versus being a recognized member of the modern world. It is clear in the corporate marketplace that they know they are battling for the profits of the future. A great example is inside Bodega. During field research, Bodega implemented a new shopping cart program. The new carts supplemented the old carts. The new ones are scaled down to about one-fourth the size of a regular cart. They are painted bright colors and sport tall poles and signs that read: “now I’m learning to drive too.” This is a deliberate ploy to socialize the younger generations into a purely modern model of consumer behavior.

Guadalajara: A Sensory Experience

Mexico’s capital city, *DF* in local vernacular, is located centrally to the country and is the country’s largest city. It is actually one of the world’s largest cities, containing 20 percent of Mexico’s 100 million inhabitants. Mexico’s second largest city is Guadalajara, nestled high in the Western Sierra. Guadalajara’s population exceeds 4 million, making it a major urban center. Western Mexico does not have many large urban centers like Guadalajara, so Guadalajara has become an important point for government administration and for industrial development. As

such an important center, Guadalajara is home to the largest most advanced hospitals servicing western Mexico, an important element in selecting Guadalajara as a research site.

Guadalajara has a relatively clean environment because of its location adjacent to the ocean, which brings in clean air. However, there is concern that industrialization is polluting the local water system. The pollution is evident in the lowland areas northeast of the city. From the highway far above, the scene looks like a pristine village in the valley, with a beautiful river running through it. Upon arrival in the valley, the stench emanating from the river is caustic. This is especially true during the wet season when large amounts of contaminated rainwater wash into the valley.

Olfaction

If one arrives in Guadalajara during the rainy season a distinct smell is noticeable. The smell is a combination of wet earth, stagnant sewage, and fatty, spicy street cuisine. The city has been constructed like a beehive without symmetry. One soft earthen brick wall is stacked against the next, with little garden or green space visible from the streets. Not that there are no green spaces; quite the contrary, the city has a fabulous park system, and many have open courtyards inside their homes. It is simply that things are built in a classic European style, with walls placed around an entire property, surrounding it, secluding it from the outside world. It is unlike most U.S. cities, where streets appear much broader because of the yards and lawns that surround independently standing homes.

The city is old relative to the majority of European styled cities in the Americas. It has been built up, layer upon layer of bricks and stones, for about a half millennium. Some things get torn down and replaced, but there is a kind of permanence about many structures. Some

places have changed little. For example, in the heart of the city center stands Hotel Francis, a hotel and restaurant that has been in continuous operation for over 400 years.

Others buildings are brand new and state of the art. For example, at the outer western edge of the city, a new stadium has been built for *Las Chivas*, the popular, local, national level soccer franchise. The stadium has been modeled after the latest Japanese stadium architecture and boasts both a daycare facility and retail shopping to encourage family participation in this male dominated sport.

Many structures in the city have had years of changing façade. There have been overlays of fresh tiles or a new coat of plaster and paint, but the core is the same soft bricks that have been there for centuries. For example, the hottest new nightclub near the city center is an old warehouse keenly disguised. Much of the refurbishing construction style is reminiscent of Mayan grand architecture, where in many of the ruins (*Chichen Itza* or *Palenque* for example) expansion of the structures involved building a new layer atop the old (Adams 1991)

During the rainy season, especially after the first heavy rains, the dry season's dusty coat becomes compacted, bonding with the brick and plaster below, leaving behind the odor of damp earth. This smell is more concentrated in some areas than others. In some unfortunate areas, the poorly designed waste water system is frequently backed up or is chronically still, leaving the strong odor of sewage in the air. The sewer system is sufficiently problematic that as a rule, *Tapatíos* dispose of soiled bathroom tissue in a waste basket, and not down the commode. The summer rain stirs the stagnant sewers, floods the system, and inevitably forces the unpleasant waste to the surface. Shifting winds then obligingly carry the odors to and fro.

The Smell of Food in the Air

The wind carries another odor too, one far more pleasant, the smell of sizzling meat, crackling lard, and spicy chilies – street food. Street food is an integral part of Mexican culture across the urban zones of the entire country, but appears even more popular in Guadalajara than other major cities, such as *DF*, Mérida, Monterrey, or Oaxaca. In addition to the abundance of small, open-front restaurants, Guadalajara is burgeoning with portable restaurants. Food carts are a main example. Food carts range in size from wheelbarrows and baskets mounted to bicycle frames to trailer mounted models, as small as one, but sometimes larger than four meters in length. The smaller carts sell nuts and candies, ice cream and *paletes* (frozen fruits and juices), and corn on the cob (*elotes*). The trailer models tend to account for the uniquely Mexican aroma. A number of these portable establishments sell either tacos or *tortas* (a large meat filled sandwich considered uniquely *Tapatíán*), though roasted chicken, hot dogs, hamburgers, and chopped fresh fruit are also popular. In a typical residential neighborhood, one could expect at least three small carts to pass through each day and to find at least one larger cart every few blocks (often more than one per block).

Frequently the larger model carts, or multiple carts working together, are parked strategically so that they can be covered with large royal blue nylon tarps, providing a dry, shaded area for patrons to consume their meal. These larger portable establishments often contain two or more sets of white injection molded plastic tables and chairs, equivalent to permanent street-side restaurants. These larger portable establishments often serve more complex popular dishes such as tamales (steamed or boiled masa corn flour dough stuffed with meats, vegetables, and sauces), *pazole* (soup with meat, broth, and puffed maize) or *birria* (an

original dish from Jalisco, combining a base broth of dried roasted peppers and roasted meat. The meat is often the cheap cuts, and is most commonly goat meat.

The foods above are also served at the multitude of open-front street side restaurants, where one can order local cuisine, traditional Mexican foods, modern trendy foods, and imported knock-offs. Street side restaurants are usually small; they have a kitchen, often a portable one, and as few as one and as many as ten or twelve plastic tables. Each table is seated with two to four chairs. Depending on the variety of foods served in one of these restaurants, menus may or may not be available.

One needs to take care when acquiring street-food. The tantalizing aroma is sometimes misleading. Occasionally, lurking behind the rich smell of chilies and spices is rancid meat that will leave a person incapacitated for a few days. A local rule for selecting unfamiliar street foods is to watch for vendors who have drawn a crowd. Vendors with many customers turn their inventory and are less likely to have rancid foods. One can also avoid the deadly long-term side effects of eating fat and carbohydrate rich street food, and seek out a salad restaurant or a chopped fruit vendor. Vegetables and fruits are often displayed already chopped or with at least one already halved for inspection.

Food and Society

While many in the US think of Mexico as a place of Spanish heritage, the French influence is equally strong. One place that this is true is in the cuisine, which has combined French method with items of long traditional use like chili and chocolate (Pilcher 1998). Pilcher, a Mexican oriented food historian, draws ties between food and the rhetoric of political economy. Upon Spanish arrival there began to be competition between traditional foods and Spanish imports. This is particularly notable with a few specific foods. The most important is

the tortilla. The tortilla, made of finely ground lime-soaked corn was the traditional indigenous bread. Spaniards preferred bread made from leavened wheat. Bread became a high-status food, but it was difficult to acquire because of the lack of ovens. The compromise is the flour tortilla, European bread prepared for and cooked on a Mexican *comal* (slightly curved metal cooking disk). The real tortilla struggle was related to modernization and changing gender roles. Prior to the mechanization of masa processing, it was all done on a hand operated grinding stone. The mechanization allegedly changed the flavor of the corn flour because it was not ground on the same stones (Pilcher 1998). Mill ground masa became a marker of the modern homemaker and the emerging middle class. Working class men flaunted the great flavor of their wives' tortillas while middle class men could talk about the other chores a wife could accomplish after minimizing her time grinding corn.

The struggle between pork and turkey was also notable, where Spanish pork became a status marker over traditional turkey. Eventually pork lost some status, especially as health issues pointed toward fat consumption as a risk factor in chronic disease. In Guadalajara, turkey is not highly visible though it is readily available. Poultry focuses on chicken.

The real Mexican national dish according to Pilcher (1998) is the tamale. Tamales, in their plural, are rolls of steamed dough. They are often stuffed with various sauces, vegetables, and seasoned meat. The stuffing is prepared separately from the dough. The dough is a mixture of masa corn flour, lard, a few seasonings like chili and garlic powder, and hot water or broth. The dough is spread on a cooking medium. In Guadalajara, the cooking medium is corn husks. In the east of Mexico like Merída, tamales are prepared with banana leaves. The cooking medium makes a difference, as it adds a subtle flavor to the tamales. After spreading the dough, the stuffing is added and the medium is rolled up and folded closed on one end. The tamales are

placed in a large steamer, with the open end up, and cooked for two or more hours. Sweet and savory versions are available.

One of the most common sauces for tamales is called *molé*. *Molé* is another Mexican national symbol. It combines the French cooking method of reduction with traditional flavors of chilies and chocolate. There are thousands of ways to prepare mole. It appears that the basic ingredient that makes a *molé* different from other sauces is the base of reduced chilies. Poblano peppers are a popular starter. *Molé* often includes Old World herbs and has complex flavors. Chocolate is another common flavor in *mole* and some sources prefer to think of chocolate as the definitive *molé* ingredient. However, local experience negates this idea.

Tamales and turkey *molé* together represented the working classes fundamentals, while wheat breads and pork represented the upper classes. As the middle class emerged from the working class, they brought with them culinary habits that included tamales and *molé*. As the upper and middle classes intermingled, the upper classes were tempted by the flavors and exotic street cuisine (Pilcher 1998). Pilcher (1998) describes upper class women waiting secretly at home while their lover's venture out to buy street food. Together they secretly share the food out of sight of their more snobbish peers.

Like other places in the world, Mexico has been experiencing changes in food processing and preservation. While many Mexicans appear to eat far more fresh food than those in the US, they still eat plenty of canned and processed foods. This includes many canned vegetables, especially pickled vegetables and chilies. As will be discussed in the following chapters, the Mexican diet is largely carbohydrates, fats, and sweets. This dependency on fats is easily seen in any grocery or market. Markets are loaded with *cremerias*, stores selling dairy and fats like lard.

In the grocery, such as those described above, one aisle will be lined on one side with cooking oils. As much or more shelf space is given to cooking oils than any other item in the grocery.

Color

The cut fruits distributed about add to the stunning visuals of the city. Bright colors abound everywhere, but at the same time contrast with the dull grays and browns of dirty concrete and decayed stucco. The city is bustling with activity, people and traffic moving every which way. Architecture is largely traditional European style so that many streets are lined with high walls. In the central zone, the streets are narrow and only accommodate one-way traffic. The central zone is densely populated, so the narrowness of the street is emphasized by three and four storied buildings that serve as businesses below and residences above.

On the periphery of the city, the streets appear slightly less narrow. This is largely due to a construction style that accommodates two-way road travel and low-rising buildings. In many areas, the homes are single story, with a few two story single family dwellings interspersed. Larger two-story homes can be found in the periphery of the city and in wealthier pockets scattered throughout. Along the large gorge that marks the city's northeast boundary one can get excellent perspective on the city. Looking west from the peripheral highway shows the city's great expanse. To the east is the gorge, which drops several hundred meters to the river below. Most of the housing built near the gorge is simple non-plastered brick and is reminiscent of village construction. The exception to the poor pueblos is usually a single or small group of large, brightly painted homes that offer fantastic vistas for the wealthy.

Apartments of various types can be found as well. Two popular types of apartments are simple high rises of four stories and private apartments (*privados*). The symmetrical four story buildings are usually found in groups of two or more. From a street view, private apartments are

often indistinguishable from single family homes. When the front door opens, rather than having a room on the interior there is a long, narrow, often open or partially open corridor, with apartments lining one or both sides.

It is not uncommon for a two bedroom, one bath dwelling to house as many as 10 people. Extended families will frequently live in adjacent private apartments creating a multiunit family dwelling. Three generation households are very common. Where families do not live together in the same dwelling, frequently they occupy dwellings in close proximity to each other. It is easy to find people who live in the same neighborhood in which they grew up. Extended family members are usually nearby. Family is probably the most important of all social networks. People talk about their families and inquire about others. In fact one of the local customs that few will tell about (it must be learned), is the habit about asking about one's family, then proceeding to ask about each individual member of the family.

Interspersed with the traditional brick and mortar structures that make up the seeming catacombs of the city are large modern steel buildings that rise high into the skyline. Large buildings can be found in small groups or standing alone. There are no areas of the city that resemble the central urban zones common in the US, though if the skyscrapers were collected centrally, it would undoubtedly resemble something like Chicago or Nashville. There is a great deal of commerce in the city, both large-scale and small.

Sounding Out the Rhythm of the Day

Guadalajara is a noisy place, full of activity at all hours of the day and night, though there is a stark contrast between day and nighttime noise. Just before the crack of dawn, a loud high pitched squeal begins in many neighborhoods. The sound is generated at the local *tortillaria*. The automatic tortilla maker presses out fresh corn tortillas by pushing a ball of *masa* dough onto

a small conveyor. The conveyor runs beneath a large wheel that presses the dough into its round flat shape. Since force is used to shape the tortillas, the moist dough tends to stick to the press wheel. In order to maintain its shape, the tortilla needs to be gently slid off of the wheel and onto another conveyor. The sliding action is completed with a thin wire stretched across the wheel. As the stuck tortilla passes the wire it is lifted from the wheel, but the wire must be close enough to the wheel to scrape it, thereby generating the loud squeal.

Soon after the *tortillarias* begin their morning melody, dawn breaks and the local roosters begin to crow. It was surprising to us Indiana folks that so many ‘farm’ animals are kept in the city. It was easy to find chickens, rabbits, and goats, as well as an occasional horse or donkey in the thickest urban areas. Stores throughout the city sell feed for a wide variety of domestic animals.

Early morning brings a great deal of activity. *Tapatíos* rise early in order to beat the heat of the sun. Open windows allow the sounds of the street to penetrate deeply into a home. Heavy trucks pass carrying cargo of all types to the myriad of small stores that support every neighborhood. From time to time, there is the loud early morning jolt of returnable soda bottles crashing to the pavement caused by a careless route driver who did not take time to secure his cargo and turned a corner too fast. The voices of passing neighbors and morning business are at first very salient as one attempts to get just a few more minutes of sleep. However, they soon fade into the sound of normal and sleep is easier to find.

Many government offices and other businesses are open by 8:00 A. M. During the school year, many schools are open at this time too, although school hours vary across morning, afternoon, and evening schools. By 8:00, the sounds of the city change slightly from the sounds of children and pedestrians to the low hum of city life. This low hum is frequently pierced by

some loud noise, for example the cowbells indicating the arrival of garbage collectors, or the loud speaker advertising some vendor's goods or promoting a political message.

Many Mexican businesses advertise over loud speakers, either attracting attention of passersby, or passing through residential areas piping the ad into homes. The city is flooded with small signs, and most businesses have signs that are flush with the front of the building. The signs do not extend into the streets, making them difficult to read for passersby. Free standing signs are almost non-existent. Therefore, messages, sometimes accompanying music and entertainment, are announced to attract special attention. One of the most memorable messages heard frequently in Guadalajara is the sound of the "Z Gas" truck (*Zeta Gas*) which announces its presence with *Zeta Zeta, Zeta Gas*.

Trucks and buses add a great deal to the hum and grind of the City. Moving from point to point is an important part of city life. In comparison with most large U.S. cities, many *Tapatíos* walk, though many of them do not travel far from home. Attitudes about traveling around the city were in stark contrast to those held by the local world-traveling anthropologist. For example, there is an area in the southeast of the city known as *Tonalá*, famous for its artisans. They make high quality goods such as clayware, furniture, clothing, and art. Prices are very low, which served well when furnishing a family home. On several occasions, neighbors and other visitors admired the furnishings from *Tonalá* and offered to buy the items for more than their purchase price. What was interesting is that people were unwilling to travel 30 minutes around the city to acquire the items directly from the vendor.

Most people traveling by foot will occasionally need to travel to a more distant part of the city. Depending on the destination and financial means, several forms of public transportation are available. Taxis are easy to find (easily hailed from the street) and come in a variety of

quality levels from 20-year-old rickety death traps to brand new SUVs. Inside the taxi, the sounds are a combination of popular Mexican music and the honking of a dozen car horns. The city buses are noisy, hot, and often crowded, but they are also routed efficiently and are economical (MEX\$6 = US \$0.48). Taking a bus ride is a good way to see the city cheaply. The sites in and outside of the bus can be very informative for a newcomer.

There is also an economical public railway, but it only runs from the northern city perimeter to the southern perimeter, through the city's central zone. From the central station, a second line runs to the city's eastern perimeter. The train is electric and therefore surprisingly quiet, smooth, and very fast. One notable difference about train culture in Guadalajara over some other places like Chicago or London is that almost no one reads on the train.

For many, the sounds of the city fade away in the late morning or early afternoon as windows are closed and shades drawn to avoid the intense afternoon Sun. Outdoor life slows dramatically in the afternoon as shopkeepers close for the lunch hour and children go home to eat and avoid the heat around 3:00 p.m. Guadalajara is famous for its favorable climate. Because of the latitude, altitude, and geographic relation with the nearby Pacific Ocean, the climate has a strong pattern of waxing and waning daily temperatures. Daytime highs peak about 3:00 p.m. and nighttime lows dip until daybreak. In May, the hottest month of the year, daytime temperatures will reach highs near 90 degrees Fahrenheit, and overnight lows near 60. May is the end of the dry season and the air warms very quickly in the morning. The sun is intense and there is a big comfort difference between sun and shade. Motivation for the invention of the sombrero can be clearly apprehended on a May afternoon in Guadalajara. The sun is so intense that person with even the slightest skin sensitivity might imagine an exposed area of skin erupting with flames like some character from a Hollywood vampire film. Most people stay

indoors or at least under shade during the most intense sunlight hours of the day. It is easy to imagine that the afternoon heat has contributed to a preference for eating the main daily meal during this time.

During the dry season, as the day cools, activity again increases. Shopkeepers and others return to work and many families come out into the streets. The sound of children playing soccer or tag is added to the normal sounds. Small parties and informal gatherings add additional laughter to the air. Cars pass by with loud music, dogs bark, someone yells something, a curse or a greeting. As the evening wanes, the sound level drops so that voices and the occasional loud vehicle become the primary sounds. The voices from a gathering of men streams from a nearby corner, women and children can be heard passing by, and there is the sound of a party in the distance. By midnight, the sounds of the street are passing vehicles and the play of teenagers mock fighting or learning about love.

The rainy season is a little different. Each day about 5 or 6 p.m. there is a storm, often including heavy rain, thunder, and frequently lightning. The heaviest part of the storm arrives first and often calms into a steady, soaking rain. The large fast-moving raindrops of the initial downpour slap against the brick and stucco with a great deal of force, making it necessary to sweep loosened plaster and debris from in front of a house after each rain. The sound of the rain often dominates the atmosphere for hours only being shut out by a loud vehicle or the screech of a passing pedestrian.

Some areas of the city have late night activities, such as nightclubs and other drinking establishments, which provide ample noise in the form of rowdy behavior and loud music. However, during the week, the majority of the city is quiet during the early morning hours, with the exception of frequent thunder and rain during the wet season. During weekends or from time

to time during the year the nighttime quiet will be pierced by a late night party or other off-hour event, such as when a neighbor's daughter received a marriage proposal at 3 a.m. This event included her being romantically serenaded by an eight-piece mariachi band. It is not rare to have a weekend party begin after midnight, even as late as 2 or 3 in the morning, and last until dawn.

Pluralism in the Mexican Health Care System

Overall, the medical system in Mexico is a pluralist system. Biomedicine or allopathic medicine is dominant but is not the only medical service available. Homeopathy enjoys a great deal of prestige as well as a substantial share of medical consultations. The homeopathic pharmacy appears to be a local favorite in Guadalajara, with many licensed consultant-practitioners operating from within. Several informants noted the failure of allopathic medicine to cure their diabetes and diabetic complications, while homeopaths had astounding success. One informant, showing her leg that was blackened from the knee down (deep blue-black), stated that her IMSS doctor (allopathic doctor) wanted to amputate the leg a few months prior for gangrene. The homeopathic doctor gave her a prescription that reduced the swelling and healed the open wounds. The informant claimed the leg to be functioning normally. Homeopathic medicine flows over into dentistry as well. Acupuncture is another high-profile alternative, with acupuncture shops located all over major cities.

When it came to magical curing and other distant alternatives, many informants knew something of the topic but appeared limited in knowledge. One informant claimed to know a witch (*bruja*), but fearfully refused to associate with such a character. No one claimed to be personally familiar with a *curandero*.

Mexican Biomedicine

The Mexican biomedical system resembles biomedical systems the world over, though as authors like Payer (1996) have pointed out, biomedical systems vary within local contexts. For Mexico, Finkler (2004) has painted a picture that includes strong influences from both the US and France. While the era during and after WW II saw sweeping changes in Mexico's health policy such as the creation of the Ministry of Health and the Institute of Mexican Social Security (IMSS), and the implementation of US medical training standards, the time up to that point had been influenced more by French medical and bureaucratic traditions. The French influence gives Mexican medicine more emphasis on clinical care than technical expertise. The struggle between clinical care and technical competence is not unique to Mexico (Brown 2007; Finkler 1991; Good and DelVecchio Good 1993). Finkler argues that in Mexico this emphasis "stems as much from economic constraint as from an ideological disposition to interpret sickness in traditional terms" (Finkler 1991:84). She goes on to explain that since they are trained in biomedicine they reinterpret things in a biomedical idiom. Treatment, she says, consists primarily of pharmacological monitoring of physiological processes and some attention to diet. Given these conditions, one could expect type 2 diabetes models to contain strong models for pharmaceutical consumption and food.

The traditional system that Finkler (1991) refers to involves a specific disease etiology set that includes experiences of strong emotions and explanations through exposure to harmful contexts. Harmful contexts can include anything from pollution to brushes with the spirit world. Finkler (1991) argues that biomedical practitioners use nervous conditions as the idiom to talk about strong emotional experiences. Traditional etiology lends to traditional treatment.

Traditional treatment has often included the use of herbs, leaving biomedical doctors comfortable with pharmaceutical interventions.

Counseling the patient is a major aspect of the clinical encounter. Finkler (1991) argues that the paternalistic air of the clinical encounter makes people expect advice from the older wiser doctor. The paternalism goes beyond age though, as young doctors still guide their patients based on educational achievement. Doctors have high social status and are, in some regards, expected to be paternal. However, the asymmetrical social relation can work against positive interaction and genuine communication, especially for adult male patients who are often competing for status. The political climate in Mexico has established an “us versus them” cultural attitude where the government funded biomedical system and the practitioners within are undeniably “them.” The paternal system is expected, but not necessarily valued.

The social role of patient, which is closely related to the sick role, extends beyond the patient alone. Especially in Mexico where family relations are the basis of social structure, patients’ families are deeply involved. Finkler (1991) argues that the biomedical clinical encounter, with its isolating, one-on-one nature, acts to separate the sick person from his or her family, intensifying their sickness burden because in that context they become the lone sufferer. While this is certainly the norm, there is an interesting group who use their treatment as a source of empowerment (Crossley1998). For example, one informant would only participate in the research if she could meet the interviewers at the medical office, because medical visits were one of the few opportunities she had to escape her abusive husband. Another had rearranged household chores so that she could have time to exercise. This meant having teenage boys doing dishes and other women’s work. As one informant explained, “if I’m not there for myself now, how will I be there for them [the family] later?”

While there are many people who do not have health coverage, and struggle with the expense of long-term medical care, many Mexican are covered by their government provided health care. The IMSS health system is the largest of the multiple health care services. IMSS operates by collecting a health tax from all employees working for an employer with at least 10 employees. The IMSS system covers about 70 percent of all Mexicans, meaning the majority of Mexicans are covered. IMSS offers a full range of services to its clients from primary to tertiary and emergency care. The basic IMSS unit is the family care clinic. These clinics are located all over the country, including rural outposts when there is a sufficient population. Specialty services clinics such as pediatrics and oncology are less widely distributed, being located in urban centers. Other specialized services such as neurological clinics, specialty surgeries, and medical research centers are limited even further. These are located only in major urban centers like Guadalajara and *DF*.

In Guadalajara, the central medical facility is the *Centro Médico Nacional Occidente* or Western National Medical Center (CMNO). It services the entire western portion of the country. The CMNO is affiliated with the Central University of Guadalajara and shares adjacent properties. The combined campuses take up several square blocks of the city. One office in the complex, an unimposing space beneath the Central Pharmacy, houses the *Unidad de Investigación Social, Epidemiológico, y Servicios de Salud*, or the Social, Epidemiological, and Health Services Research Unit (UISESS). UIESES is an interdisciplinary research unit composed of medical personnel, such as doctors, nurses, nutritionists, and physical therapists. There are also social scientists, psychologists, social workers, and of course, anthropologists. One of the main missions of UISESS is simultaneously studying the physical, psychological, social, and cultural aspects of diabetes and other chronic conditions. The clinic recruits research

participants from the local IMSS clinics, and cooperates with other IMSS research centers to aggregate findings for larger segments of the society. One of the main sources for recruiting research participants is the closest family clinic, *clinica 3* or *clinica tres*, located in an adjacent building a few short steps from UISESS. The clinic services a large part of central Guadalajara and has many patients.

For those not covered by IMSS, there are various other health services. The largest of these secondary systems is the *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado*, or Institute of Insurance and Social Security for State Workers (ISSSTE). ISSSTE is a decentralized system that provides a number of social security benefits in addition to health care services. This system is focused on public employees and professionals and services about ten percent of the total population.

The remainder of the population is covered by individual state-sponsored systems or private health care. The state level facilities are targeted at the poor. There is a substantial market for private health care providers and a wide range of facilities available. The quality and price of services varies from high to low, though private practitioners tend to service top-end market extremes and the working-class self-employed. Various types of private and state-funded insurance programs are available as well. Health coverage is widespread in the urban areas like Guadalajara, though for many on the lower economic end, services have sharp limitations.

The project described in the following chapters drew from the general population of Guadalajara, but owes a special debt to the diabetic patients of *clinica 3* who were gracious enough to allow a stranger into their homes and private lives, and were willing to give their time to help advance an understanding of how social factors impact health outcomes.

CHAPTER FOUR: A QUALITATIVE LOOK AT DIABETIC EXPERIENCES

The following section illustrates the context of individuals' lives as they relate to the diabetic experience. The section is composed of very brief vignettes and represents the most qualitative aspect of the project. While many ethnographies employ extensive quotes, this one does not. Many informants were reluctant to have their voices recorded, so recording was dropped from the research protocols. Given the nature of the interviews, notes were taken, but verbatim quotes are limited. Each case is described from the ethnographer's perspective.

The first case involves a grandfamily of 10 living in a small 2-bedroom apartment. The husband and wife of the eldest generation both have diabetes. The husband's case is severe and advanced; he is mostly blind and confined to a wheelchair from a double leg amputation. The couple resides with their two, male and female teenaged children, three adult children (two male, one female), and three young grandchildren. Several of the adult children are employed in low-paying, labor intensive jobs. The second generation female works at her daughter's elementary school, but only part-time. The interviewee was the mother, an especially short and obviously obese woman. She is illiterate with very little education. She and her husband share eyeglasses. She gave the appearance of reading the informed consent letter but then handed it off to her daughter after a few moments of looking at it. The teenaged daughter read the letter aloud.

The woman (age 50) was very mild mannered and apologetic about the conditions of her home and life. During the interview, she pleaded with her older children to do various tasks such

as helping their father to the restroom, feeding the younger children, and to quit horseplay. The home was boisterous, cramped and cluttered, and the sofa clearly served as someone's bed.

Another case involves an older couple that lived in a small upper apartment. In this situation the husband and the wife were interviewed, though for different segments of the research. The husband (age 65) was interviewed first, participating in the cultural consensus survey. He had troubles staying on task with the questions. He gave long elaborate explanations for his responses. He was verbally abusive with his wife, commenting on her poor country raising, stupidity, and referring to her as a thing rather than a person. At the same time, he coldly explained many of the ways that she took care of him. He gave the impression that he felt entitled to her unflinching devotion.

Later, the wife (age 43) was contacted for an interview in the final stage of research. She was happy to complete the interview, but insisted upon meeting outside of her home. When she arrived and introduced herself she noted that her husband had been interviewed previously, and that she was present during the interview. Her demeanor made it difficult to recall which interview she had attended. During the interview with her husband, she had sat quietly staring at the floor like an abused servant. During her interview, she smiled and was happy. She explained that she had insisted on meeting outside of her home so that she could get away from her husband. Medical visits were one of the few things she was allowed to do on her own. Also she wanted to be interviewed individually so that he would not interfere with her responses.

This case involves a woman (age 58) living in a densely populated lower income area of the city with her husband, several adult children and their spouses, and grandchildren. Her sons had traveled to the US for work, but ended up involved with gangs before returning to Guadalajara. The sons are protective of their mother and were initially hostile toward the

ethnographer. Tensions quickly eased and settled into a jovial mood. The brothers harassed each other with jokes and regularly interrupted the flow of the interview. The mother kept after her boys to be quiet, but also laughed at their play. None of the adult children were employed, though they earn money doing odd jobs, such as fixing cars. Everyone in the family would like to migrate to the US. However, there is not enough money and the family worries about the effects of moving on the mother's diabetes.

In another case a husband and wife ran a catering business out of their home. She (Age 43) has diabetes. She and her husband both participate in the family business. They appear to work together closely as near-equal partners. The exception is that he holds the male upper hand when it comes to making household and business decisions. The family's food budget is merged with the business food budget. The business's needs take priority over family needs, so the family often eats the leftovers from the catering business. They do not use diabetic friendly foods in their catering because the husband believes that an authentic taste drives their business. She says it makes it difficult to manage diabetes.

Another case involved a woman (age 46) sharing a small two bedroom apartment with two of her adult brothers and her adolescent daughter. The woman and daughter share one room, the men share the other. The apartment was almost empty, furnished with a few kitchen chairs and stools. There is a small entertainment center equipped with an old television and other aged electronics. The woman expressed feeling sad and depressed. She believed that grief over her divorce along with her living arrangements were causing her glucose to raise. She stated that her brothers are unkind, but they are the only support she has for her and her daughter. She was highly distressed and asked where she could get help, including psychological counseling

services. She was provided with several government service phone numbers and directions for accessing such services through IMSS.

This case is about a retired woman taking care of her older retired husband (age 72). He had a very small pension, but supplemented their income by selling real estate with his nephew. It was a clear case of a wealthy family member supporting another less fortunate. The man stated that his nephew buys and renovates houses and since he sits by the phone all day, he answers sales calls and sets viewing appointments. He had recently had heart surgery and was not able to make the showings himself. He was having a slow recovery, which was creating an extra burden for the household. The husband and wife did not communicate with each other a great deal, but rather addressed the interviewers. She was happy to have visitors in their home, but he was not very expressive. The wife complained about the difficulty of taking care of her husband, especially how much time it consumed. Yet, there were signs that she simply had other priorities. For example, she talked about how much she enjoyed getting out of the house for exercise classes for her own health. The house was filled with ceramic statues of frogs and angels that she had painted, including her current projects. Also, their house was far from tidy, indicating that she spent little time cleaning.

One case involves a woman (age 49) who was suffering depression from the death of her youngest son. The death had caused her marital problems and she said it contributed to her diabetes. Her sister visited frequently and even sat watching television during the interview. The interviewee had stated that she didn't like how much household responsibility that she had placed on her three young daughters, and that if it weren't for the help of her sister and daughters she would not be able to carry on. The remaining son, a teen, did not appear to carry any household obligations. Perhaps this was a reaction to the loss of the young boy.

One informant was a female medical doctor (age 53) living in upper-class neighborhood. She distrusted strangers and would not allow the interviewers to come inside her home. The interview was conducted at her front gate. Behind the plain white stucco wall was a large swimming pool equipped with a high quality patio set including a large mechanical umbrella. The doctor wore what was clearly heavy gold jewelry, fine clothes, and smelled richly of perfume. She grew increasingly agitated as the interview progressed because she found it trivial.

In the neighbor adjacent to the CMNO was a man (age 60) with a bachelor's degree. He taught business at a local university and ran a warehousing and distribution business of his own. He and his wife shared a large house. They had grown children who no longer lived at home. One child was away for a university education. They had a housekeeper and multiple interior garden spaces. This was clearly the upper-end of the IMSS patients' income range. It is likely that the man deflated his reported income by divulging his university salary, but not his business income. The house was decorated with fine furniture, high quality ceramic figurines, and high end cookware and electronics. This was also the only informant with an intercom system and a remotely operated exterior gate. The man reported being in good control, even though he disliked the effort it required.

One informant is a mother (age 45) with five children living in a middle class neighborhood. Her husband comes and goes. The family had a neighborhood reputation for vulgar language and behavior, domestic violence, and bullying neighbors. The family lives in an apartment building with ambiguous ownership. It was explained by local informants that the owner of the building died and did not leave a will. An heir stepped forward to take ownership, but the issue had complications. The people living in the building were forced to make repairs in the landlord's absence. This gave the tenants some legal rights to ownership, so they

collectively challenged the heir. The struggle reached a legal stalemate. The tenants cannot leave or the heir will regain legal privilege, but they have incentive to stay, because they do not pay rent. They maintain the building and utilities, and that is their cost of living. Neighbors must cooperate and this family is known to be stubborn about building issues.

Another case included a man aged 68. He lived with his wife and reported being very unhappy because all he has to do all day is sit and watch out the window. The house was small but well kept. It was brimming with religious icons. He suffered leg problems. He had not yet experienced amputation, but he fears it is close. His only activity was to go for dialysis. He has been harassed by neighborhood kids because he does not like them playing soccer in front of his house.

One remarkable case involved a woman (age 55) living in a one bedroom private apartment with her two adult male children, a daughter in law, and a grandson. The apartment was dark and cramped. The living room also serves as a second bedroom. The woman had one leg that was black from the knee down. She stated that the IMSS facility told her she would need an amputation because gangrene had set in. She went to a homeopathic doctor who made a remedy. After two months, the leg was healed and appeared to function fine, despite the horrifying charred appearance. The woman had a great deal of negative commentary about the IMSS doctors. She told about their lack of empathy and their domineering paternal attitudes. She complained that when she had found an IMSS doctor that she liked they rotated her to another. She could not get the attention she felt she deserved. The homeopathic doctors on the other hand were caring and effective.

One woman (age 63) formerly sold religious icons. Her home looked like a retail showroom for icons. A nearly life-sized Jesus hung on the cross directly across from the sofa

where guests sit. The looming figure appeared poised to fall and made the interviewers uncomfortable. The woman was nearly blind and had trouble walking because of pain in her feet. Her feet appeared disfigured and highly callused. She claimed to have very poor diabetic control and did not have a clear idea of how to help herself. She claimed that neither she nor her husband could understand her condition or how to manage it.

One informant was a nun (age 39) living in an orphanage. The household was all female and numbered over twenty, including four other adults. She claimed to have devoted her life to the orphanage because she loves to teach and having been an orphan herself, does not have anyone to take care of her. She described some of the difficulties of living under the mother superior, stating that life there is very demanding. She did not seem to understand her condition either, and relied on others to do what is best for her.

In another case, a widower (age 60) was living with his unwed daughter and her child, and an adult son. The man operates a *tienda* (a small store) in the front room of his home. The daughter takes care of her father and the household, and assists with the store. The son is separated from his wife and estranged from his children. The man did not take care of himself. He was unbathed and smelled strongly of urine. The daughter interjected that he fights against her attempts to care for him. He agreed, stating that he did not want or need her constant nagging.

One of the more intense interview experiences came through a man aged 58. He was confined to a wheelchair due to a leg amputation and a stroke. One side of his face contracted and one arm did not fully function. The man wailed and moaned and cried, he sat forward in his chair very close to the interviewers' faces and spat and barked while he talked. He looked intently with his one good eye. He complained of losing his friends, not being able to gamble

and drink. He felt stuck with his caregivers, his wife and her teen nephew. The caregivers sat in the background shaking their heads from time to time in agreement or to the contrary. Their facial expressions revealed something that appeared to be part pity and part disgust. Everyone agreed that they were all just waiting for the man to die.

One case involved an alternative health practitioner. The woman (age 51) ran a health salon that performed sensory therapy using light, sound, and aromas. The front of her home had been converted into a product showroom and clinic. Therapy was completed using machines that looked very much like tanning beds. The home was well furnished because the family had had good business success. The woman joked about starting her business as part of her own treatment, because she had participated in sensory therapy for her own benefit and subsequently built a business around it. She said she got involved to treat her diabetes and the stress of living with her husband and two adult sons.

One woman in her late forties (age 48) missed her first appointment because she had been hospitalized by a diabetes-related kidney complication. The woman lived with her adolescent daughter in her estranged husband's house. Her adult daughter, who lives nearby, came to check on her the day of the interview. When the daughter arrived, she found the interviewers waiting on the sidewalk in front of the house. She opened the door and found her mother's personal belongings, like her purse, still inside, but no sign from her mother. Later it was discovered that her mother had gone across the street to visit a friend's store when she collapsed and was rushed to the hospital. During the later interview the woman appeared depressed and expressed being worried for her health and for her younger daughter's future. It was clear that she felt death was near.

One man (age 55) lived in a household that had four generations living under one roof. The house was divided into upper and lower apartments. However, the family used the upper apartment living and dining areas as bedrooms. Everyone shared a communal living room and kitchen below. The oldest generation was a husband and wife who were both in obviously poor health. Their two adult daughters and sons-in-law (one of which was the participant) also lived there. One of the daughters had an adult daughter of her own, who also had a child. The younger grandfamily shared the upstairs area. The younger daughter appeared to take care of her toddler and do household chores like cooking, cleaning, and caring for the elderly pair. The second generation adults appeared obese and sedentary, passing the entire interview time in front of the TV.

One case included a single woman near sixty (age 61). The woman lived alone. Her estranged husband left her a well-furnished house to live in, though it showed signs of deterioration. She works as a store clerk to earn money. Her adult daughter visits frequently. She was hostile about medical care and the paternal attitude of her doctor. She complained about the doctor's constant threats regarding her future treatment (insulin shots) if she did not change her behaviors.

A woman aged 79 lived with her unmarried adult son and daughter. She was immobile and completely reliant on her children. Her children, both well into their forties or early fifties, have a reputation for fighting, physically and otherwise. The woman expressed her distaste for disharmony. She passes the majority of her time on a sofa near the front window of her home. The sofa serves as her bed and sitting area. The family's efforts to care for the woman and her diabetes were taken directly from literature provided by a physician a number of years earlier. The woman had her daughter produce the literature to illustrate how "well-informed" the family

is on the topic. She cannot walk and must be moved around in a wheelchair. Her daughter explained that they take her outdoors at least once per week so that she can get fresh air. The woman could be seen from time to time sitting on the patio in front of the house.

One man age 64 was bound to a wheelchair due to double leg amputations, one at the knee the other at the ankle. He claimed to be independent despite his obvious limitations. His wife, who had been busy painting the central patio with her niece, passed through as he made this statement. The wife openly challenged him. At first her challenge was mild, but it grew more forceful as the conversation proceeded. Finally, she asked him what kind of fool he took the interviewers to be, that they would not recognize his need for assistance. The man maintained his position. The wife, standing out of his view, rolled her eyes as a final gesture to the ethnographer.

One female interviewee (age 48), who was recently divorced, took care of her three brothers. She lived independently of them and had several children of her own. The youngest of her brothers, a teen, lived with the middle brother, an underpaid musician. The eldest brother was blind, but contributed to the family by assisting the middle brother with his music career. The eldest is married, but requires enough care that the responsibilities are split between his wife and sister. All but the youngest brother have diabetes. They all live within three blocks of each other and provide each other with their main source of social support. The house where the interview took place (the eldest brother's home) was small and cramped, and heavily decayed. The furnishings were worn to the point of scrap. While the group expressed having serious difficulties navigating life, they were jovial about it. They laughed together and expressed gratitude toward each other for maintaining family unity.

One man (age 46) lived alone. He claimed to be friendly with, but distant from his family. He was more educated than most informants and worked full-time as a file clerk. He was clearly passionate about music and involved himself in musical pursuits as a hobby and a semi-profession. His home was cluttered with musical instruments, music books, and electronic equipment. The house was filled to the point that it was nearly impassable. An aisle existed from the front door to the kitchen and a rear bedroom. At one end, near the rear of the living room, was a chair arranged across from a television where he sat. Many of the items in the house looked as if they had not been touched in a very long time. This man claimed to have good diabetic control. He attributed his good control to his self-proclaimed “unusual” preference for a healthy diet and an active job including a full music performance schedule.

One woman (aged 68) lived with her husband and two male grandchildren. The husband was ill and had been in the hospital. He returned home during the interview, assisted by one of their children. The house was in disarray and it appeared that the grandchildren did not contribute to the maintenance of the house. The informant expressed constantly feeling exhausted and being unable to take care of herself.

In another case, a woman (Age 43) lived with her husband and their sole teenage child. Her husband worked at a local brewery and she held a secretarial position. Her home was well furnished and clean, decorated in a modern-traditional style. That is, the home was furnished with wooden furniture fashioned by popular local artisans. The design combines traditional elements with contemporary styling. The woman and her husband were avid beer drinkers and appear to carry on an upper middle class lifestyle, including strong consumer trends focused on entertainment. The woman produced “healthy” packaged snacks when questioned about her diet.

She claimed to take care of herself and stated that she had good diabetic control. However, when asked about her fasting glucose results she stated a number far outside levels of clinical control.

One positively oriented case involved a man age 49. He appeared physically fit and happy. He lived with his wife and their two (male and female) teenage children, and his grandson. He claims that his wife and daughter do a great job of taking care of the household and keeping him on a healthy diet and exercise routine. The man also reported having a successful and still promising career.

Another positive case involved a woman (age 46) who was married to a slightly older widower. The couple lived in a well maintained house. The woman kept excellent record of her diabetes. She also had her medical records on hand showing her clinical glucose test results, demonstrating her good control. She was one of the few informants who checked her blood sugar at home daily. She reported eating right and claimed to dance around the house all day. Her husband laughed about how much she danced, but followed with a comment about how it keeps her healthy and beautiful. The home was equipped with an area that could surely be a dedicated dance area. The room prominently featured stereo equipment and CDs.

The cases outlined above demonstrate several patterns. One is unusual living arrangements, especially living with relatives outside of the grandfamily. Another feature is the common presence of large numbers of individuals in small dwellings. Many of the individuals face hardships beyond those imposed by a chronic disease. Economic issues and family relations are central themes. Household obligations are frequently forfeited in order to care for sick individuals. In many cases the diabetics' health suffers as they sacrifice for the group and fulfill their own household obligations. Additionally, many of the women in this sample suffer from

their husbands' dominance and gender discrimination in general. However, for some, self care has become an empowering process (Crossley 1998).

CHAPTER FIVE: CULTURAL DOMAIN ANALYSIS METHODS AND RESULTS

This chapter presents the methods and results of the cultural domain analysis. Initiation of these formal research steps was preceded by eight weeks of participant-observation and informal interviews. This step of the research project elicits local knowledge of diabetes problem with an emphasis on treatment. It represents the first step toward quantification by including a numerical description alongside participants' responses.

Since the author has type 2 diabetes, and is married to and was accompanied by a type 1 diabetic, arranging access to local treatment was a priority upon entering the field. This provided additional insights into navigating the local diabetic world.

Research Assistants

It was anticipated through local advisement that more females would be available to participate in the research than males (Garcia de Alba, personal communication). The reason for this is two-fold. Locally, men tend to underreport diabetes and diabetes symptoms, and they tend to decline participation in health research projects. This leaves a large female majority among the available participants. Local custom recommends a mediator to act between male researchers and female participants. Furthermore, the primary investigator is not local, nor a native Spanish speaker, so it was suggested that the assistant also be a native speaker. Therefore, female, bilingual assistants were identified and trained in the research protocol. The research assistants facilitated efficient data collection in the form of document translation, appointment setting, and conducting structured interviews alongside the primary investigator.

Research Strategy

The methods used for this project begin qualitatively with broad ethnography and cognitive elicitation, and work through several stages of data analysis, elaboration, and reduction. It finishes with an examination of the relationship between cultural factors and health outcomes for type 2 diabetes using statistical hypothesis testing (regression analysis). Initial entry into the field constituted the broadest approach, where the first order of business was acquiring adequate language proficiency and a basic understanding of the social and cultural functioning of the research site. In essence, a research project of this kind is two projects in one. One project is the qualitative cross-cultural exploration presented in the previous chapter, understanding what it is like to be a *Tapatío*. For this initial project, informants were recruited from a variety of areas within Guadalajara and its metropolitan surrounding. The second project is more technical, where the ethnographic sense or implicit cultural understandings are explicated for quantitative analysis.

As has been explained in previous chapters, great care needs to be taken in order to measure variables as fluid and dynamic as culture. This chapter presents the concrete steps taken in the measurement procedures. These steps closely match the field methods outlined by Dressler et al. (2005). The particular steps taken are reiterated here as a refresher for the reader.

Participants were recruited from an IMSS health clinic in the city of Guadalajara. Data collection was carried out in three parts. The first part consisted of cultural domain analysis. The second part included a test of cultural consensus for a cultural model of diabetes treatment, and the third part included an epidemiological survey along with relevant data mining from medical records. The goal of the first research stage was to elicit a local cultural model of type 2 diabetes treatment. The initial sampling frame was guided by Kleinman's (1980) professional,

folk, and popular health sectors. The sample was drawn conveniently from IMSS medical staff and from within the general population. Methods included participant-observation, formal and informal interviews, free-listing, pile-sorting, and rating and ranking tasks.

Cognitive free-listing was used to elicit domain content from each sample sector. Elicitation items were open-ended. Free-list protocols evolved during recruitment, so that later informants were asked to make more lists than were earlier informants. Lists results were pooled where possible. Overall, 28 informants were recruited for the free-list task. An additional 29 informants were asked to perform pile-sorting tasks. This included three unconstrained and two constrained pile-sorts. Open-ended interviews along with the cognitive tasks provided a robust ethnographic description of the diabetes treatment domain. This description was used to construct a quantified survey instrument suitable for cultural consensus analysis (Romney et al. 1986).

In the second stage of research a test of cultural consensus was carried out to triangulate the qualitative data and to quantify the cultural model. The consensus survey presented participants with a scenario derived from the previous research stage and asked if the informant thought that, in general, others would agree or disagree with the statement. Participants were then asked if they thought others would agree or disagree somewhat or if they would agree or disagree strongly. This procedure resulted in a four-point Likert scale.

By compiling a consensus model, the tri-sector sampling strategy useful in the first stage was no longer useful. Rather, for the second stage consensus survey, a sample of 56 participants was recruited from among type 2 diabetics being treated through the IMSS clinic. The sample was not systematically stratified, but included both men and women, and a wide range of ages.

All participants have had diabetes for at least three years, ensuring that participants have had ample time to learn the treatment regimen.

The resultant answer key describes the features of type 2 diabetes treatment, and was used to inform the cultural consonance measures in the third stage of research. The consonance survey was adapted from the consensus model by shifting the question away from society and toward the individual. It asked how much each scenario applied to the informant's life. Additional data were collected in order to control for clinical treatments. Adherence to pharmaceuticals was measured using a scale created by Morisky et al. (1986). Food intake controls involved combining a free-list exercise with Willett's (1990) semi-quantitative food frequency questionnaire and adapting them for use with the National Institute of Health (2009) diabetes food pyramid. A similar procedure was used to control for individual activity levels. Participants were asked how many times each day they engage in 15 minutes of activity from each activity category.

For the survey, 85 participants were recruited through the IMSS clinic. Some demographic information was retrieved directly from the informant, while other data such as BMI, blood pressure, and FBG were extracted from participants' medical records.

It was hypothesized that individuals who are able to live according to cultural norms, that is those who are consonant with the cultural model of treatment, will have better outcomes such as lower BMI, good diabetic control, and better general well being. Good control was defined as FBG below 110 (mg/dl), but was also measured at 140 (mg/dl). Only those using hypoglycemic medications were included. Pregnant women, people under 18 years of age, and those with less than one year since diagnosis were excluded.

Analysis of diabetic control was conducted using logistic regression analysis to distinguish between good and poor control groups. The logistic regression equation is: [group membership] = a + b1 [covariates] + b2 [adherence] + b3 [cultural consonance in treatment model]

A series of least squares regression analyses were used to examine linear relations among other outcome variables such as cultural consonance in treatment, BMI, FBG, and general well-being. As analysis continued additional hypothesis were developed . This included creating a second cultural consonance measure in the domain of food-as-treatment. It also included and a variable called role strain. As a concept, role strain describes the distress one experiences when one cannot fulfill their role obligations (Goode 1960). The concept was applied as a way of explaining the effects of family demographics observed throughout the project. These include observations of gender dominance and discrimination, especially in family and economic relationships. Tensions observed and expressed in large households and in households with very sick individuals, and expressions of regret, especially among women. These observations along with the influence of Oths' (1999) work on *debilidad* suggested that women are disadvantaged when it comes to fulfilling role expectations. The formula for calculating the role strain variable was based on observation along with some statistical correlations, which are explained in the detailed analysis below.

The research protocol was approved (Appendix C) by the University of Alabama and IMSS Internal Review Boards. All participants in formal interviews were provided with and signed appropriate informed consent documents. Questions were answered as needed. Where individually identifying information was necessary, participants were assigned numeric codes

and the code list and sensitive information were stored apart from general responses and were permanently disposed of once such information was no longer necessary.

Cognitive Tasks Part 1: Free Listing

The first step in identifying cultural variables involves developing a set of cognitive tasks designed to extract cultural knowledge. A good way to do this is to start with a free-listing task. The initial free-list should be broad enough to allow the informants' ideas to flow forth inductively, but focused enough to cover only the domain in question. For this project, the domain of inquiry was limited to type 2 diabetes treatments. The initial free-list protocol is presented in Table 1. The protocol includes one very open-ended free-listing task, with four probing questions. It also includes a second, narrative evoking question.

Table 1. Initial free list protocol in English and Spanish.

1. Please make a list of the kinds of things people with diabetes must do to remain healthy.
(Por favor, se hace una lista de los tipos de cosas que necesitan hacer para continuar saludable las gentes con diabetes.)
 - a. Probe (read last items): Can you think of anything else?
(Investigar (leer las ultimas cosas): ¿Se puede pensar de otras cosas?)
 - b. Second probe: Is there anything else in particular that people can do in order to control their blood sugar day to day?
(Investigar segundo vez: ¿Hay otras cosas en concreto pueden hacer las gentes con diabetes para control de azúcar de sangre diaria?)
 - c. Third probe: Is there anything people should do or not do in order to avoid long-term complications from diabetes?
(Investigar tercero vez: ¿Hay cosas pueden hacer las gentes con diabetes para evitar complicaciones de diabetes en largo plazo?)
 - d. Fourth probe (read entire list): Are there any others we may have missed?
(Investigar cuarto vez (leer lista completa): ¿Hay otras cosas no hubiéramos considerado?)
2. Do you have anything else you would like to say about this topic?
(¿Se quiere decir algo más sobre éste tema?)

Kleinman's (1980) three-part description of overlapping healthcare sectors guided participant recruitment. In order to maximize the breadth of treatment knowledge, informants

were enrolled from the professional medical sector, alternative and traditional health sector, and from the lay public. This included both men and women of a variety of ages. Systematic stratification was not applied; rather, all participants were recruited conveniently from the general population with the aim of acquiring a broad sample. Demographic information was not recorded. Interviewing took place in locations chosen by participants, mostly informants' homes and places of business. For the free-listing phase, no participants were recruited through the health clinic, nor were interviews conducted at IMSS facilities. The instrument was pretested with a convenience sample. Pretesting went smoothly and the instrument was subsequently presented to an initial sample of 12 informants, including both diabetics and healthy persons. This initial sample was composed of three medical professionals, three alternative health professionals and six lay persons. Informants were provided with informed consent forms and were then presented questions verbally. Responses were recorded manually on paper by a research assistant and later entered electronically by the principal investigator.

Initial free-lists were relatively consistent and created many opportunities for further exploration. For the most part, informants adhered closely to the biomedical model of treatment, including eating right, exercising, taking proper medication, checking one's blood sugar and visiting the doctor regularly. Other non-clinical aspects of treatment emerged as well. These included things like family relations, quality of care, avoiding strong emotional states, and keeping occupied.

A second instrument was developed to explore the ideas uncovered in the first round of free-lists. The second instrument sought to uncover more details about local food models and eating for diabetes, as well as models of exercise, models for visiting the doctor, models for checking and controlling blood sugar, and details about what kinds of information informants

feel they need, and where the new information should be generated. This instrument also sought ideas about how one can avoid stress, what kinds of personal traits might help or harm efforts to control diabetes, and how family relations affect diabetic control. The actual instrument questions are in Table 2.

Table 2. Modified (second) free list protocol.

1. What type of food should a diabetic eat or not eat?
(¿Qué es el tipo de alimentos debe comer un diabético o no comer?)
 - a. What kinds of fruits?
(¿Qué tipos de frutas?)
 - b. What kinds of vegetables?
(¿Qué tipos de verduras?)
 - c. What should one eat for fiber?
(¿Qué se debe comer para obtener la fibra?)
 - d. Are there foods that are medicinal?
(¿Hay algunos alimentos que son medicamentos?)
 - e. Are there other specific things to avoid?
(¿Hay otros alimentos específicos para evitar?)
2. What kind of exercise helps with diabetes?
(¿Qué tipo de ejercicio ayudan con la diabetes?)
 - a. How often should a diabetic exercise?
(¿Con cuál frecuencia debe una persona con diabetes hace ejercicios?)
 - b. How long should a person spend exercising each time they do it?
(¿Cuánto tiempo una persona con diabetes pasan ejercicio cada vez que lo hacen?)
3. How often should a person with diabetes visit the doctor?
(¿Con qué frecuencia debe una persona con diabetes visita al médico?)
 - a. What can the doctor do to help specifically?
(¿Específicamente, qué puede hacer un médico o una visita al médico hacer para ayudar?)
4. How often should a person with diabetes check their blood sugar?
(¿Con qué frecuencia debe una persona con diabetes chequean su nivel de azúcar de sangre?)
 - a. In the case that the sugar level is high, in that particular moment what can a person do to lower the level?
(¿En caso de que compruebe su nivel de azúcar en un determinado momento o momentos?)
 - b. What good does it do to control blood sugar?
(¿Qué bien le hace a una persona con diabetes a controlar su azúcar en la sangre?)
 - c. What concrete steps can a person take to control their blood sugar?
(¿Qué medidas concretas se puede tomar para controlar el número?)

5. Several people have said that more information should be available about diabetes. What kind of information about diabetes should be available?
(Varias personas han dicho que más información debe estar disponible sobre de la diabetes. ¿Qué tipo de información sobre la diabetes debe estar disponible?)
 - a. Where should the information come from?
(¿De quién deben hacer la información?)
6. What can a person do to live a more peaceful, stress free life?
(¿Qué podría ayudar una persona para vivir una vida más tranquila y libre de estrés?)
7. What specific character traits, good or bad, affect diabetes?
(¿Hay rasgos de carácter específico, ya sea bien o mal, que afectan a la diabetes?)
8. What kinds of things can a family do to help or hinder a family member with diabetes?
(¿Qué tipo de cosas que una familia puede hacer para ayudar u obstaculizar el tratamiento de un familiar con diabetes?)
9. To what degree should a person follow their doctor's instruction?
(¿En qué medida debe hacer una persona con diabetes sigue las instrucciones médicas?)
 - a. Why should a person follow instructions to that degree?
(¿Por qué deben seguir las instrucciones médicas de esta manera?)

The second free listing task was administered to a group of six (6) informants. Sampling continued as described above and included at least one representative from each of Kleinman's (1980) three health sectors. This task generated a great deal of information, though some of the responses proved rather uninteresting so the corresponding questions were dropped from the interview schedule. In addition, there were some comprehension problems with question #7 above (Table 2), which made it necessary to explain the question to some informants before they could respond. These problem questions were addressed, which resulted in a third free-list protocol (Table 3).

Table 3. Third free list instrument.

1. What kinds of food and drink should a diabetic have?
(*¿Qué tipos de comidas y bebidas debe comer o tomar un diabético?*)
 - a. Are there/what kinds of fruits?
(*¿Hay/Qué tipos de frutas?*)
 - b. Are there/what kinds of vegetables?
(*¿Hay/Qué tipos de verduras?*)
 - c. Are there/what kinds of fiber should one eat?
(*¿Hay/Qué se debe comer para obtener la fibra?*)
 - d. Are there/what kinds of things should one eat for protein?
(*¿Hay/Qué se debe comer para obtener las proteínas?*)
 - e. Are there/what kinds of foods should a person with diabetes avoid?
(*¿Hay/Qué otros alimentos específicos para evitar?*)
 - f. How often should a person with diabetes eat? At what hours?
(*¿Con qué frecuencia debe una persona con diabetes comer? ¿A cuáles horas?*)

2. For a diabetic what kinds of things can interfere with ones efforts to eat right?
(*¿Para un diabético qué tipo de cosas interfieren con esfuerzos para comer bien?*)

3. What kinds of activities should a person with diabetes do?
(*¿Qué tipo de actividades debe hacer una persona con la diabetes?*)
 - a. What kind of exercise helps with diabetes?
(*¿Qué tipo de ejercicio ayuda con la diabetes?*)
 - b. How often and for how much time should a person with diabetes do exercise?
(*¿Con qué frecuencia y por cuánto tiempo debe una persona con diabetes hacer ejercicio?*)

4. For a person with diabetes what kinds of things can interfere with efforts to do good activities like exercise?
(*¿Para un diabético, qué tipo de cosas interfieren con esfuerzos para hacer actividades buenas, por ejemplo el ejercicio?*)

5. Please describe the kind of relationship that should exist between a person with diabetes and their doctor?
(*¿Por favor describa qué tipo de relación debe existir entre los pacientes con diabetes y sus médicos?*)

6. How often should a diabetic check their blood sugar? Do you know the correct level?
(*¿Con qué frecuencia debe una persona con diabetes checar su nivel de azúcar en la sangre? ¿Sabe usted el nivel correcto?*)
 - a. If a person with diabetes has high blood sugar, in that moment, what concrete steps can they take to lower the number?
(*¿Si un diabético tiene la azúcar de la sangre demasiado alto, en este momento, qué medidas concretas pueden tomar para reducir el nivel?*)

7. What helps to reduce stress and worry?
(*¿Qué podría ayudarle a reducir el estrés y la preocupación?*)
8. Which emotions and attitudes affect diabetes?
(*¿Cuáles emociones y actitudes afectan a la diabetes?*)
9. What kinds of things can motivate a person to maintain their health and control their diabetes?
(*¿Qué tipos de cosas podrían motivar a una persona para mantenerse saludable y controlar la diabetes?*)
10. What kinds of things can a family do to help with a family member's diabetes treatment?
(*¿Qué tipos de cosas puede hacer la familia para ayudar con el tratamiento de un familiar con diabetes?*)
11. For a diabetic what other kinds of things can interfere with efforts to control their diabetes?
(*¿Para los diabéticos hay otros tipos de cosas que interfieran con esfuerzos para controlar su diabetes?*)

The third instrument (Table 3) was administered to 11 informants. Sampling continued as above, with the addition that six of the 11 informants suffer from diabetes. It was important to include a representation of diabetics in order to insure that the final model fits with the actual experiences of people with diabetes. In a qualitative sense, the results appear consistent across all participants and do not show a strong difference between sampling sectors.

These statements were used to develop the second cognitive task, pile-sorting. It is important to note that many of the statements generated by free-listing had cross-links with various aspects of treatment and needed to be better understood in their relative importance. For example, family support was mentioned frequently and early in the free-lists as a primary source of help and support. However, it was also mentioned as one of the most popular obstacles to good treatment.

Overall Free List Results

Some of the free-lists were pooled across protocols. The exercise yielded 1231 statements with approximately 564 unique ideas about diabetes treatment (Table 4). The cross-section sampling strategy did not provide a great deal of additional content, though it did tend to show minor differences in emphasis for various elements of the domain content. The lay public stuck close to the biomedical view in the initial phases of the free-listing exercise, demonstrating its prominence in the overall cultural model. However, later items in the list include less direct influences like social support (friends, family, the personal relationship with one's doctor), self-care behaviors (maintaining weight, checking feet, wearing properly fitting clothes), and emotional/personal issues (avoiding strong emotions and extremes of attitude and behavior, and guarding one's character).

Items elicited from the professional medical community emphasized the need to check one's sugar regularly and the need to consult with professional health practitioners, including specialists like dermatologists and nutritionists. Items provided by alternative health providers, which in this case were largely homeopathic doctors and naturopathic pharmacists, tended to emphasize diet and exercise over regular medical consultation and techno-pharmaceutical interventions. For example, alternative practitioners emphasized eating *nopales* and chayote, and walking for exercise but did not talk much about taking hypoglycemic medicines. The alternative medical practitioners frequently noted that each person is unique and treatment must be tailored to the individual, a perspective not found among mainstream physicians.

General List of Diabetes Treatments

In all, the free list content consists of 'treatment in general' and nine specific treatment sub-themes, including food, activity, clinical treatment and the doctor patient relationship,

glucose testing, seeking information, emotions and other psychological issues, family, motivation for treatment, and obstacles to treatment. The initial treatment in general list guided data collection for the additional lists. See the list below for general responses (Table 4). The responses fall into two basic categories, things to do and things to avoid. Without actually expressing these values, informants were clear that diabetes is a disorder of consumption and participation, a true lifestyle disease.

Table 4. Pooled free list (protocol 1 and 2): general treatment items for diabetes listed by frequency of mention (n=18).

#	Item	Frequency	%	Average Rank	Smith's S
1	Nutritious Food <i>Alimentación</i>	14	78	1.857	0.732
2	Exercise <i>Ejercicio</i>	14	78	4.071	0.595
3	Take Medications <i>Tomar medicamentos</i>	11	61	8.545	0.29
4	Visit doctors <i>Visitar médicos</i>	8	44	9.5	0.201
5	Avoid alcohol <i>Evitar alcohol</i>	7	39	12.286	0.152
6	Vegetables <i>Verduras</i>	7	39	6.143	0.287
7	Check blood sugar <i>Checar azúcar en la sangre</i>	7	39	8.571	0.226
8	Maintain proper weight <i>Mantenerse peso adecuado</i>	7	39	11.429	0.156
9	Follow diet <i>Seguir dieta</i>	6	33	9.833	0.171
10	Moderate sugar <i>Medir azúcar</i>	6	33	7	0.206
11	Fruits <i>Frutas</i>	6	33	4.167	0.269
12	Sports <i>Deportes</i>	5	28	10.2	0.131
13	No sweets <i>No dulces</i>	4	22	10	0.117
14	Moderate fat <i>Medir grasa</i>	4	22	7.5	0.146
15	Do not smoke <i>No fumar</i>	4	22	11.75	0.09

16	Moderate flour <i>Medir harina</i>	4	22	11.75	0.069
17	Walk <i>Caminar</i>	4	22	11	0.109
18	Sugar substitutes <i>Sustitos</i>	3	17	11	0.081
19	Care for feet <i>Cuidar pies</i>	3	17	10.333	0.078
20	Activity <i>Actividad</i>	3	17	9	0.111
21	Search for information <i>Buscar información</i>	3	17	3.667	0.114
22	Eat regularly <i>Comer a sus horas</i>	3	17	4	0.139
23	No soft drinks <i>No refrescos</i>	3	17	8.667	0.059
24	Drink water <i>Tomar agua</i>	3	17	9.667	0.092
25	Contact with others <i>Contacto con otros</i>	2	11	10	0.025
26	Tranquil life <i>Vida Tranquila</i>	2	11	11.5	0.061
27	Maintain glucose <i>Mantener glucosa</i>	2	11	13	0.035
28	Eat frequently <i>Comer con frecuencia</i>	2	11	12	0.056
29	Do not spend time badly <i>No mal pasarse</i>	2	11	5.5	0.074
30	Swim <i>Nadar</i>	2	11	16.5	0.016
31	Follow instructions <i>Seguir instrucciones</i>	2	11	8.5	0.065
32	No prepared foods <i>No cosas preparados</i>	2	11	6.5	0.024
33	Non-sweet fruits <i>Frutas sin dulce</i>	2	11	3.5	0.096
34	No red meat <i>No carne roja</i>	2	11	5.5	0.084
35	Eat balanced <i>Comer balanceado</i>	2	11	7	0.075
36	Proper clothes <i>Ropa buena</i>	2	11	6	0.079
37	Do not eat what you ought not <i>No come que no deben</i>	2	11	17.5	0.026
38	Circulate blood <i>Circula sangre</i>	2	11	10.5	0.024

39	No pre-packaged foods <i>No comida enlatada</i>	2	11	5.5	0.04
40	Care for skin <i>Cuidar piel</i>	2	11	12.5	0.06
41	Measure/control quantity <i>Medir Cantidad</i>	1	6	10	0.031
42	Measure/control salt <i>Medir sal</i>	1	6	3	0.052
43	Eat well between meals <i>Come sana entre comidas</i>	1	6	11	0.028
44	Apple <i>Manzana</i>	1	6	12	0.025
45	No tortillas No tortillas	1	6	14	0.019
46	Publicize the fact that it is not contagious <i>Informar que no es contagiosa</i>	1	6	5	0.045
47	No sweet drinks <i>No bebidas dulces</i>	1	6	8	0.036
48	Clean your system with water <i>Limpia su sistema con agua</i>	1	6	22	0.014
49	Work <i>Trabajo</i>	1	6	23	0.012
50	Nopal cactus <i>Nopales</i>	1	6	24	0.01
51	Celery <i>Apio</i>	1	6	25	0.008
52	Avoid temptations <i>Evitar tentaciones</i>	1	6	15	0.017
53	Fiber <i>Fibra</i>	1	6	27	0.004
54	Control your character <i>Controlar su carácter</i>	1	6	28	0.002
55	Get a diabetes medical checkup every 6 months <i>Checar diabetes cada 6 meses con médico</i>	1	6	6	0.039
56	Maintain equilibrium <i>Tener equilibrio</i>	1	6	18	0.003
57	Check for fluid build-up <i>Checar edema</i>	1	6	8	0.033
58	Check eyelids <i>Checar parpados</i>	1	6	9	0.029
59	Check kidneys <i>Checar riñon</i>	1	6	10	0.026
60	Take insulin <i>Tomar insulina</i>	1	6	11	0.023

61	Be disciplined <i>Ser disciplinado</i>	1	6	17	0.003
62	Family cooperation <i>Familiares cooperen</i>	1	6	12	0.026
63	Bicycle <i>Bicicleta</i>	1	6	10	0.022
64	Chayote <i>Chayote</i>	1	6	26	0.006
65	Fish <i>Pescado</i>	1	6	5	0.041
66	Chicken <i>Pollo</i>	1	6	6	0.037
67	Balanced diet <i>Dieta balanceada</i>	1	6	10	0.022
68	Check symptoms <i>Checar simptomias</i>	1	6	7	0.036
69	Care for oneself <i>Cuidarse</i>	1	6	3	0.049
70	Measure/control carbohydrates <i>Medir carbohidratos</i>	1	6	6	0.038
71	One cannot sleep <i>No Desvelarse</i>	1	6	9	0.028
72	Avoid harm/pain <i>Evitar daño</i>	1	6	12	0.017
73	Self-help groups <i>Grupos autoayuda</i>	1	6	16	0.003
74	Stick to treatment <i>Apegarse al tratamiento</i>	1	6	1	0.056
75	Cardiovascular exercises <i>Ejercicios cardiovasculares</i>	1	6	4	0.045
76	Exercise 30 minutes per day <i>Ejercicio 30 minutos al día</i>	1	6	5	0.042
77	Eat foods low in glycemic index <i>Comer cosas bajos índice glicémico</i>	1	6	10	0.024
78	Have integrated/holistic treatment <i>Tener tratamiento integral</i>	1	6	14	0.01
79	Visit the dermatologist <i>Visitar dermatólogo</i>	1	6	15	0.007
80	Visit the optometrist <i>Visitar oculista</i>	1	6	16	0.003
81	Hygiene <i>Higiene</i>	1	6	4	0.039
82	Communicate with one's family <i>Comunicarse con familia</i>	1	6	6	0.028
83	Avoid hot foods <i>No picante</i>	1	6	5	0.045

84	Sleep well <i>Dormir bien</i>	1	6	8	0.037
85	No coffee <i>No cafe</i>	1	6	9	0.034
86	Cereals <i>Cereales</i>	1	6	11	0.029
87	Fiber <i>Fibras</i>	1	6	12	0.026
88	Avoid stress <i>Evitar estrés</i>	1	6	13	0.024
89	Keep busy <i>Estar ocupados</i>	1	6	14	0.021
90	No junk food <i>No chatarra</i>	1	6	18	0.011
91	Do not get angry <i>No corajes</i>	1	6	20	0.005
92	Do not get upset <i>No alterarse</i>	1	6	21	0.003
93	Avoid a sedentary lifestyle <i>Evitar vida sedentaria</i>	1	6	15	0.004
94	Clean lifestyle <i>Vida sana</i>	1	6	13	0.032
95	Go outside at least once every 8 days <i>Pasar afuera cada 8 días</i>	1	6	7	0.008
96	Genetics <i>Geneticas</i>	1	6	4	0.032
97	Teach children (about diabetes) <i>Ensenar niños</i>	1	6	5	0.024
98	Trim down <i>Adelgazar</i>	1	6	3	0.019
99	Eat less <i>Comer menos</i>	1	6	4	0.028
100	Be alert <i>Estar al pendiente</i>	1	6	5	0.019

Food List Results

Diet was a main component in diabetes treatment. The food list included nutritional categories, fats, proteins, fiber, carbohydrates, etc. Eating fresh whole fruits and vegetables, chicken, fish, and cereals were important. Many participants stated that sweet fruits and vegetables like bananas, carrots, and beets, should be avoided. Overall, sugar and sweets, soft

drinks (especially Coca Cola), and alcoholic beverages were to be avoided. Apples and papaya were named commonly as fruits that should be eaten. Explanations followed from several participants that apples are sweet but they also contain fiber to help balance the sugars. *Nopales* and *chayote* were mentioned as vegetables to be eaten frequently. *Nopales* are the paddles of the local prickly pear cactus and are known to have glucose reducing properties (Bacardi-Gascon et al. 2007; Bush et al. 2007; Cefalu et al. 2008; Laurenz et al. 2003). Chayote is a member of the squash family with a consistency somewhere between a cucumber and a potato. Consumption of vegetables in general leads the list, followed by avoidance of sweets and fats. See Table 5 for a complete food list. The diabetes food domain was extensive and detailed and could easily be the focus for an entire research project.

Table 5. Pooled free list (protocol 2 and 3): foods that are important for diabetics listed by frequency of mention (n=17).

#	Item	Frequency	%	Avg. Rank	Smith's S
1	Vegetables <i>Verduras</i>	12	71	5.083	0.556
2	No sweets <i>No dulces</i>	12	71	10.083	0.453
3	No fat <i>No grasa</i>	10	59	9.6	0.39
4	Apple <i>Manzana</i>	10	59	10.3	0.361
5	Eat frequently <i>Comer frecuentemente</i>	10	59	26	0.038
6	Fish <i>Pescado</i>	9	53	11.889	0.329
7	Chicken <i>Pollo</i>	9	53	12.111	0.324
8	Cereals <i>Cereales</i>	9	53	11.444	0.287
9	Nopal cactus <i>Nopales</i>	9	53	15.889	0.194
10	Meat <i>Carne</i>	8	47	14.125	0.222
11	No carbonated drinks <i>No refrescos</i>	8	47	14.625	0.195

12	Fruits low in sugar <i>Frutas sin dulce</i>	8	47	5.625	0.383
13	Lettuce/salads <i>Lechuga/ensaladas</i>	7	41	10.143	0.26
14	Whole fruits <i>Frutas enteral</i>	7	41	16.857	0.161
15	Papaya Papaya	7	41	11	0.249
16	Chayote Chayote	7	41	14	0.208
17	No flour <i>No harina</i>	6	35	15.667	0.149
18	Green vegetables <i>Verduras verdes</i>	6	35	13.167	0.146
19	Oatmeal <i>Avena</i>	6	35	11.833	0.195
20	No sweet bread <i>No pan dulce</i>	6	35	20.667	0.109
21	Fiber <i>Fibra</i>	5	29	6.2	0.215
22	No alcohol No alcohol	5	29	20.4	0.039
23	Oranges <i>Naranja</i>	5	29	12.2	0.162
24	Banana <i>Plátano</i>	5	29	11	0.153
25	No carrot <i>No zanahoria</i>	5	29	13.8	0.155
26	No cakes/pastries <i>No pasteles</i>	5	29	20.6	0.094
27	Squash/zucchini <i>Calabaza</i>	5	29	12.4	0.167
28	Sugar substitutes <i>Sustitos</i>	5	29	6	0.233
29	No potato <i>No papa</i>	5	29	20.2	0.107
30	No beet <i>No betabel</i>	4	24	13.75	0.122
31	Whole wheat bread <i>Pan integral</i>	4	24	9.5	0.17
32	No salt <i>No sal</i>	4	24	10.5	0.13
33	Low carbohydrates <i>Bajos carbohidratos</i>	4	24	5.25	0.172
34	Carrot <i>Zanahoria</i>	4	24	11.25	0.124

35	No bread <i>No pan</i>	4	24	18.75	0.087
36	Spinach <i>Espinaca</i>	3	18	12.667	0.084
37	Eat at the proper time <i>Comer a sus horas</i>	3	18	24.333	0.013
38	Pureed fruits and vegetables <i>licuados</i>	3	18	8.667	0.13
39	Low fat milk <i>Leche light</i>	3	18	8	0.134
40	Cantaloupe <i>Melon</i>	3	18	6.333	0.125
41	Fruits <i>Frutas</i>	3	18	14	0.109
42	Water <i>Agua</i>	3	18	4	0.156
43	Pear <i>Pera</i>	3	18	11.667	0.092
44	Avoid meat <i>Evitar carne</i>	3	18	19	0.024
45	Light beverages <i>Bebidas light</i>	3	18	4	0.16
46	No processed foods <i>No procesados</i>	3	18	19.667	0.063
47	Celery <i>Apio</i>	3	18	14.333	0.087
48	No junk food <i>No chatarra</i>	3	18	22.667	0.059
49	Broccoli <i>Brocoli</i>	3	18	14.667	0.078
50	Corn flakes <i>Cornflakes</i>	2	12	14.5	0.058
51	Eat an appropriate amount <i>Cantidades apropiado</i>	2	12	7.5	0.093
52	Pineapple <i>Piña</i>	2	12	19.5	0.024
53	Cauliflower <i>Coliflor</i>	2	12	15.5	0.048
54	Cheese <i>Queso</i>	2	12	25.5	0.035
55	No grapes <i>No uvas</i>	2	12	9.5	0.066
56	No cookies <i>No galletas</i>	2	12	24.5	0.02
57	Cucumber <i>Pepino</i>	2	12	9	0.085

58	No honey <i>No miel</i>	2	12	7.5	0.084
59	Broth <i>Caldos</i>	2	12	11.5	0.035
60	Soft cheese <i>Panela</i>	2	12	18	0.06
61	Raw vegetables <i>Verduras crudas</i>	2	12	21	0.044
62	Eat natural <i>Comer natural</i>	2	12	2	0.113
63	Egg <i>Huevo</i>	2	12	13	0.076
64	Jicama <i>Jicama</i>	2	12	8	0.083
65	No tortillas <i>No tortilla</i>	2	12	8	0.064
66	No juice <i>No jugo</i>	2	12	15	0.051
67	No bananas <i>No plátano</i>	2	12	24	0.026
68	Beans <i>Frijoles</i>	2	12	10	0.047
69	Chard <i>Acelgas</i>	2	12	15.5	0.058
70	Protein <i>Proteína</i>	2	12	5	0.102
71	Green juice <i>Jugo verde</i>	2	12	4.5	0.105
72	No starches <i>No almidones</i>	2	12	12.5	0.077
73	Wheat <i>Trigo</i>	2	12	12.5	0.071
74	No beer <i>No cerveza</i>	2	12	17.5	0.02
75	Eat lightly <i>Comer ligera</i>	2	12	25	0.005
76	String beans <i>Ejotes</i>	2	12	20	0.046
77	No jams/jelly/marmalades <i>No marmellada</i>	2	12	13.5	0.057
78	Figs <i>Higos</i>	1	6	9	0.029
79	No fried foods <i>No frituras</i>	1	6	23	0.003
80	No syrup <i>No jarabe</i>	1	6	13	0.031

81	Kiwi <i>Kiwi</i>	1	6	11	0.042
82	Mango <i>Mango</i>	1	6	6	0.039
83	Types of seeds <i>Tipos de semillas</i>	1	6	11	0.02
84	Radish <i>Rábanos</i>	1	6	9	0.034
85	Lime <i>Lima</i>	1	6	17	0.021
86	No lactose <i>No lactosa</i>	1	6	30	0.01
87	No oil <i>No aceite</i>	1	6	32	0.007
88	No squash/zucchini <i>No calabaza</i>	1	6	12	0.025
89	Whatever the doctor says <i>Que mande el médico</i>	1	6	1	0.059
90	Without chemicals <i>Sin químicos</i>	1	6	5	0.043
91	Little butter <i>Bajo mantequilla</i>	1	6	6	0.047
92	Tubers <i>Tuberculos</i>	1	6	8	0.037
93	Yogurt <i>Yoghurt</i>	1	6	8	0.042
94	Combine nutrients <i>Combinar los alimentos</i>	1	6	3	0.054
95	Lentils <i>Lentejos</i>	1	6	3	0.055
96	Aloe vera <i>Sabila</i>	1	6	16	0.004
97	Nutri-grain bars <i>Nutri-grain</i>	1	6	8	0.029
98	Soy <i>Soya</i>	1	6	9	0.025
99	Strawberry <i>Fresas</i>	1	6	14	0.028
100	Tuna <i>Atún</i>	1	6	20	0.027
101	Fresh cheese <i>Queso fresco</i>	1	6	11	0.042
102	Cilantro <i>Cilantro</i>	1	6	18	0.019
103	Cottage cheese <i>Requesón</i>	1	6	13	0.039

104	All-bran cereal <i>All-bran</i>	1	6	20	0.014
105	Watercress <i>Berros</i>	1	6	22	0.025
106	No fruit flavored caramel spreads <i>No cajetas de frutas</i>	1	6	24	0.005
107	Milk <i>Leche</i>	1	6	27	0.016
108	No chocolates No chocolates	1	6	2	0.056
109	No chocolate with fruit puree <i>No chocolate licuado</i>	1	6	31	0.01
110	Gelatin <i>Gelatina</i>	1	6	36	0.002
111	Guayaba fruit <i>Guayaba</i>	1	6	7	0.045
112	Rice <i>Arroz</i>	1	6	14	0.029
113	No yogurt <i>No yoghurt</i>	1	6	17	0.023
114	No milk <i>No leche</i>	1	6	18	0.02
115	No cheese <i>No queso</i>	1	6	19	0.018
116	No butter <i>No mantequilla</i>	1	6	20	0.016
117	Watermelon <i>Sandia</i>	1	6	8	0.031
118	Low calorie <i>Bajo calorías</i>	1	6	5	0.049
119	Avocado <i>Aguacate</i>	1	6	14	0.027
120	Balanced <i>Balanceado</i>	1	6	21	0.01
121	Vitamins <i>Vitaminas</i>	1	6	22	0.007
122	Iron <i>Hierro</i>	1	6	5	0.048
123	Corn <i>Maiz</i>	1	6	10	0.034
124	White meat <i>Carne blanco</i>	1	6	12	0.028
125	No watermelon <i>No sandia</i>	1	6	15	0.02
126	Mandarin oranges <i>Mandarina</i>	1	6	11	0.042

127	Seasonal fruits <i>Frutas temporadas</i>	1	6	12	0.04
128	Peas <i>Chicharos</i>	1	6	17	0.031
129	Tomato <i>Jitomate</i>	1	6	8	0.042
130	No flan No flan	1	6	30	0.009
131	Natural drinks <i>Bebidas naturales</i>	1	6	4	0.053
132	No pork <i>No puerco</i>	1	6	7	0.047
133	No pazole <i>No pozole</i>	1	6	24	0.012
134	No seafood <i>No mariscos</i>	1	6	25	0.01
135	No broth <i>No caldo</i>	1	6	26	0.008

List of Diabetic Activities

The activities list was much shorter than foods, though it represents an important aspect of treatment. In general there was a great deal of discussion about how often one should exercise and for what duration. Over the year preceding the investigation the federal government had been promoting an anti-obesity campaign that included the message to exercise at least thirty minutes each day. Walking was the preferred means of exercise, though sports like soccer and swimming were also popular responses. A few informants strongly endorsed bicycling. Some informants stated that circulating the blood was the key function of exercising, while others stuck to the idea of keeping oneself occupied. One other interesting addition to this list is sleep as a necessary activity. See Table 6 for a complete activity list.

Table 6. Pooled free list (protocol 2 and 3): activities which diabetics should engage in listed by frequency of mention (n=17).

#	Item	Frequency	%	Avg. rank	Smith's S
1	Daily activity <i>Actividades diario</i>	17	100	4.941	0.321
2	Walk <i>Caminar</i>	15	88	1.933	0.742
3	Do 30 minutes of activity <i>30 minutos</i>	11	65	4.818	0.211
4	Exercise <i>Ejercicio</i>	8	47	1.375	0.436
5	Do 60 minutes of activity <i>60 minutos</i>	4	24	4.5	0.07
6	Do 20 minutes of activity <i>20 minutos</i>	3	18	4	0.082
7	Gym <i>Gimnasio</i>	3	18	4	0.097
8	Yoga <i>Yoga</i>	3	18	2.667	0.134
9	Cardiovascular exercises <i>Ejercicios cardiovasculares</i>	2	12	2.5	0.091
10	At least three times per week <i>Por lo menos 3 veces por semana</i>	2	12	5.5	0.022
11	Do 15 minutes of activity <i>15 minutos</i>	2	12	6.5	0.027
12	Swim <i>Nadar</i>	2	12	4	0.061
13	Run <i>Correr</i>	2	12	2	0.098
14	Be active <i>Ser activo</i>	2	12	1.5	0.103
15	Sports <i>Deportes</i>	2	12	3	0.084
16	Aerobics <i>Aerobics</i>	2	12	2	0.091
17	Sleep well <i>Dormir bien</i>	2	12	2	0.097
18	Exercise for tone <i>Ejercicios para tonificar</i>	1	6	5	0.029
19	Body <i>Corporal</i>	1	6	1	0.059
20	Exercise for flexibility <i>Ejercicio para flexibilidad</i>	1	6	3	0.044
21	Leg exercises <i>Ejercicios de piernas</i>	1	6	2	0.051

22	Arms <i>Los brazos</i>	1	6	4	0.037
23	Social activities <i>Actividades social</i>	1	6	2	0.05
24	Pilates Pilates	1	6	5	0.025
25	Do 10 minutes of activity <i>10 minutos</i>	1	6	7	0.015
26	Work <i>Trabajo</i>	1	6	2	0.047
27	Jog <i>Trotar</i>	1	6	5	0.029
28	Bicycle <i>Bicicleta</i>	1	6	3	0.042
29	Laborious activities <i>Actividades laboral</i>	1	6	1	0.059
30	Dance <i>Bailar</i>	1	6	3	0.039
31	In the morning <i>En la mañana</i>	1	6	4	0.029

List of Clinical Concerns

Within the list of clinical concerns, one can spot the paternal nature of Mexican biomedicine (Finkler 2001). For example, it can be seen in the high frequency of mention for following instructions very closely. Communication with the doctor is also highly valued, as is development of a long and trusting relationship. Participants seem to lack particular knowledge about what exactly the clinic does to assist in diabetes treatment. The responses are limited to obtaining knowledge of one's condition through examinations and tests, and the prescription of medications. See Table 7 for a complete list of clinical concerns.

Table 7. Pooled free list (protocol 2 and 3): relationship with doctor and the benefits of clinical visits listed by frequency of mention (n=17).

#	Item	Frequency	%	Avg. Rank	Smith's S
1	Follow instructions <i>Seguir instrucciones</i>	7	41	5.143	0.188
2	Very good relationship <i>Muy buen relación</i>	6	35	1.5	0.304
3	Visit monthly <i>Visitar mensual</i>	5	29	1	0.294
4	Long-lasting relationship <i>Relación continuo</i>	5	29	1.6	0.243
5	Check your blood <i>Checar sangre</i>	5	29	3	0.215
6	Communication <i>Comunicación</i>	4	24	2	0.18
7	Trust/confidence <i>Confianza</i>	4	24	2.5	0.143
8	For the family <i>Por la familia</i>	2	12	8	0.02
9	For quality of life <i>Por calidad de vida</i>	2	12	8	0.02
10	To see your blood sugar level <i>Ver nivel de glucosa</i>	2	12	3.5	0.085
11	How one feels <i>Como se siente</i>	2	12	4	0.065
12	Visit every 2-3 months <i>Visitar cada 2-3 meses</i>	2	12	1.5	0.112
13	Well-being <i>Bienstar</i>	2	12	7	0.034
14	Check blood pressure <i>Checar presión</i>	2	12	3	0.092
15	Check heart <i>Checar corazón</i>	1	6	5	0.033
16	Study <i>Estudio</i>	1	6	5	0.033
17	Follow down to the letter <i>Seguir al pie de letra</i>	1	6	7	0.02
18	Allergies or adverse reactions <i>Alegáis o reacciones adversas</i>	1	6	9	0.007
19	Longer life <i>Largar la vida</i>	1	6	9	0.007
20	To avoid a coma <i>Para evitar un coma</i>	1	6	10	0.006

21	To orient oneself <i>Orientarle</i>	1	6	2	0.051
22	Degenerative <i>Degenerativo</i>	1	6	5	0.029
23	Silence <i>Silencio</i>	1	6	6	0.022
24	Tests <i>Exámenes</i>	1	6	2	0.05
25	Address doubts <i>Cuidar dudas</i>	1	6	3	0.042
26	See how grave <i>Ver grave</i>	1	6	4	0.034
27	If one urinates too much <i>Si tirando muchos líquidos</i>	1	6	5	0.035
28	See about fatigue <i>Ver cansancio</i>	1	6	6	0.029
29	Tracing nutrition <i>Seguimiento alimentación</i>	1	6	3	0.035
30	Tracing activities <i>Seguimiento actividades</i>	1	6	4	0.024
31	Explain things clearly <i>Explicar cosas con claridad</i>	1	6	5	0.012
32	Check lungs <i>Checar los pulmonos</i>	1	6	4	0.039
33	Trust/confidence in the family <i>Confianza con familiares</i>	1	6	2	0.029
34	Take medicine <i>Tomar medicina</i>	1	6	2	0.029
35	Have criteria <i>Tener criterio</i>	1	6	8	0.013
36	Be aware of your limitations <i>Consciente de sus limitaciones</i>	1	6	3	0.02
37	Take control of progress <i>Lleva control del progreso</i>	1	6	3	0.029
38	Check <i>Checar</i>	1	6	4	0.015
39	Be systematic <i>Sistemática</i>	1	6	2	0.047
40	Avoid self-medicating <i>Evitar auto medicarse</i>	1	6	5	0.012
41	When one has high sugar <i>Que se sube el azúcar</i>	1	6	3	0.02
42	See the nutritionist frequently <i>Ver nutriólogo freq</i>	1	6	1	0.059
43	To love your job and community <i>Que ame la profesión y al prójimo</i>	1	6	3	0.02

44	Know to change medicines <i>Saber de cambiar medicamento</i>	1	6	3	0.02
45	Allopathic doctors treat people badly <i>Médicos alópatas trataron mal</i>	1	6	1	0.059
46	Knowledge of the patient <i>Conocimiento de la paciente</i>	1	6	4	0.015

List of Blood Sugar Monitoring Activities

In addition to the clinical concerns, checking one's blood sugar appeared to be a special case. It was mentioned by many participants in the general listing exercise, but there was little elaboration or understanding of the purpose for checking sugar, especially on the part of the researcher. A probing question was added to the free-list protocol but yielded few immediately meaningful results. In general participants thought that sugar should be checked monthly in the clinic. Diabetic informants who self-reported poor control mentioned blood testing on a daily basis.

The list below (Table 8) contains a number of terms that suggest that more frequent monitoring is associated with increased symptoms. For example, if one urinates a lot, then one should check their blood sugar (in order to know the severity of one's disease). Many of the statements represent a goal level of glucose control. However, informants had little idea of how to interpret the number, other than to comment that their doctor thinks they should be at this or that level. From an etic, medical perspective, checking blood sugar means monitoring control. From an emic perspective, it is a measure of severity. Since diabetics often do not feel bad from their disease, such a measure can be useful in determining self-treatment behaviors. Complicating this position is that bio-numeric fluency is not widespread. Numbers are only nominally applicable with categories like high blood sugar, higher than desirable blood sugar, and normal range (Hatcher and Whittemeore 2007).

Table 8. Pooled free list (protocol 2 and 3): checking blood sugar and other self-monitoring behaviors listed by frequency of mention (n=17).

#	Item	Frequency	%	Avg. Rank	Smith's S
1	Take medicines <i>Tomar medicamentos</i>	9	53	3.778	0.207
2	Check daily <i>Checar diario</i>	7	41	1	0.412
3	Check monthly <i>Checar mensual</i>	5	29	1	0.294
4	Controlled diet <i>Controlar dieta</i>	4	24	4.25	0.101
5	Check every 3 days <i>Checar cada 3 dias</i>	4	24	1.25	0.221
6	Visit the doctor <i>Visitar médico</i>	4	24	4	0.077
7	Greater than 90 <i>Mas de 90</i>	4	24	2.75	0.137
8	Know the level <i>Saber nivel</i>	3	18	3.667	0.087
9	Less than 120 <i>Menos de 120</i>	3	18	3	0.108
10	Check if blood sugar is high <i>Checar si esta alto</i>	2	12	3	0.069
11	Check in the morning <i>Checar mañana</i>	2	12	3	0.081
12	Rest <i>Descansar</i>	2	12	5.5	0.029
13	Check weekly <i>Checar semanal</i>	2	12	1.5	0.108
14	Maintain control <i>Mantener control</i>	1	6	4	0.029
15	Check when you urinate a lot <i>Checar cuando orinar mucho</i>	1	6	2	0.049
16	Check when you are tired <i>Checar cuando muy cansado</i>	1	6	3	0.039
17	Check at night <i>Checar noche</i>	1	6	4	0.034
18	Diet is more important than medicines <i>Dieta es más importante que medicinas</i>	1	6	7	0.008
19	Be disciplined <i>Ser disciplinado</i>	1	6	6	0.01
20	Check while fasting <i>Checar ayunos</i>	1	6	3	0.029
21	Drink water <i>Tomar agua</i>	1	6	2	0.029

22	Consult a physician <i>Consultar médico</i>	1	6	2	0.044
23	Have an exam every three months <i>Hacer examen cada 3 meses</i>	1	6	2	0.044
24	Exercise <i>Ejercicio</i>	1	6	3	0.029
25	One can never know exactly <i>Nunca ha sabido con exactitud</i>	1	6	2	0.044
26	Less than 110 <i>Menos de 110</i>	1	6	3	0.029
27	To be in a comfortable environment <i>Estar ambiente cómodo</i>	1	6	4	0.024
28	Be tranquil <i>Estar tranquila</i>	1	6	5	0.012
29	Check three times daily <i>Checar 3 veces por día</i>	1	6	2	0.044
30	More than 110 <i>Mas de 110</i>	1	6	1	0.059
31	Less than 114 <i>Menos de 114</i>	1	6	2	0.047
32	Go to the hospital <i>Ir al hospital</i>	1	6	5	0.012
33	No food <i>No comer</i>	1	6	5	0.02
34	Check at different times <i>Checar en momentos diferentes</i>	1	6	2	0.05
35	More than 95 <i>Mas de 95</i>	1	6	2	0.049
36	Rigorous diet <i>Dieta rigurosa</i>	1	6	6	0.01

Searching for Information List

Initial participants mentioned the need to look for information, but there was little idea of what kind of information should be sought, only the general notion to learn more. There was general agreement that information should come from the government sponsored health sector, meaning the biomedical sciences, again demonstrating the power of the medical sector in society. Several participants, along with several informal informants, mentioned the need to

provide better health education in schools especially regarding obesity and diabetes. See Table 9 for a complete list of informational concerns.

The most important aspect of the searching for information list is its connection with blood glucose monitoring. Glucose monitoring is a measure of severity that may require action from informants in the form of treatment. In a subtle way, informants seem to be saying that one must seek out culturally approved sources of information, and follow their instructions. Since they will be doing this as a function of the severity of their illness, illness becomes a culturally centripetal force.

Table 9. Free list (protocol 3): types of information and information sources for diabetics listed by frequency of mention (n=6).

#	Item	Frequency	%	Avg. rank	Smith's S
1	From doctors <i>De médicos</i>	3	50	3.333	0.236
2	From health centers <i>De los centros de salud</i>	2	33	5.5	0.076
3	From the federal government <i>De gobierno federal</i>	2	33	4.5	0.131
4	From the health sector <i>De sector salud</i>	2	33	4	0.146
5	About food <i>Sobre comidas</i>	2	33	1	0.333
6	Federal social security system <i>De IMSS</i>	2	33	6	0.097
7	About diabetes <i>Sobre diabetes</i>	2	33	1	0.333
8	In school <i>En la escuela</i>	2	33	5.5	0.107
9	To show emotion <i>Trípticos para que muestran afecto</i>	1	17	2	0.146
10	From the National Agency for Child Development <i>De DIF</i>	1	17	5	0.083
11	The federal workers health system <i>De ISSTE</i>	1	17	6	0.063
12	From family members <i>De familiares</i>	1	17	3	0.125
13	From the media <i>De medias</i>	1	17	1	0.167

14	About children and diabetes <i>Sobre niños y diabetes</i>	1	17	3	0.111
15	How to lose weight <i>Como bajar peso</i>	1	17	2	0.139
16	About the harm/pain <i>Sobre los danos</i>	1	17	2	0.143
17	About degeneration <i>Sobre los deterioraciones</i>	1	17	3	0.119
18	To frighten them <i>Asustarlos</i>	1	17	4	0.095
19	About prevention <i>Sobre prevenir</i>	1	17	5	0.071
20	About checking blood <i>Sobre checar sangre</i>	1	17	1	0.167
21	About sensible exercise <i>Sobre ejercicios sencillas</i>	1	17	2	0.111

Emotions and Behaviors List

The emotions and behaviors list proved to be interesting. Anger, fear, and other strong emotions, along with stress and worry were listed early and often. Questions were designed to probe these areas to get at what, in particular, people could do to manage or treat these problems. The answer seems to involve resting well and keeping mentally and physically busy, though those things can take a number of concrete forms. See Table 10 for a complete list of psychological-emotional-behavioral items.

Table 10. Pooled free list (protocol 2 and 3): emotional and behavioral contributions to treatment listed by frequency of mention (n=17).

#	Item	Frequency	%	Avg. rank	Smith's S
1	No anger <i>No corajes</i>	6	35	5.5	0.151
2	No stress <i>No estrés</i>	6	35	2.5	0.296
3	No worry <i>No preocuparse</i>	5	29	5.2	0.12
4	Exercise <i>Ejercicio</i>	5	29	3.6	0.204
5	No depression <i>No depresión</i>	5	29	7.2	0.07

6	Seep well <i>Dormir bien</i>	5	29	3.8	0.197
7	No strong emotions <i>No emociones fuertes</i>	4	24	6.75	0.044
8	Busy life <i>Vida laboral</i>	4	24	2.5	0.182
9	Forget problems <i>Olvidar problemas</i>	4	24	2	0.207
10	Avoid extremes <i>Evitar extremos</i>	3	18	6.333	0.059
11	No negativity <i>No negatividad</i>	3	18	6.333	0.051
12	Have friends <i>Tener amigos</i>	3	18	4.333	0.108
13	Mental equilibrium <i>Equilibrio mental</i>	2	12	7	0.051
14	Eat well <i>Comer bien</i>	2	12	6	0.063
15	Emotional stability <i>Estabilidad emocional</i>	2	12	9.5	0.023
16	Be calm <i>Ser tranquilo</i>	2	12	2.5	0.069
17	Keep busy <i>Mantenerse ocupado</i>	2	12	3	0.082
18	No frights <i>No susto</i>	2	12	8.5	0.014
19	No sadness <i>No tristeza</i>	2	12	5.5	0.059
20	No bad news <i>No noticias malas</i>	2	12	5	0.052
21	Work <i>Trabajo</i>	2	12	2.5	0.091
22	Stable life <i>Vida estable</i>	2	12	3.5	0.087
23	Chat <i>Platicar</i>	2	12	4	0.069
24	God <i>Dios</i>	2	12	1.5	0.11
25	Go out with neighbors <i>Salir con vecinos</i>	1	6	3	0.044
26	Pay attention <i>Tener atención</i>	1	6	3	0.046
27	Have feeling <i>Tener afecto</i>	1	6	7	0.015
28	Change habits <i>Cambiando hábitos</i>	1	6	2	0.051

29	Be helpful <i>Dar ayuda</i>	1	6	9	0.007
30	Be cooperative <i>Ser cooperativa</i>	1	6	6	0.026
31	Natural life <i>Vida naturaleza</i>	1	6	5	0.033
32	Don't be indifferent about the disease <i>No tener indiferencia por la enfermedad</i>	1	6	6	0.026
33	Do not be self-destructive <i>No ser auto-destructivo</i>	1	6	7	0.02
34	Avoid drama <i>Evitar drama</i>	1	6	8	0.013
35	Check oneself <i>Chearse</i>	1	6	1	0.059
36	Relax <i>Relajarse</i>	1	6	2	0.039
37	Be available <i>Ser disponibilidad</i>	1	6	7	0.02
38	Finacial solvency <i>Solvencia</i>	1	6	2	0.049
39	No drugs <i>No drogas</i>	1	6	4	0.039
40	Think of the present <i>Pensar de presente</i>	1	6	2	0.053
41	Family life <i>Vida familiar</i>	1	6	3	0.047
42	Clean activity <i>Actividad sana</i>	1	6	6	0.029
43	Careful with entertainment <i>Cuidar con diversiones</i>	1	6	5	0.037
44	Careful with work <i>Cuidar con trabajo</i>	1	6	6	0.032
45	Rest your body <i>Descansa el cuerpo</i>	1	6	7	0.027
46	Rest your mind <i>Descansa la mente</i>	1	6	8	0.021
47	Anger raises sugar <i>Corajes aumentar azúcar</i>	1	6	8	0.007
48	Have good work <i>Tener buen trabajar</i>	1	6	3	0.039
49	Have love <i>Tener amor</i>	1	6	1	0.059
50	Take care <i>Tener cuidado</i>	1	6	2	0.052
51	Fear <i>Temor</i>	1	6	5	0.02

52	Believe that someone is interested <i>Sienten que alguien tener interés</i>	1	6	4	0.039
53	Understand the sickness <i>Entender la enfermedad</i>	1	6	1	0.059
54	Care with nutrition <i>Cuidar alimentación</i>	1	6	4	0.041
55	Life force <i>Estado de animo</i>	1	6	5	0.035
56	Be accepting <i>Ser de aceptar</i>	1	6	8	0.013
57	Do not lose interest in activity <i>No desinterés en actividad</i>	1	6	10	0.006
58	Attitude that one can beat this <i>Actitud de vencer eso</i>	1	6	1	0.059
59	Avoid too much desire to be well <i>Evitar demasiado deseo de estar bien</i>	1	6	2	0.051
60	Do not get mad <i>No enojo</i>	1	6	3	0.044
61	Do not be lonely <i>No soledad</i>	1	6	7	0.015
62	Follow treatment <i>Seguir tratamiento</i>	1	6	1	0.059
63	Be good to family <i>Estar bien con familiares</i>	1	6	2	0.05
64	Get up early <i>Levantarse temprano</i>	1	6	5	0.025
65	Do not be disgusted <i>No disgusto</i>	1	6	6	0.017
66	Peace <i>Paz</i>	1	6	3	0.039
67	Entertainment <i>Diversión</i>	1	6	3	0.047
68	Go to the movies <i>Ir al cine</i>	1	6	4	0.041
69	Try to distract oneself <i>Tratar de distraerte</i>	1	6	5	0.035
70	No fighting <i>No pelear</i>	1	6	9	0.012
71	Do not have problems <i>No tener problemas</i>	1	6	1	0.059
72	Psychological help <i>Ayuda psicológica</i>	1	6	3	0.044
73	Get out of the house <i>Desahogarse</i>	1	6	5	0.029
74	No surprises <i>No sorpresas</i>	1	6	7	0.015

75	Homeopathic medicines <i>Medicamentos homeopáticos</i>	1	6	1	0.059
76	Death in the family <i>Muertes de familiares</i>	1	6	4	0.029

List of Family Aspects of Treatment

For the list of family contributions to diabetes treatment, dietary support appeared to be the most popular item. Additionally many of the items mentioned with less frequency covered other aspects of social supports provided by the family, so that family support was the leading aspect of the free list. Friends were mentioned along with family as sources of support, but clearly were less important than family in the basic support pattern. Previous literature on diabetes had also suggested that family would play a large role in motivation for treatment, which was supported by the motivation results. Health for the sake of health was also a prominent motivational theme. See Table 11 for a complete list of family contributions and Table 12 for a list of motivational items.

Table 11. Pooled free list (protocol 2 and 3): family contributions to treatment listed by frequency of mention (n=17).

#	Item	Frequency	%	Avg. rank	Smith's S
1	Support with diet <i>Apoyo con dieta</i>	10	59	2.8	0.321
2	Material support <i>Apoyo materiales</i>	4	24	2.25	0.137
3	Moral support <i>Apoyo moralmente</i>	3	18	3.333	0.111
4	No temptations <i>No tentaciones</i>	3	18	3	0.108
5	Support with changing habits <i>Apoyo cambiar hábitos</i>	3	18	2	0.147
6	Consult physician <i>Consultar médico</i>	3	18	2.333	0.098
7	Medical support <i>Apoyo medicinal</i>	2	12	2	0.078
8	Physical support <i>Apoyo física</i>	2	12	3.5	0.054

9	Increase life force <i>Llevar estado de animo</i>	2	12	4.5	0.049
10	Mental support <i>Apoyo mental</i>	2	12	2	0.098
11	Emotional support <i>Apoyo emocional</i>	2	12	4.5	0.053
12	Help to be happy <i>Ayudar ser alegre</i>	1	6	2	0.044
13	Supply an agreeable environment <i>Dar un ambiente agradable</i>	1	6	1	0.059
14	Sports <i>Deportes</i>	1	6	4	0.029
15	To be nettled/ kept in line <i>Estar ortigando</i>	1	6	2	0.029
16	Family therapy <i>Terapia familiar</i>	1	6	2	0.049
17	Harmonious family life <i>Vida familiar harmonia</i>	1	6	1	0.059
18	Humor Humor	1	6	5	0.02
19	To see if you feel well <i>Procurar si sienta bien</i>	1	6	1	0.059
20	To feel sad for the person <i>Dar lastima por la persona</i>	1	6	3	0.039
21	Do activities <i>Realizar actividades</i>	1	6	2	0.049
22	Understand the diabetic <i>Entender a diabetico</i>	1	6	1	0.059
23	What happens with the diabetic <i>Que la pasa a diabetico</i>	1	6	2	0.05
24	Help <i>Ayudar</i>	1	6	5	0.025
25	See it without compromise <i>Verlo con no compromiso</i>	1	6	7	0.008
26	To break news gently <i>Darmela suave</i>	1	6	1	0.059
27	No arguing <i>No discutir</i>	1	6	2	0.039
28	Have information <i>Tener información</i>	1	6	1	0.059
29	Have awareness <i>Tener conciencia</i>	1	6	2	0.039
30	Cooperate <i>Cooperar</i>	1	6	3	0.02
31	Be aware <i>Estar al pendiente</i>	1	6	1	0.059

32	Do not provoke anger <i>No provocar corajes</i>	1	6	2	0.039
33	Do not cause problems <i>No dar problemas</i>	1	6	1	0.059

Table 12. Pooled free list (protocol 2 and 3): motivations to complete treatment listed by frequency of mention (n=17).

#	Item	Frequency	%	Avg. rank	Smith's S
1	Family <i>Familia</i>	7	64	2.143	0.453
2	Feel well <i>Sentir bien</i>	6	55	2	0.412
3	Friends <i>Amigos</i>	2	18	3.5	0.082
4	Stick to treatment <i>Apego por tratamiento</i>	2	18	3	0.083
5	Love yourself <i>Amor propio</i>	2	18	3	0.091
6	Calm/tranquil <i>Tranquila</i>	2	18	1.5	0.164
7	Life's expectations <i>Expectativa de vida</i>	1	9	3	0.045
8	Improve your character <i>Mejorar su carácter</i>	1	9	4	0.023
9	Attitude <i>Actitud</i>	1	9	2	0.061
10	Prevention <i>Prevención</i>	1	9	3	0.03
11	If treatment is helping <i>Si tratamiento esta ayudando</i>	1	9	2	0.068
12	Busy mind <i>Mente ocupado</i>	1	9	3	0.045
13	Get results <i>Tener resultado</i>	1	9	4	0.023
14	Quality of life <i>Calidad de vida</i>	1	9	2	0.068
15	Do not be alone <i>No estar solo</i>	1	9	5	0.018
16	Exercise <i>Ejercicio</i>	1	9	1	0.091
17	Sleep well <i>Dormir bien</i>	1	9	2	0.061
18	Get up early <i>Levantarse temprano</i>	1	9	3	0.03

19	Love <i>Amor</i>	1	9	1	0.091
20	Want to live <i>Quierer vivir</i>	1	9	1	0.091
21	Love life <i>Amor a la vida</i>	1	9	2	0.061
22	Be well <i>Estar bien</i>	1	9	1	0.091
23	Children <i>Hijos</i>	1	9	3	0.055
24	Grandchildren <i>Nietos</i>	1	9	4	0.036

List of Treatment Obstacles

The final list addressed obstacles to treatment. Tempting foods were listed most frequently, followed by lack of time and financial resources. Lifestyle habits of friends and family, along with issues of family unity, were also commonly mentioned. Physical health such as the ability to walk was mentioned as an obstacle to exercise. Finally, a common theme was a lack of desire to change and/or a dislike for the treatment regimen. See Table 13 for a complete list of treatment obstacles.

Table 13. Free list (protocol 3): obstacles to treatment listed by frequency of mention (n=11).

#	Item	Frequency	%	Avg. rank	Smith's S
1	Tempting food <i>Tentaciones de comida</i>	9	82	4.889	0.496
2	No time <i>No tiempo</i>	5	45	3.8	0.229
3	The family <i>La familia</i>	4	36	6.75	0.191
4	Friend's habits <i>Habitos de amigos</i>	3	27	9.667	0.098
5	Economy/budget <i>Economía</i>	3	27	3.333	0.202
6	No money <i>No dinero</i>	3	27	1.667	0.247
7	Life force <i>Estado de animo</i>	3	27	5	0.159

8	Work <i>Trabajo</i>	3	27	4	0.165
9	Family habits <i>Habitos familiar</i>	3	27	8.667	0.12
10	State of health <i>Estado de salud</i>	3	27	4.333	0.161
11	Do not like it <i>No le gusta</i>	3	27	1.333	0.242
12	Snacks/cravings <i>Antojos</i>	2	18	1.5	0.176
13	Social gatherings <i>Reuniones</i>	2	18	12	0.042
14	Go out on the town <i>Salir para diversiones</i>	2	18	9	0.085
15	Sedentarianism <i>Sedentarismo</i>	2	18	6.5	0.076
16	Ignorance <i>Ignorancia</i>	2	18	7.5	0.042
17	Lack of information <i>Falta de información</i>	2	18	5.5	0.095
18	Temptations <i>Tentación</i>	2	18	1	0.182
19	Physical limitations <i>Limitaciones físicas</i>	2	18	4.5	0.121
20	Cannot make an effort <i>No poder por esfuerzo</i>	1	9	10	0.043
21	Skin problems <i>Problemas de piel</i>	1	9	6	0.064
22	Blood pressure <i>Presión arterial</i>	1	9	5	0.07
23	Fatigue <i>Cansancio</i>	1	9	9	0.048
24	Can not eat <i>No pude comer</i>	1	9	1	0.091
25	Bad habits <i>Malos habitos</i>	1	9	3	0.068
26	Parties <i>Fiestas</i>	1	9	12	0.032
27	Culture <i>Cultura</i>	1	9	4	0.057
28	Sugar level <i>Nivel de azúcar</i>	1	9	8	0.053
29	Can not walk <i>No puedan caminar</i>	1	9	5	0.051
30	Processed foods <i>Alimentos procesados</i>	1	9	1	0.091

31	Fried food <i>Frituras</i>	1	9	3	0.08
32	Lack of resource <i>Falta de recursos</i>	1	9	9	0.01
33	Self love <i>Amor propio</i>	1	9	3	0.076
34	Lack of awareness of the gravity <i>Falta de consciencia de gravedad</i>	1	9	4	0.068
35	The media <i>Medias</i>	1	9	8	0.038
36	TV TV	1	9	9	0.03
37	Genetics <i>Geneticas</i>	1	9	12	0.008
38	No family support <i>No apoyo familiar</i>	1	9	4	0.066
39	No family around <i>Famila no rodean</i>	1	9	5	0.058
40	No interest in food/nutrition <i>No interés en alimentación</i>	1	9	7	0.041
41	Never had a cultura of activity <i>Nunca tuvo la cultura de actividad</i>	1	9	8	0.033
42	Loose/idle <i>Flojera</i>	1	9	9	0.025
43	Do not have the custom <i>No tener costumbre</i>	1	9	11	0.008
44	Going where there are things one should not eat <i>Donde esta cosas no debe comer</i>	1	9	15	0.016
45	Reactions <i>Reacciones</i>	1	9	4	0.052
46	Fits of anger <i>Corajes</i>	1	9	5	0.039
47	Pain from medications <i>Dolor desde medicamentos</i>	1	9	7	0.013
48	Fat <i>La gordura</i>	1	9	4	0.023
49	No will power to avoid sweets <i>No poder a evitar dulces</i>	1	9	3	0.073
50	Bad eating habits <i>Malos habitos comidas</i>	1	9	4	0.064
51	Lack of organization <i>Falta de organización</i>	1	9	7	0.036
52	One does not want to adjust <i>No quiere ajustar</i>	1	9	8	0.027

53	Travel/trip <i>Viaje</i>	1	9	3	0.073
54	Stay out too late <i>No tener buen horario</i>	1	9	5	0.055
55	Depression <i>Depresión</i>	1	9	6	0.045
56	Lost love <i>Perdirle el amor</i>	1	9	8	0.027
57	Meaningful life <i>Sentido a la vida</i>	1	9	9	0.018
58	Problems <i>Las problemas</i>	1	9	10	0.009

Cognitive Tasks Part 2: Pile Sorting Methods

The next step in the process was to get a more robust understanding of the structure of the diabetes treatment domain. One way to do this is through pile-sorting tasks. The pile-sort is intended to generate a proximity matrix, which allows a researcher to infer degrees of similarity for sorted items (Borgatti 1996b). The more often two items are sorted together in the same pile, the more similar the items. Reverse is also true, that is dissimilar items will be sorted into different piles

In all, 28 participants were recruited to take part in the pile-sorting tasks. However, not all participants completed all five pile-sorting tasks. During the first 10 interviews, only two tasks were assigned, but five tasks were asked of the remaining 18 informants. In addition, three informants were unable to complete the tasks due to time limits or fatigue. Participant recruitment continued to be guided by the same principles as the free-list exercise, using a three-sector sampling strategy, and included both men and women and a variety of ages. Stratification was not applied systematically. Since medical professionals were not inclined to participate, the sample only included two biomedical professionals and two alternative practitioners. The majority of informants (24) were lay individuals; approximately two-thirds were women.

Demographic information was not recorded. Approximately half of the individuals were interviewed in the public areas surrounding the IMSS clinic, and half were interviewed in other places chosen for each informant's convenience.

In devising the tasks, the free-lists were reviewed and 35 of the most popular items were selected as the "core" of the diabetes treatment model (Table 14). Paring the free-lists down to a manageable level was a challenging task and required several judgment calls. The list was limited to 35 so that it would not be overwhelming for participants. The general free-list was used as a guide, where frequency of mention was used as a measure of importance. In addition, an effort was made to include items from all 10 free-lists, so that the core treatment model included the most important items from each treatment-related area. Phrases were typed on plain white 4"X6" cards in black ink using a large readable font. The cards were then numbered in small print on the reverse side and laminated on each side for durability.

Participants were first asked to sort the cards into piles of similar items, but were otherwise unconstrained. Next, they were asked to rank order the cards in order of importance. For the first task, participants were asked to sort the 35 cards in any order they wished, with the one rule that they could not put everything in a single pile nor could they put all items in individual piles. Once the cards were sorted, informants were asked to explain why they sorted the cards as they did. All unconstrained pile-sorts followed this protocol. Six informants were offered the opportunity to make a second unconstrained sort. None of these participants wanted a second opportunity to sort the cards, so the second unconstrained pile-sort was dropped from the protocol. All 28 participants completed this task.

The second pile-sorting task is a constrained sort. Participants were asked to sort the core set of cards into two piles, one being things beneficial for treatment, and the other things

detrimental to treatment. They were then asked to separate the beneficial stack into two stacks, one being those things most beneficial for treatment and the other being things only somewhat beneficial. They were then asked to perform the same task with the detrimental items. This yielded four ordinal piles. Informants were then asked to rank each individual item in each pile from most important for treatment to least important for treatment. This yielded a complete ranking for each of the 35 items. This task was assigned to the first 18 of participants but only completed by 15. The task was dropped because of obvious signals of frustration and fatigue from participants.

After completing the above task with the 10 initial participants, results suggested that food, emotions, and other behavioral components represented important aspects of the domain structure. In order to address this issue, two additional sets of cards were created (Table 14) and three additional sorting tasks were added to the protocol. The new cards were printed on the same laminated white index cards as the original set. One set of 38 cards was created for foods and was included in one unconstrained pile-sort and one constrained pile-sort. A second set of 25 cards was created for emotions and behaviors and were used in one unconstrained pile-sort.

After completing the original two sorting tasks informants were asked to perform an unconstrained pile-sort with the food cards. This was followed by a constrained food sort. In this task, informants were asked to sort the cards into three piles, one for those things that diabetics should eat, the second for those things diabetics should avoid, and the third for those things that are unimportant for a diabetic diet. This rendered a model of foods and a general ranking of the importance of the foods. These tasks were completed by 17 of the 28 participants.

Table 14. Card sets used for pile-sorting tasks, arranged alphabetically in Spanish.

Set 1: Core Treatment	Set 2: Food	Set 3: Emotions and Behaviors
1. Water <i>Agua</i>	1. Rice <i>Arroz</i>	1. Eat <i>Comer</i>
2. Alcohol <i>Alcohol</i>	2. Tuna <i>Atún</i>	2. Anger <i>Corajes</i>
3. Family Support <i>Apoyo de familiares</i>	3. Oats <i>Avena</i>	3. Depression <i>Depresión</i>
4. Sugar and sweets <i>Azúcar y dulces</i>	4. Beet <i>Betabel</i>	4. Sleep <i>Dormir</i>
5. Search for information <i>Buscar información</i>	5. Squash <i>Calabaza</i>	5. Stress <i>Estrés</i>
6. Healthy diet <i>Buena alimentación</i>	6. Beef <i>Carne de Res</i>	6. Exercise <i>Ejercicio</i>
7. Good communication with your doctor <i>Buena comunicación con su médico</i>	7. Pork <i>Carne de Cerdo/Puerco</i>	7. Mental/Emotional stability <i>Estabilidad de mente/emociones</i>
8. Walking <i>Caminar</i>	8. Onion <i>Cebolla</i>	8. Stable life <i>Estabilidad de vida</i>
9. Cereals <i>Cereales</i>	9. Chayote <i>Chayote</i>	9. Avoid extremes <i>Evitar extremos</i>
10. Check blood sugar regularly <i>Checar glucosa de sangre con regularidad</i>	10. Chilis <i>Chiles</i>	10. Do things <i>Hacer actividades</i>
11. Eat at the proper times <i>Comer a sus horas</i>	11. Cabbage <i>Col</i>	11. Pray <i>Hacer oraciones</i>
12. Trust in your doctor <i>Confianza con su médico</i>	12. Spinach <i>Espinaca</i>	12. Go to the cinema <i>Ir al cine</i>
13. Anger <i>Corajes</i>	13. Beans <i>Frijoles</i>	13. Maintain house/garden <i>Mantener Casa/Jardín</i>
14. Care for your feet <i>Cuidar sus pies</i>	14. Salads/Lettuce <i>Ensaladas/Lechuga</i>	14. Keep busy <i>Mantenerse ocupado</i>
15. Rest <i>Descansar</i>	15. Egg <i>Huevo</i>	15. Negativity <i>Negatividad</i>
16. Money <i>Dinero</i>	16. Tomato <i>Jitomate</i>	16. Forget about problems <i>Olvidar problemas</i>
17. Sleep well <i>Dormir bien</i>	17. Milk <i>Leche</i>	17. Pass time with family <i>Pasarse con familiares</i>
18. Strong emotions <i>Emociones fuertes</i>	18. Lime <i>Lima</i>	18. Chat <i>Platicar</i>

19. Faith in god <i>Fe en Dios</i>	19. Corn <i>Maíz</i>	19. Worry <i>Preocuparse</i>
20. Whole fruits low in sugar <i>Frutas enteras y sin dulce</i>	20. Apple <i>Manzana</i>	20. Fright <i>Sustos</i>
21. Smoking <i>Fumar</i>	21. Melon <i>Melón</i>	21. Have friends <i>Tener amigos</i>
22. Exercise <i>Hacer ejercicio</i>	22. Orange <i>Naranja</i>	22. Work <i>Trabajo</i>
23. Maintain proper blood sugar <i>Mantener nivel de azúcar en sangre correcto</i>	23. Nopal cactus <i>Nopales</i>	23. Sadness <i>Tristeza</i>
24. Maintain proper weight <i>Mantener peso adecuado</i>	24. Potatoes <i>Papas</i>	24. Life of labor <i>Vida laboral</i>
25. Good relation with your doctor <i>Muy buena relación con su médico</i>	25. Papaya <i>Papaya</i>	25. Tranquil life <i>Vida tranquila</i>
26. Visit the doctor <i>Visitar médicos</i>	26. Cucumber <i>Pepino</i>	
27. Chat with friends <i>Platicar con amigos</i>	27. Pear <i>Pera</i>	
28. Play sports <i>Practicar deportes</i>	28. Fish <i>Pescado</i>	
29. Soft drinks/Soda pop <i>Refrescos</i>	29. Pineapple <i>Piña</i>	
30. Fright <i>Sustos</i>	30. Banana <i>Plátano</i>	
31. Take medicine <i>Tomar medicamentos</i>	31. Chicken <i>Pollo</i>	
32. Work <i>Trabajo</i>	32. Cheese <i>Queso/Panela</i>	
33. Enduring relationship with your doctor <i>Una relación continua con su médico</i>	33. Radish <i>Rábano</i>	
34. Family unity <i>Unidad familiar</i>	34. Watermelon <i>Sandia</i>	
35. Vegetables <i>Verduras</i>	35. Tortilla	

	36. Wheat <i>Trigo</i>	
	37. Grapes <i>Uvas</i>	
	38. Carrot <i>Zanahoria</i>	

Immediately after completing the food sorting tasks the third set of cards (emotions and behaviors) was presented. Participants were asked to complete an unconstrained pile-sort with the cards, including at least two piles and fewer than 25. This task was completed by 17 of the 28 participants.

The pile sort data were analyzed using Anthropac version 4.9 (Borgatti 1996a). Data for each pile-sorting task were entered in individual text based files and imported for analyses. Each sort was first converted into an aggregate proximity matrix. Then, each proximity matrix was analyzed in two dimensions using non-metric multidimensional scaling and then rendered graphically in a scatter plot. Each proximity matrix was analyzed using cluster analysis. The final step in the analysis was to enter the ranked pile sort from the core set of cards into a free-list format, using Smith's salience score and average rank scores to understand the importance of each item in relation to the model.

Results for Pile-Sorting Tasks

After collecting data for the pile sorting tasks some patterns began to appear in the data. Three sets of cards were used (core, foods, emotional-behavioral) with five tasks. The results of each task were input into Anthropac (Borgatti 1996a), converted to proximity matrices and statistically analyzed. The analyses included multidimensional scaling (MDS), cluster analysis, PROFIT analysis, and cultural consensus analysis. All three sets of cards, core treatments, food, and emotional-behavioral components had thought provoking outcomes.

Results for the Unconstrained Core Treatment Pile-Sort

The unconstrained pile-sort using the core set of cards was subjected to non-metric multidimensional scaling (MDS), yielding a two-dimensional model with a final stress of 0.10 after 25 iterations. A scatter plot of the MDS map is presented in Figure 4. The first notable aspect of the plot is the strong horizontal division of items. This is clearly related to what one should take, and corresponds very well to the Spanish word *tomar*. Note that sugar, alcohol, smoking, and strong emotions are all to the right of the map. Items located more centrally in the plot were observably difficult for participants during the sorting task. For example, money is a contested item. Many informants expressed feelings, that while money does not directly affect diabetes, one must have some money just to get by. Much of the conflict is centered on acquiring money so that one must work to get money and working is on one hand stressful, while on the other hand, working is mentally and physically engaging, so it is also beneficial.

Foods and consumption-related items appear in the lower portion of the map. Interpersonal items appear in the central and upper portions, and money sits largely alone at the very top of the map.

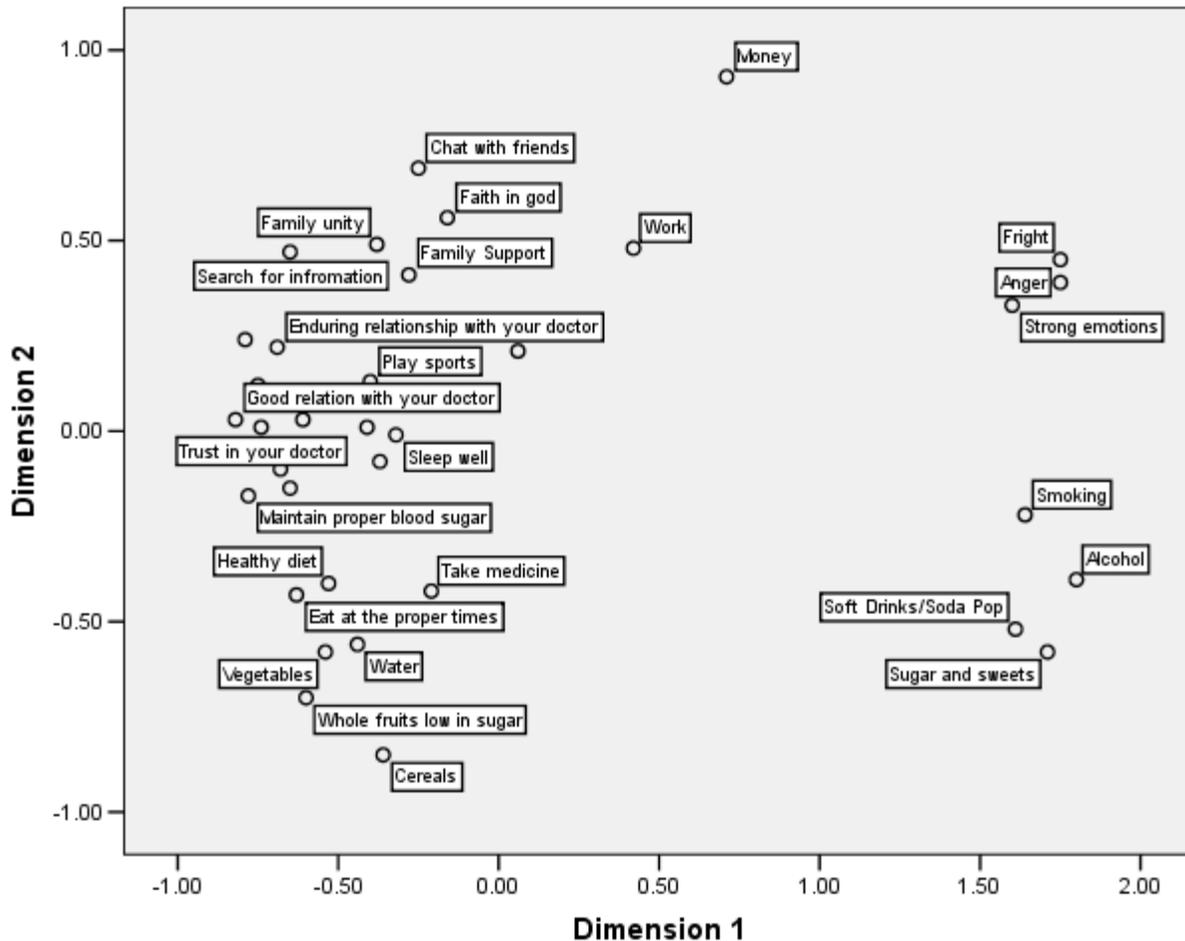


Figure 4. Scatter plot of unconstrained core treatment pile-sort showing two dimensional MDS results (n=28).

As described above, informants were asked to sort the core cards into piles of beneficial and detrimental items. Informants then sorted those piles into the most and least beneficial or detrimental and finally ranked each pile from most to least beneficial or detrimental. This task was used to understand the rank order of importance for the treatment items using cultural consensus analysis.

Consensus was achieved. There is a first to second eigenvalue ratio of 5.79:1. The first factor value is 8.91 and accounts for 76.6 percent of the variance explained. The second factor is 1.54. Average competence in the model was .67, ranging from .26 to .81. The distribution in the answer key rankings shows three clear groups, the “should do” group in front, the “should avoid”

group at the end, and two items that are generally not important (Table 15). The first 26 items have “answer key” ranks (Romney et al. 1986; Weller 2007) that are spaced less than two average positions apart. The same is true for consecutive items 27 and 28, and for the final group 29 through 35. There are large gaps in average answer key ranks between groups.

Table 15. Cultural consensus rankings for core diabetes treatments.

Rank	Item	Consensus Answer Key
<i>Should Do</i>		
1.	Check blood sugar regularly <i>Checar glucosa de sangre con regularidad</i>	8.19
2.	Water <i>Agua</i>	8.82
3.	Maintain Sugar <i>Mantenerse Azúcar</i>	10.50
4.	Diet/Nutrition <i>Alimentación</i>	11.19
5.	Maintain weight <i>Mantener peso</i>	11.66
6.	Vegetables <i>Verduras</i>	12.19
7.	Eat regularly <i>Comer a sus horas</i>	12.42
8.	Walk <i>Caminar</i>	12.85
9.	Fruits <i>Frutas</i>	13.31
10.	Take medicines <i>Tomar Medicamentos</i>	13.40
11.	God <i>Dios</i>	13.45
12.	Exercise <i>Ejercicio</i>	13.48
13.	Feet <i>Pies</i>	14.51
14.	Visit the doctor <i>Visit Médico</i>	14.61
15.	Sleep <i>Dormir</i>	14.64
16.	Cereals <i>Cereales</i>	14.77

17.	Trust/confidence in the doctor <i>Confianza Médico</i>	15.04
18.	Lasting relationship with the doctor <i>Relación Continua con Médico</i>	15.29
19.	Sports <i>Deportes</i>	15.52
20.	Rest <i>Descansa</i>	15.80
21.	Family support <i>Apoyo Familiar</i>	16.09
22.	Money <i>Dinero</i>	16.35
23.	Communication with the doctor <i>Comunicación con médicos</i>	16.53
24.	Family unity <i>Unidad Familiar</i>	17.16
25.	Good relationship with the doctor <i>Bien Relación con Médico</i>	17.37
26.	Search for information <i>Buscar información</i>	17.66
<i>Unimportant</i>		
27.	Work <i>Trabajo</i>	21.30
28.	Chat with others <i>Platicar</i>	23.89
<i>Should Avoid</i>		
29.	Fright <i>Susto</i>	29.55
30.	Smoking <i>Fumar</i>	30.59
31.	Fits of anger <i>Corajes</i>	30.70
32.	Strong emotions <i>Emociones Fuertes</i>	31.04
33.	Carbonated beverages <i>Refrescos</i>	31.58
34.	Alcohol Alcohol	32.16
35.	Sugar <i>Azúcar</i>	33.28

The resultant consensus key and the above MDS model were used together in a PROFIT analysis. The outcome is a good fit with over 70 percent of the variance explained (Table 16). In regression analysis, the dependent cultural consensus key is predictable along the first MDS dimension. This indicates that informant sorting decisions are most strongly influenced by the consumption-avoidance continuum. The fit is represented numerically in Table 16, where each dimension was entered as a separate independent variable. The first dimension has an impact, even after controlling the influence of the second dimension. The fit is represented visually in Figure 5.

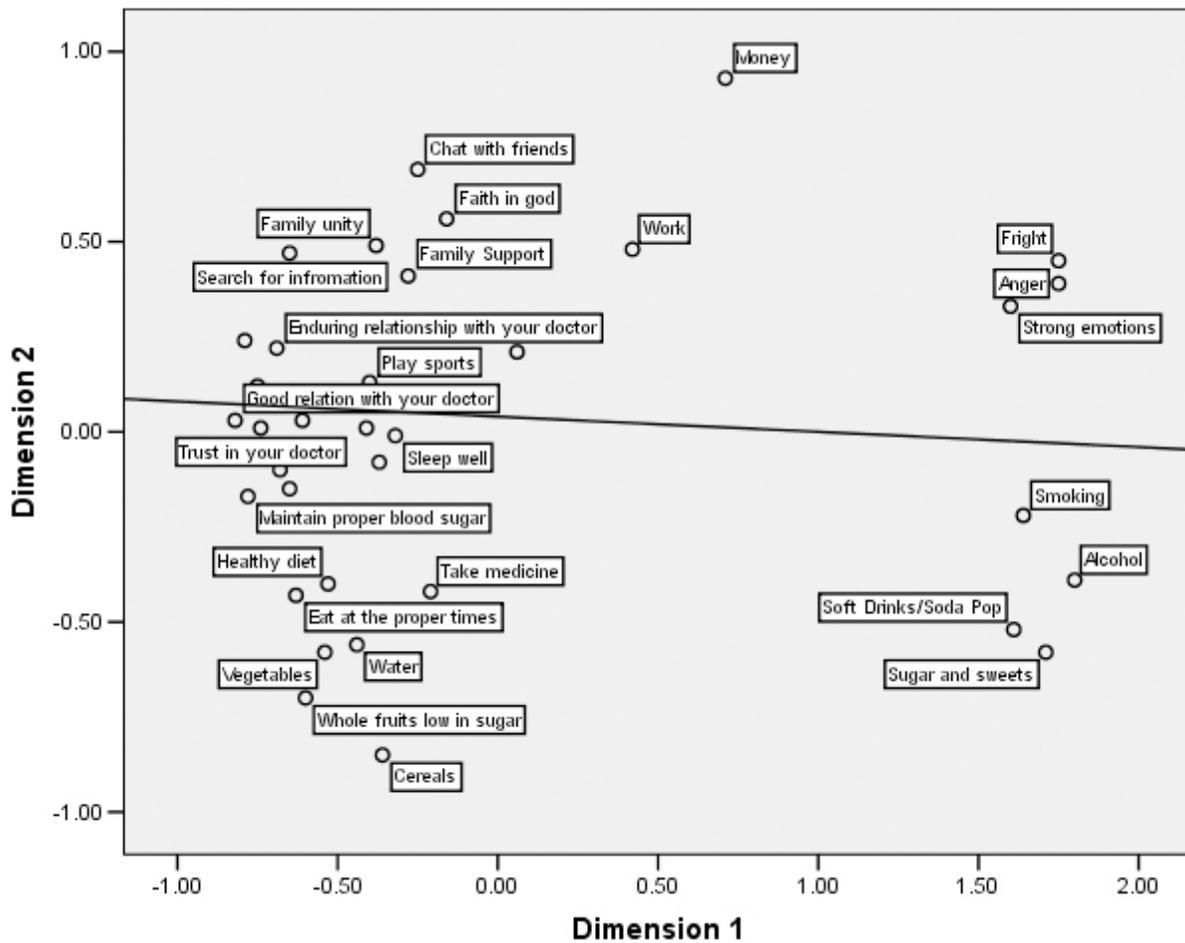


Figure 5. MDS map of unconstrained pile-sort for core treatments showing PROFIT line derived from cultural consensus analysis of constrained core treatments.

Table 16. Linear regression standardized Beta coefficients for PROFIT analysis of consensus ranked treatment items.

	<i>Model 1</i>	<i>Model 2</i>
Dimension 1	-.84*	-.84*
Dimension 2		-.10
<i>R</i> ²	.71	.72

Note: * = significant at <.001 level.

A cluster analysis (Figure 6) of the core treatment pile-sort shows four primary groups, three of which have substantial sub-clusters. The main cluster to the left of Figure 6 shows items to be avoided, alcoholic beverages and smoking, sweets and sweetened soft drinks, as well as strong emotions, anger, and fright. The second cluster has items necessary for life, like work and money. Note (Figure 6) that the strength of association for these items is low, supporting the observation above that money stands distant from other items. The third cluster is the largest cluster and shows four subgroups of treatment. The first subgroup, farthest left in Figure 6, shows the maintenance aspect of self-treatment including searching for information, checking blood glucose regularly, maintaining an acceptable level of blood glucose, checking one's feet regularly and maintaining a healthy weight, not too high or low. The next subgroup concerns the doctor-patient relationship. Items include having a good personal relationship with the doctor, visiting the doctor regularly, having good communication with the doctor, having trust in the doctor, and having an enduring relationship with the doctor. The next subgroup includes physical activities necessary for treatment. These include sleep, walking, exercising, and playing sports. The fourth subgroup encompasses social supports needed for positive outcomes, resting and having family support, faith in God, chatting with friends and family, and having family unity. The final cluster deals with consumption, first in the abstract with taking medications,

eating a healthy diet, and eating regularly. The second subgroup includes the concrete consumables, cereals, water, fruits, and vegetables.

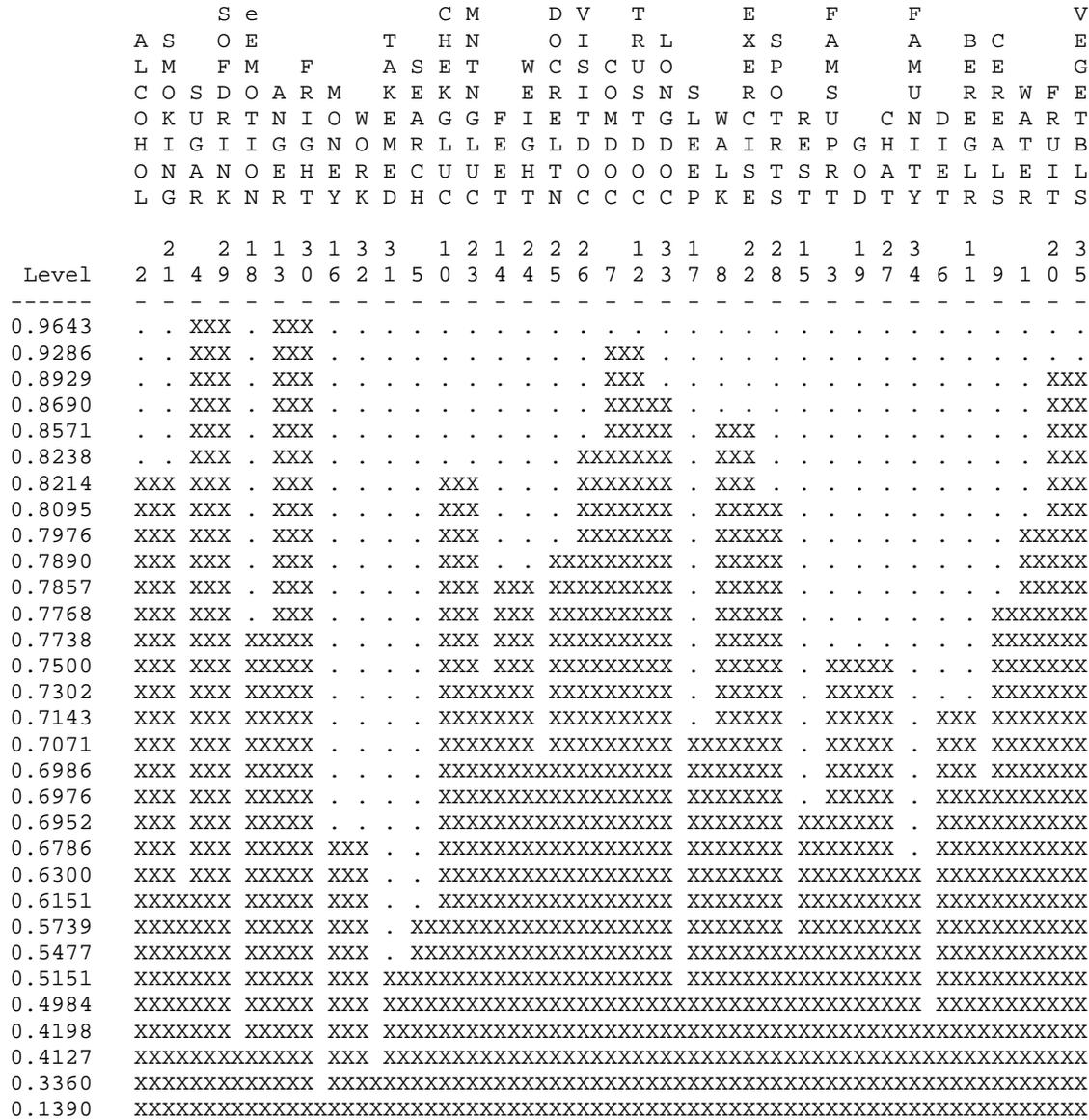


Figure 6. Cluster analysis results for unconstrained pile-sort of core diabetes treatments (n=28).

Pile Sorts for Food Cards

The food sorting cognitive task elicited many responses. There were 38 foods, each sorted twice. The first sort is an unconstrained pile-sort where informants could sort the cards as they desired. An MDS map of these data (Figure 7) has a final stress of .17 after 48 iterations and shows a somewhat circular distribution. Proteins and most grain carbohydrates are located

in the lower part of the map. Fruits and vegetables are in the upper portion. The position of potatoes, distant from other items and more strongly associated with vegetables than carbohydrates (Figure 7) indicates a strong difference between popular models of food and specialized medical models, where potatoes are associated with carbohydrates.

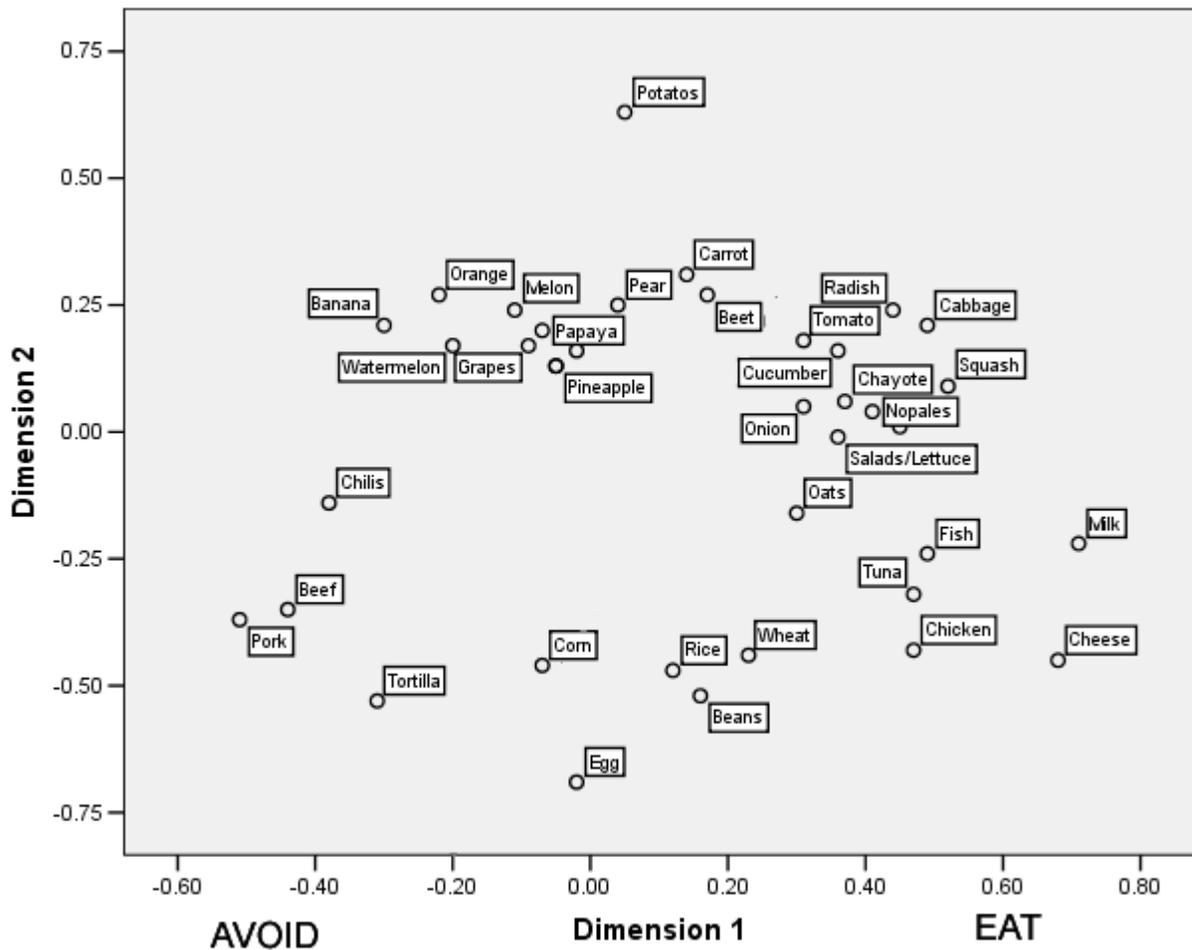


Figure 7. MDS map for unconstrained food pile-sort (n=17).

Cluster analysis of the unconstrained food sort shows six primary groups, each divided into subgroups (Figure 8). The first primary cluster represents traditional foods in relation to the rest of the set. There are three subgroups. First are eggs and chilies, second beef and pork, and third tortillas. The second prime group is protein, which has two subgroups, 1) meat proteins -

tuna, fish, and chicken, and more distantly dairy proteins – milk and cheese/*panela*. The third prime group is largely grain carbohydrates, which divide into two types. The first is corn and oats, and may represent grains that are more fibrous, versus the second type, rice, beans, and wheat. The fourth primary group is complex, but mostly includes vegetables one should eat. Potatoes stand in an unusual position relative to the rest of the group, having a small association with vegetables, but simultaneously not distant from the carbohydrates (see Figure 8). This relation contrasts with the above MDS map, where potatoes stand in opposition to the grain carbohydrates. Squash is similar, with greater relationship to potatoes and vegetables, but still not a strong association (Figure 8). The next group includes four popular green vegetables that are usually associated with healthy eating, *chayote*, lettuce/salad, spinach, and *nopales*. These items have a high level of proximity. The next subgroup is closely related to the previous and includes tomatoes and cucumbers. Onions again stand on their own, though in a way bridge the gap between types of vegetable toppings commonly used, since the group is finished out with cabbage and radishes a popular combination for topping street foods. The next prime group is fruits. The first subgroup stands more distant from the rest, and includes fruits that contain a lot of sugar and ought to be avoided, oranges and bananas. Pears stand slightly apart from the larger groups and are most like the melon group that includes cantaloupe and watermelon. Apples and pineapples hang together as healthy/medicinal fruits. The last fruit group includes the other fruits limes, papaya, and grapes. The last prime group is sweet vegetables that should be avoided, beets and carrots. There are no subgroups for the last category.

consumption” includes pears, cantaloupe, apples, papaya, and pineapple. The group, “tend to avoid” is watermelon, oranges, grapes, beets, limes, and carrots.

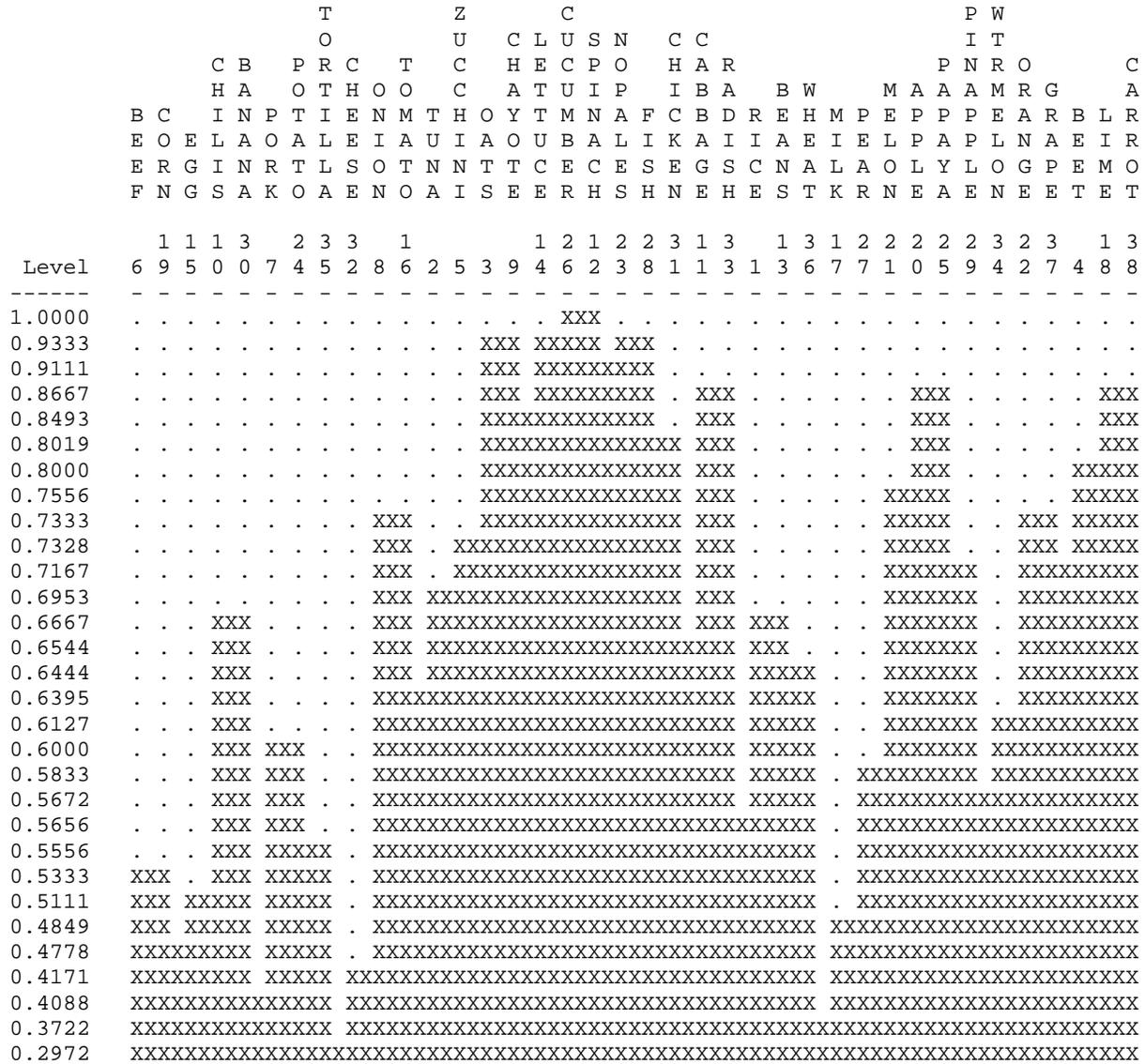


Figure 9. Cluster analysis for categorically ranked foods (n=17).

Pile-Sort Results for Emotions and Behaviors

The third and final set of cards contains emotional and behavioral components of diabetes treatment. There is only one free-sort task associated with this group. The two-dimensional MDS model has an overall stress of .08 after 21 iterations. The MDS map (Figure 10) shows two dominant groups along the horizontal line. These appear to represent positive and negative

aspects to emotions and behaviors. There is one central, more neutralized item, “forget about your problems.”

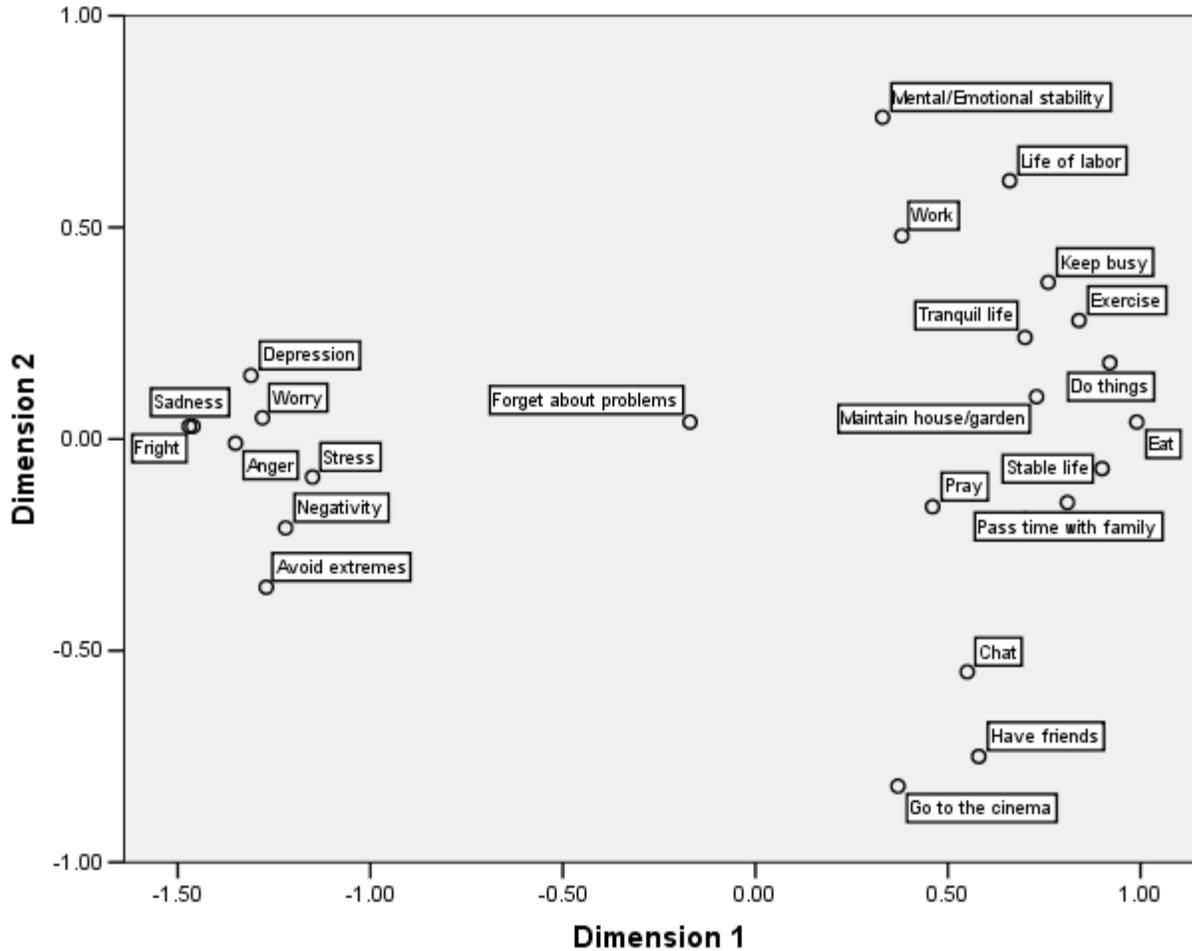


Figure 10. MDS map for behavioral and emotional components of diabetes treatment.

The first primary group (Figure 11) has a tight cluster and includes negative emotions and behaviors. These things should be avoided. This includes avoiding extreme behaviors and attitudes, negative attitudes, stress, worry, anger, depression, fright, and sadness. The next pair includes praying and forgetting one’s problems, which are mildly related to the social coping group that also includes going out, for example, to the theater, chatting with friends and passing time with friends. Mental and emotional stability has the lowest level of proximity to the other

items and is mostly related to the next most proximate item, work. The next group includes positive mental and physical activities, such as being physically active and doing exercise. It also includes keeping busy, maintaining one's house or garden, and generally living a life of productive labor. The next group includes necessary and desirable items such as eating and sleeping. It also includes having a stable life, passing time with family and having a quiet and tranquil life.

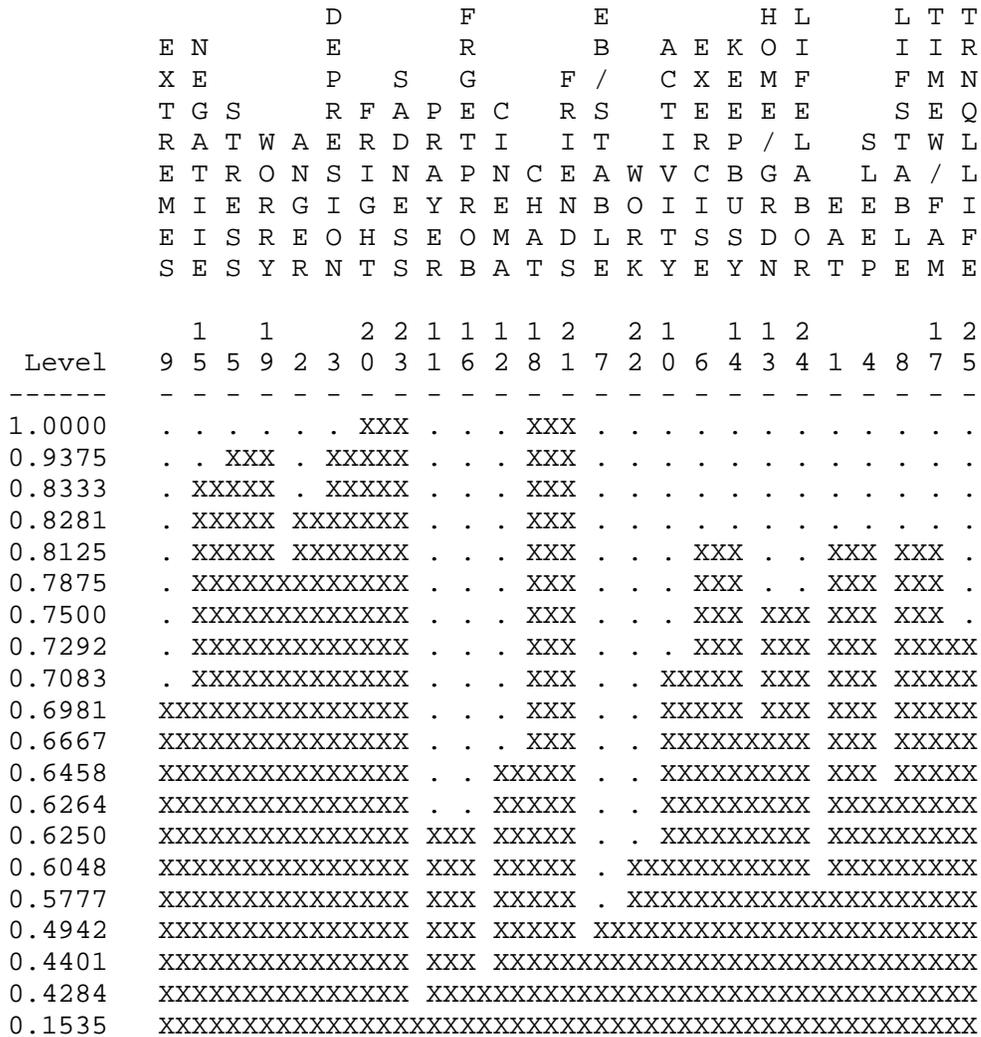


Figure 11. Cluster analysis results for emotional and behavioral aspects.

Two Types of Cultural Consensus Data

Cultural consensus data were collected in two different ways. One consensus method used the constrained pile-sort for food to complete a cultural consensus analysis. This procedure was completed during the analytic stages of the project, but fits most logically between the pile-sorting data and the cultural consensus survey. Therefore, the method and result of the food consensus model is presented first, followed by the formal cultural consensus survey methods and results below.

Cultural Consensus in the Model of Food: Method and Result

In order to quantify the food-as-treatment model, the constrained pile-sort for food was converted into a rating scale by assigning each of the 38 food items a score of zero to two, indicating foods one should eat, foods that do not matter, and foods that should be avoided. The rating matrix was entered into Anthropac (Borgatti 1996a) and cultural consensus analysis was completed.

In the initial consensus analysis, there were 15 participants, and though strikingly close, consensus was not achieved. The first factor eigenvalue is 5.09, but the ratio of the first to second factor is 2.63, just short of the three times greater rule (Weller 2007). Mean competence in the model is moderately high at .54 +/- .22. An analysis of the residual agreement proved interesting, especially a visual inspection of competence scores graphed against residual agreement scores, that is, first and second factor coefficients (Figure 12). The distribution is largely concentrated where it is expected for a singular model, though there is clearly some interesting residual as indicated by the loop of responses low in competence and high in residual. The one case that did not seem to fit the remaining pattern, Subject 28 (S28), is located at the

lowest point on the Y axis. This participant had the largest residual score, and represented the only large negative residual value.

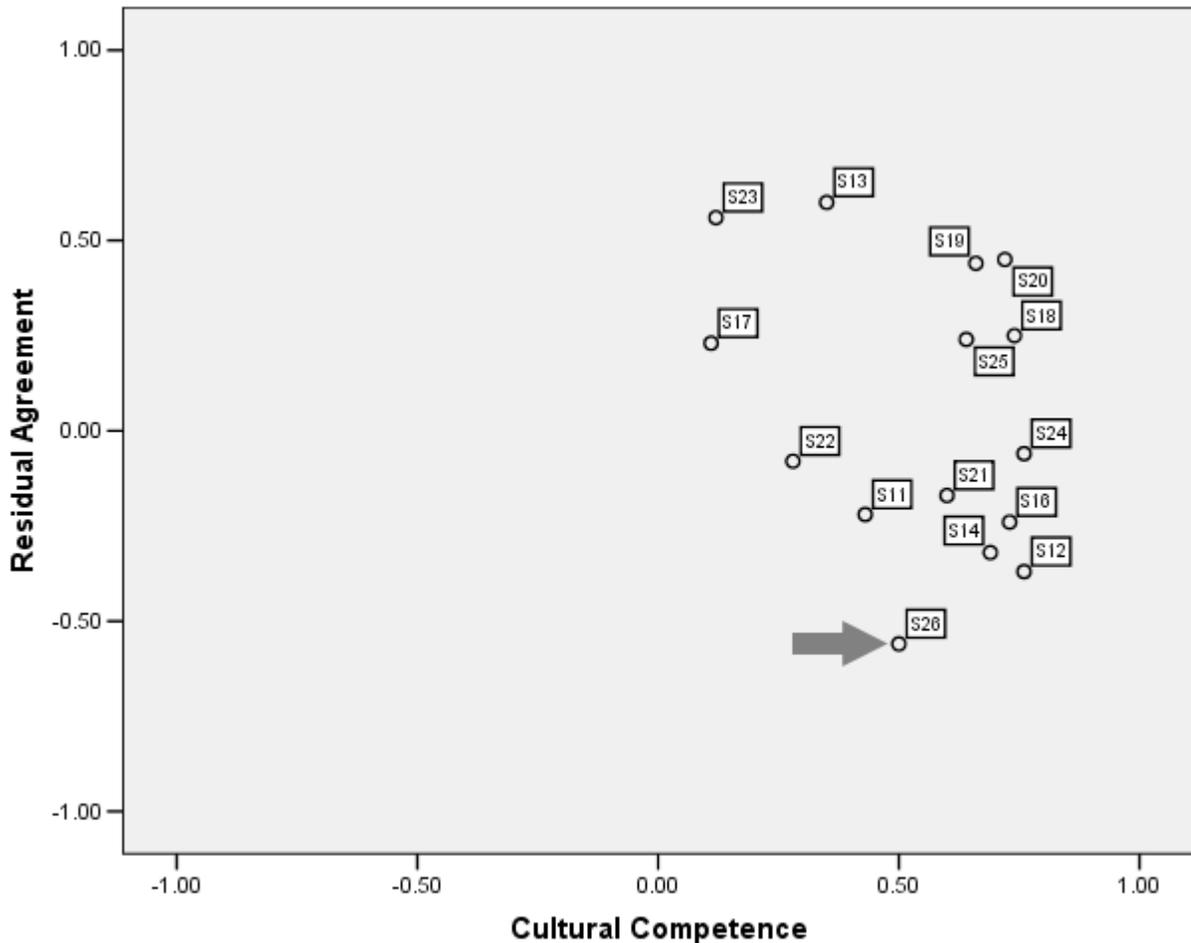


Figure 12. Cultural competence and residual agreement graphed for cultural consensus in the food domain. Consensus was not achieved. Arrow marks an interesting case.

Based on the small sample size and the existence of only one large negative residual, it was hypothesized that S28 represented an anomaly blocking consensus. The sample was reduced by excluding this case. Consensus analysis was performed again, this time resulting in consensus. The first to second factor ratio is 3.03:1, with a first factor of 4.85 and a second factor 1.60. Average competence in the model is $.55 \pm .22$. The overall pattern changed very little (Figure 13). It should be emphasized that this result should be tempered cautiously since

S28 may actually represent an important minority view or a secondary model not well represented in this small sample. While there is a great deal of residual, there are no demographic data available to identify structural factors that may be influencing the food model.

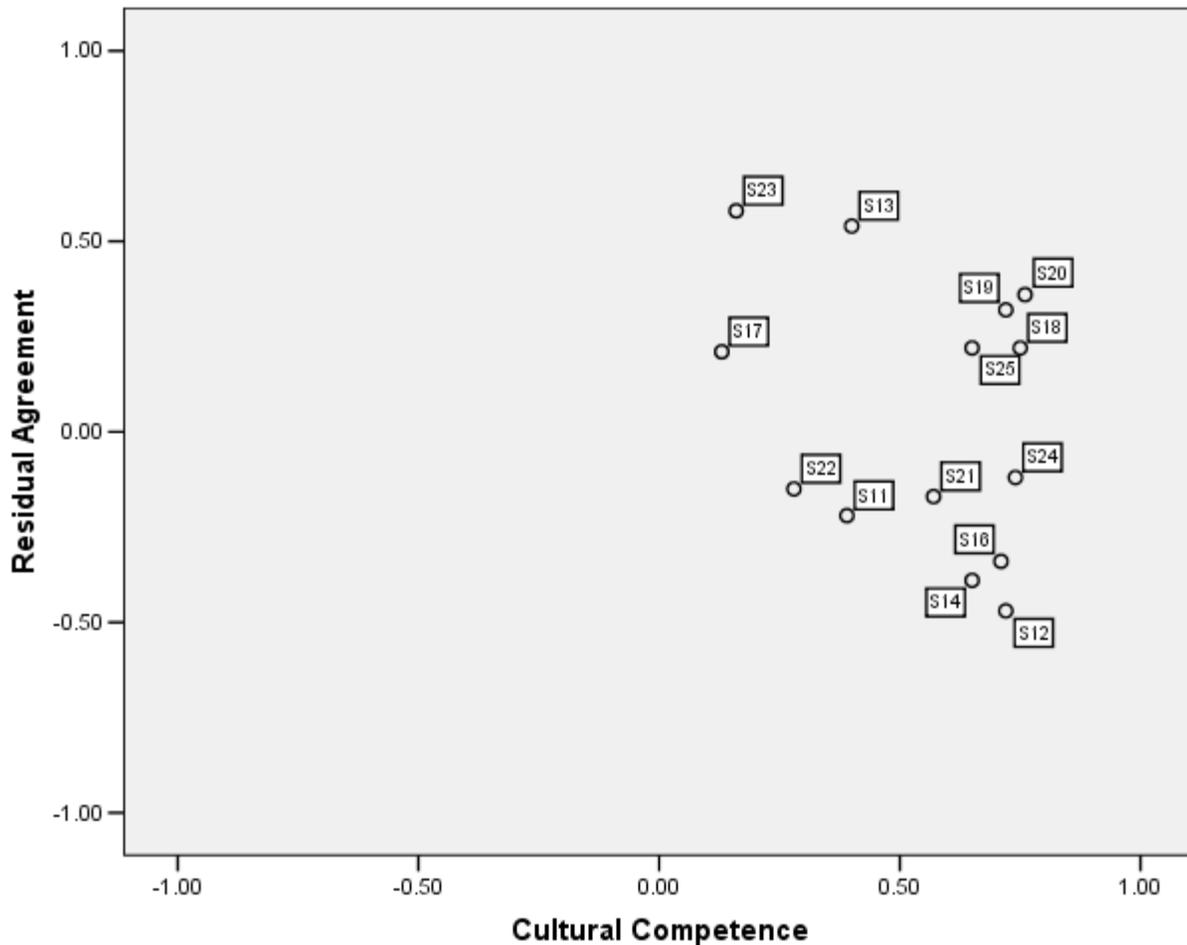


Figure 13. Cultural competence and residual agreement for food rating task. Consensus was achieved for a smaller sample.

Seven of the 38 food items were of special interest based on free list results, participant-observation in the field, and trends in data analysis observed later. The special items include oats, pork, fish, chicken, *nopales*, apples, and bananas. It was expected that after extracting these items from the larger group that they should divide into two clusters in a cluster analysis. One cluster should include foods that one should eat oats, fish, chicken, *nopales*, and apples. The

other should have foods that one should avoid, pork and bananas. Cluster analysis reveals the expected categories (Figure 14).

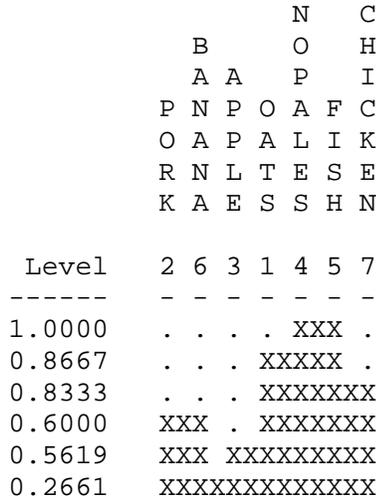


Figure 14. Cluster analysis for the limited food model.

Cultural Consensus Formal Survey Methods

In order to gather sufficient data for consensus analysis 56 diabetic patients were recruited. All participants were being treated for type 2 diabetes at *Clinica 3*, and were identified through clinical records made available by UISESS. The intent was to stratify participants equally by age and sex. However, this was not ultimately possible given the limited pool of potential participants (~500), and the disproportionate lack of both younger and male volunteers common to research at the CMNO. Instead, a randomized method was used. Patient contact information was provided by UISESS. The information was arranged in a paper spreadsheet with approximately 20 names per page. Three pages were randomly selected from the list, and each patient was contacted by telephone until the list was exhausted through volunteers, refusals, or three failed contact attempts. This process was repeated until all 56 participants were identified. The same process was continued for the final epidemiological stage.

Patients were contacted by telephone and asked two preliminary questions, first if they are older than 50 years, (the mean age of diabetes onset in Mexico (Aguilar-Salinas et al. 2003)), and second if they had been diagnosed at least three years prior. Those reporting diagnoses at least three years ago we asked to participate in a 20 minute personal survey. Participants were offered the opportunity to be interviewed at the CMNO, at their home, or at another location of their choice. No remuneration was offered for participation. The consensus survey consisted of two parts, a demographics section and an agreement ratings section. Demographic questions included age, sex, marital status; township lived in, household composition, level of education, time since diagnosis, and level of control (self rated as yes or no and as a self-estimate of fasting blood glucose levels in mg/dl).

The rating sections used brief scenarios to understand inter-participant agreement about diabetes treatment. The scenarios are short propositional statements over which participants are asked how much they agree. The scenarios were developed from the phrases presented in free-lists and pile-sorting tasks. Since only a limited number of scenarios were desirable in order to avoid participant fatigue, only the most salient items and features were included. Thirty-six phrases were created, with some phrases integrating related ideas. Actual scenarios are presented in Table 17.

Participants were instructed to think about people in Guadalajara as the phrase was read to them, and respond that yes, people in Guadalajara would agree, or no, people would not agree (*de acuerdo o desacuerdo*). Then they were asked if they thought people would agree or disagree strongly or just somewhat (*mucho o algo*). The rating used a two-step binary system in order to reduce rating bias. The outcome is a four-point Likert scale rating agreement from 1: strongly disagree, through 4: strongly agree. Responses were recorded on paper and later entered

into various databases for statistical analysis. The actual survey instrument is presented in Appendix A.

Table 17. Scenarios presented in the cultural consensus analysis ratings section (n=56).

<u>Scenario</u>
1. Regularly eating fresh whole fruits and vegetables as part of a balanced diet is one of the most important things a person can do to control their diabetes. <i>(Lo más importante que puede hacer una persona para controlar su diabetes es buena alimentación incluyendo frutas y verduras enteras y frescas.)</i>
2. Smoking cigarettes is good for diabetics. <i>(Fumar cigarros es bueno para los diabéticos.)</i>
3. A diabetic should check his or her blood sugar at least once each day, no matter how good or bad this or her condition is controlled. <i>(Un diabético debería de checar la azúcar en las sangre por lo menos una vez al día, no importando que tan bien o mal este controlada su condición.)</i>
4. Close friends and family cannot help a diabetic patient with his or her diet. <i>(Amigos cercanos y la familia no pueden ayudar al paciente diabético con su dieta.)</i>
5. It does not matter if a person with diabetes eats fruits and vegetables that have a lot of sugar, like bananas and beets. <i>(Si una persona con diabetes come frutas y verduras que contengan mucha azúcar, por ejemplo los plátanos y el betabel, no importa.)</i>
6. Taking medicine when one's sugar is too high is the best way to control diabetes. <i>(Cuando uno tiene la azúcar muy alta, tomar medicamentos es la mejor manera de control la diabetes.)</i>
7. A person really has very little control over their diabetes treatment. <i>(Para un diabético esta fuera de sus manos controlar su tratamiento de la diabetes.)</i>
8. Saying prayers and going to church cannot help one control their diabetes. <i>(Hacer oraciones y asistir a la iglesia no puede ayudar a controlar la diabetes.)</i>
9. Family is important because they provide physical and emotional support. <i>(La familia es lo más importante porque da apoyo físico e emocional.)</i>
10. Nopal cacti help lower and stabilize blood sugar levels. <i>(Los nopales ayudan a disminuir y estabilizar los niveles de azúcar en la sangre.)</i>
11. It is important to visit your doctor regularly, even if your diabetes is under control. <i>(Visitar a su médico regularmente es importante aunque tenga su diabetes controlada.)</i>

12. Sadness and depression have no effect on diabetes.
(La tristeza y la depresión no afectan a la diabetes.)
13. Having good communication with your doctor is important so that a person has knowledge of their condition and treatment choices.
(Tener buena comunicación con su médico es importante para que la persona tenga conocimiento de su condición y de las opciones médicas.)
14. A person's weight has little to do with diabetes control.
(El peso de una persona tiene poca relación con el control de la diabetes.)
15. Diabetes is hard to control because there is not enough time in the day to follow all the treatment guidelines.
(Para un diabético es difícil controlar la diabetes porque no hay suficiente tiempo en el día para seguir todas las indicaciones del tratamiento.)
16. Strong emotions like anger make ones sugar go up, so one should make every effort to avoid them.
(Las emociones fuertes, como los corajes, hacen que suba el azúcar en la sangre y uno debería de tratar de evitarlos a toda costa.)
17. One should visit the same doctor for each checkup and develop a lasting, trusting relationship with him or her.
(En cada chequeo, uno debería de visitar al mismo médico para desarrollar una relación duradera y de confianza.)
18. Tempting foods are one of the biggest obstacles for a diabetic to overcome.
(Uno de los obstáculos más grandes de superar para un diabético es la tentación de la comida y antojos.)
19. Playing sports like soccer and swimming are good exercise for diabetics, but walking is more important.
(Jugar deportes como el futbol y nadar son buenos ejercicios para los diabéticos, pero caminar es más importante.)
20. It is easier to control diabetes if one has a supportive family.
(Si uno tiene una familia que es de gran apoyo es más fácil para uno controlar la diabetes.)
21. Drinking alcoholic beverages do not make blood sugar levels go up.
(Tomar bebidas alcohólicas no hace que suban los niveles de azúcar en la sangre.)
22. Eating right, exercising, and taking medications are the only things a diabetic needs to worry about.
(Lo único de lo cual se tiene que preocupar un diabético es de comer bien, hacer ejercicio y tomar sus medicamentos.)
23. Strong emotions like fright make it difficult to control diabetes, but sometimes they cannot be avoided.
(Las emociones fuertes, como los sustos, hacen que sea difícil controlar la diabetes pero a veces no se pueden evitar.)

24. One needs plenty of water to clean their system and help avoid diabetic complications.
(Para limpiar su sistema y evitar las complicaciones de la diabetes uno necesita tomar bastante agua.)
25. If fate has given you diabetes, it does not matter how hard you try to control the disease, it will just get worse.
(Si el destino te ha dado diabetes, no importa cuánto trates de controlar la enfermedad, solo va a empeorar.)
26. The most important thing for diabetics is to avoid sugary foods like cakes and cookies.
(Evitar comidas dulces, como pasteles y galletas, es lo más importante para un diabético.)
27. Sweet soft drinks have a strong effect on blood sugar levels.
(Los refrescos dulces causan un gran efecto en los niveles de azúcar en la sangre.)
28. It is difficult to control diabetes if one does not have enough money.
(Si uno no tiene suficiente dinero es difícil controlar la diabetes.)
29. Getting plenty of fiber is very important for diabetics, and one of the best sources of fiber is cereals, especially oats.
(Es muy importante para los diabéticos obtener suficiente fibra y una de las mejores fuentes de la fibra son los cereales, especialmente la avena.)
30. It is easier to control diabetes if one has a good relationship with his or her doctor.
(Si uno tiene una buena relación con su médico es más fácil controlar su diabetes.)
31. It is important for diabetics to keep busy with little chores and hobbies.
(Es importante para los diabéticos mantenerse ocupados con quehaceres y pasatiempos.)
32. A diabetic person should eat mostly fish and chicken, very little beef, and no pork.
(Una persona diabética debería comer más pescado y pollo, muy poca res y nada de puerco.)
33. It is easier to control diabetes if one lives a calm life, avoiding extreme behaviors and negative attitudes.
(Si uno vive una vida tranquila, evita comportamientos extremos y actitudes negativas es más fácil controlar la diabetes.)
34. Diabetes is easier to control if one has faith in God.
(Si uno tiene fe en Dios la diabetes es más fácil de controlar.)
35. Getting plenty of sleep and being well rested has no effect on diabetes.
(El dormir suficiente y descansar bien no tienen ningún efecto en la diabetes.)
36. Diabetes is easier to control if one has friends to chat with and to do things together.
(Si uno tiene amigos con quien platicar y hacer cosas juntos es más fácil controlar la diabetes.)

Cultural consensus analysis was performed using Anthropac analytic software (Borgatti 1996a). Data from all 56 informants were imported into Anthropac and analyzed using the informal (interval data) method. Results were double checked against the formal consensus model as well. In addition to standard cultural consensus analysis, other analytic techniques were applied to these data as well. For example an analysis of intra-cultural diversity was performed by using cultural competence scores (first factor loadings) as a dependent variable in regression analysis and demographic variables as independent variables for predicting patterns of agreement. Furthermore, a residual agreement analysis was performed which similarly examined agreement patterns associated with second factor loadings.

Cultural Consensus Formal Survey Results

Cultural consensus was achieved for the domain of diabetes treatment. It is generally accepted that a factor ratio for the first and second factors be at least 3:1 to obtain a cultural level of agreement (Weller 2007). Cultural level agreement means that the knowledge is shared to the degree that all informants are drawing from the same knowledge pool in their responses. In this case, the first to second factor ratio is 16.65:1. The first factor eigenvalue is 36.35, explaining 89.8 percent of the variance. The second factor eigenvalue is 2.184 and explains an additional 5.4 percent of the variance in the data. These results taken together indicate a high level of agreement with the cultural model.

In addition to eigenvalues and ratios, consensus output includes a measure of each informant's level of agreement with all other informants. This measure is called cultural competence and is represented as a fraction between -1 and 1. In this case, competence ranges between .58 and .92, with an average competence of .80 +/- .09. This information can be

represented visually by plotting competence scores (first factor) along the X axis and residual agreement scores (second factor) along the Y axis (Figure 15).

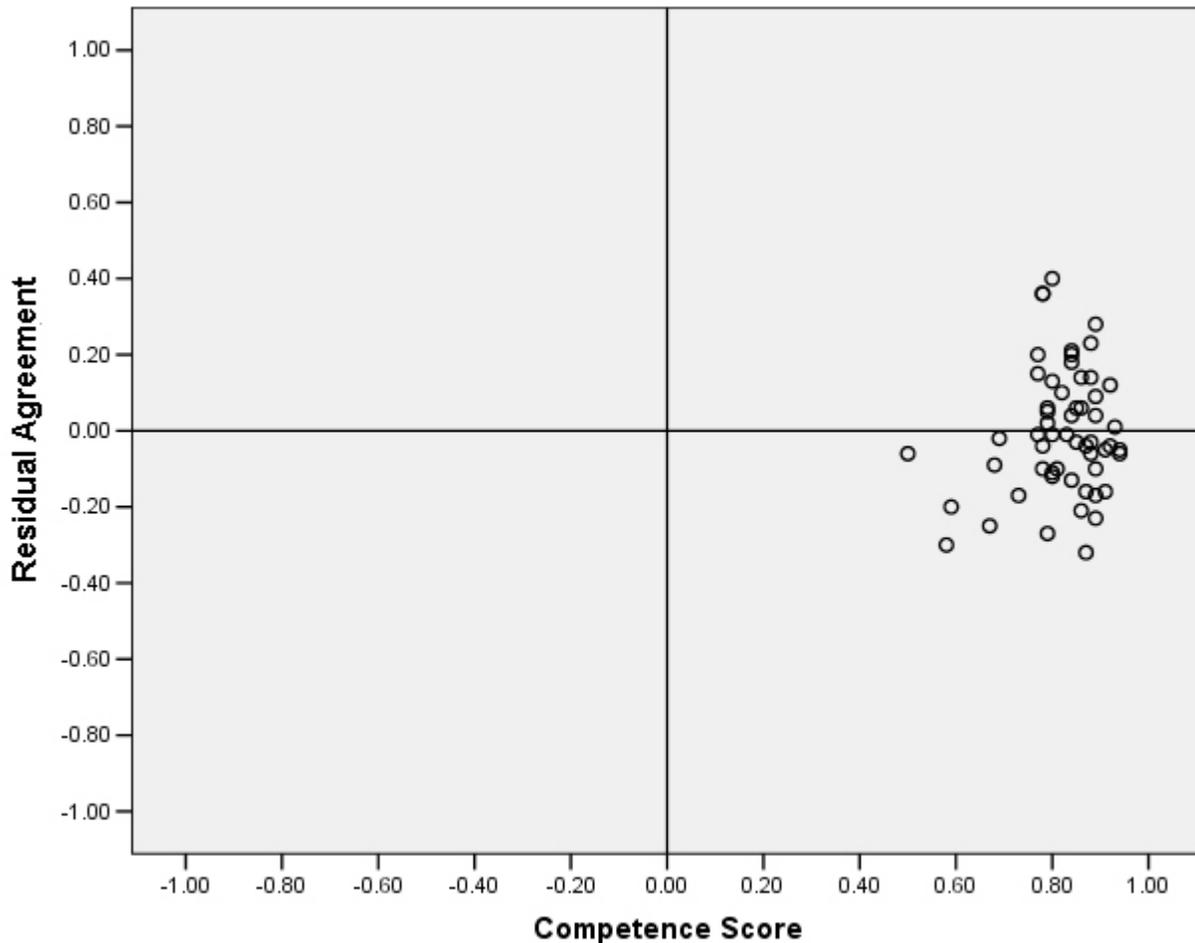


Figure 15. Plot showing the distribution of agreement with cultural competence and residual agreement scores.

The cultural consensus key shows four highly important themes where informants strongly agree with the statements, visiting a doctor regularly, the effects of sweet drinks, the need to live a calm life devoid of extremes, and the effects of smoking. An additional 20 items have average ratings over 3.5, again showing a very strong model of agreement as well as strong agreement with those statements. Another four items have strong agreement among the statements, showing scores below 1.5, indicating strong disagreement with those statements.

The complete consensus key appears in Table 18.

Table 18. Cultural Consensus Key listed by average rating.

#	Scenario	Rank	Avg. rating
11	It is important to visit your doctor regularly, even if your diabetes is under control. <i>(Visitar a su médico regularmente es importante aunque tenga su diabetes controlada.)</i>	1	4.00
27	Sweet soft drinks have a strong effect on blood sugar levels. <i>(Los refrescos dulces causan un gran efecto en los niveles de azúcar en la sangre.)</i>	2	4.00
33	It is easier to control diabetes if one lives a calm life, avoiding extreme behaviors and negative attitudes. <i>(Si uno vive una vida tranquila, evita comportamientos extremos y actitudes negativas es más fácil controlar la diabetes.)</i>	3	4.00
19	Playing sports like soccer and swimming are good exercise for diabetics, but walking is more important. <i>(Jugar deportes como el futbol y nadar son buenos ejercicios para los diabéticos, pero caminar es más importante.)</i>	4	3.98
31	It is important for diabetics to keep busy with little chores and hobbies. <i>(Es importante para los diabéticos mantenerse ocupados con quehaceres y pasatiempos.)</i>	5	3.97
13	Having good communication with your doctor is important so that a person has knowledge of their condition and treatment choices. <i>(Tener buena comunicación con su médico es importante para que la persona tenga conocimiento de su condición y de las opciones médicas.)</i>	6	3.96
23	Strong emotions like fright make it difficult to control diabetes, but sometimes they cannot be avoided. <i>(Las emociones fuertes, como los sustos, hacen que sea difícil controlar la diabetes pero a veces no se pueden evitar.)</i>	7	3.96
3	A diabetic should check his or her blood sugar at least once each day, no matter how good or bad his or her condition is controlled. <i>(Un diabético debería de checar la azúcar en las sangre por lo menos una vez al día, no importando que tan bien o mal este controlada su condición.)</i>	8	3.95
22	Eating right, exercising, and taking medications are the only things a diabetic needs to worry about. <i>(Lo único de lo cual se tiene que preocupar un diabético es de comer bien, hacer ejercicio y tomar sus medicamentos.)</i>	9	3.95
17	One should visit the same doctor for each checkup and develop a lasting, trusting relationship with him or her. <i>(En cada chequeo, uno debería de visitar al mismo médico para desarrollar una relación duradera y de confianza.)</i>	10	3.93

20	It is easier to control diabetes if one has a supportive family. (<i>Si uno tiene una familia que es de gran apoyo es más fácil para uno controlar la diabetes.</i>)	11	3.93
16	Strong emotions like anger make ones sugar go up, so one should make every effort to avoid them. (<i>Las emociones fuertes, como los corajes, hacen que suba el azúcar en la sangre y uno debería de tratar de evitarlos a toda costa.</i>)	12	3.89
9	Family is important because they provide physical and emotional support. (<i>La familia es lo más importante porque da apoyo físico e emocional.</i>)	13	3.88
32	A diabetic person should eat mostly fish and chicken, very little beef, and no pork. (<i>Una persona diabética debería comer más pescado y pollo, muy poca res y nada de puerco.</i>)	14	3.88
1	Regularly eating fresh whole fruits and vegetables as part of a balanced diet is one of the most important things a person can do to control their diabetes. (<i>Lo más importante que puede hacer una persona para controlar su diabetes es buena alimentación incluyendo frutas y verduras enteras y frescas.</i>)	15	3.83
18	Tempting foods are one of the biggest obstacles for a diabetic to overcome. (<i>Uno de los obstáculos más grandes de superar para un diabético es la tentación de la comida y antojos.</i>)	16	3.83
30	It is easier to control diabetes if one has a good relationship with his or her doctor. (<i>Si uno tiene una buena relación con su médico es más fácil control su diabetes.</i>)	17	3.82
29	Getting plenty of fiber is very important for diabetics, and some of the best sources of fiber are cereal, especially oats. (<i>Es muy importante para los diabéticos obtener suficiente fibra y una de las mejores fuentes de la fibra son los cereales, especialmente la avena.</i>)	18	3.81
24	One needs plenty of water to clean their system and help avoid diabetic complications. (<i>Para limpiar su sistema y evitar las complicaciones de la diabetes uno necesita tomar bastante agua.</i>)	19	3.76
34	Diabetes is easier to control if one has faith in God. (<i>Si uno tiene fe en Dios la diabetes es más fácil de controlar.</i>)	20	3.60
10	Nopal cacti help lower and stabilize blood sugar levels. (<i>Los nopales ayudan a disminuir y estabilizar los niveles de azúcar en la sangre.</i>)	21	3.57

36	Diabetes is easier to control if one has friends to chat with and to do things together. (<i>Si uno tiene amigos con quien platicar y hacer cosas juntos es más fácil controlar la diabetes.</i>)	22	3.54
26	The most important thing for diabetics is to avoid sugary foods like cakes and cookies. (<i>Evitar comidas dulces, como pasteles y galletas, es lo más importante para un diabético.</i>)	23	3.53
6	Taking medicine when one's sugar is too high is the best way to control diabetes. (<i>Cuando uno tiene la azúcar muy alta, tomar medicamentos es la mejor manera de control la diabetes.</i>)	24	3.29
8	Saying prayers and going to church cannot help one control their diabetes. (<i>Hacer oraciones y asistir a la iglesia no puede ayudar a controlar la diabetes.</i>)	25	2.63
28	It is difficult to control diabetes if one does not have enough money. (<i>Si uno no tiene suficiente dinero es difícil controlar la diabetes.</i>)	26	2.53
4	Close friends and family cannot help a diabetic patient with his or her diet. (<i>Amigos cercanos y la familia no pueden ayudar al paciente diabético con su dieta.</i>)	27	2.27
25	If fate has given you diabetes, it does not matter how hard you try to control the disease, it will just get worse. (<i>Si el destino te ha dado diabetes, no importa cuánto trates de controlar la enfermedad, solo va a empeorar.</i>)	28	2.26
15	Diabetes is hard to control because there is not enough time in the day to follow all the treatment guidelines. (<i>Para un diabético es difícil controlar la diabetes porque no hay suficiente tiempo en el día para seguir todas las indicaciones del tratamiento.</i>)	29	2.19
35	Getting plenty of sleep and being well rested has no effect on diabetes. (<i>El dormir suficiente y descansar bien no tienen ningún efecto en la diabetes.</i>)	30	1.84
7	A person really has very little control over their diabetes treatment. (<i>Para un diabético esta fuera de sus manos controlar su tratamiento de la diabetes.</i>)	31	1.53
5	It does not matter if a person with diabetes eats fruits and vegetables that have a lot of sugar, like bananas and beets. (<i>Si una persona con diabetes come frutas y verduras que contengan mucha azúcar, por ejemplo los plátanos y el betabel, no importa.</i>)	32	1.32
12	Sadness and depression have no effect on diabetes. (<i>La tristeza y la depresión no afectan a la diabetes.</i>)	33	1.17

14	A person's weight has little to do with diabetes control. <i>(El peso de una persona tiene poca relación con el control de la diabetes.)</i>	34	1.11
21	Drinking alcoholic beverages do not make blood sugar levels go up. <i>(Tomar bebidas alcohólicas no hace que suban los niveles de azúcar en la sangre.)</i>	35	1.08
2	Smoking cigarettes is good for diabetics. <i>(Fumar cigarros es bueno para los diabéticos.)</i>	36	1.00

CHAPTER SIX: SURVEY METHODS AND RESULTS

This chapter represents the epidemiological aspect of the project. It is arranged in four primary parts. The first part describes the data collection methods. The second part moves into results by reporting descriptive statistics and correlations. The third part involves inferential statistics and hypothesis test results. Since the project's main hypothesis resulted in a twist, a fourth section develops an alternative hypothesis

Epidemiological Survey Sampling Methods

Completion of the cultural consensus analysis marked the end of the ethnographic portion of the project, and the beginning of the epidemiological portion. For this portion of the research, a third sample group was recruited. This included 85 participants. Participants were recruited in the same manner as the consensus analysis stage. The remaining pages of the *Clinica 3* diabetes patient list provided by UIESESS were exhausted in the final sampling round. Sampling was completed by selecting blocks of informants (randomly selected pages of the contact list) and calling each name until the page was exhausted with appointments, refusals, or individuals could not be contacted after three attempts. This resulted in a sample of 85 (see Table 26 for demographic details).

The participants were self-selected treatment seeking diabetics. This point will be important later in the discussion. The self-selection process occurred in four parts. First, the individuals had to be registered with the IMSS system and second, had to have actually sought treatment at the IMSS clinic. The third part occurred during recruitment. Potential participants

were called for interview appointments from a list of diabetics being treated at *Clinica 3*. Potential informants were told that the research being conducted was being conducted with diabetic patients. They also told that they had been identified as a diabetic patient. Some individuals commented that they should not be receiving such a call, because they do not have diabetes. These persons were not pursued. The fourth selection point came with informed consent, which explicitly stated that the researcher would ask about the participant's diabetes, and that diabetes related information would be retrieved from participants' medical records. This limited the sample to known, active-treatment cases only. The questions asked were asked about treatment seekers. Those who were not motivated to participate in treatment, or worse those in denial of their condition, were selected out of the sample.

Participants were asked three qualifying questions on the telephone, even though in the end only the first had any research significance. First, they were asked if they had been diagnosed with diabetes at least three years prior. Second, they were asked if they knew their approximate fasting blood glucose level. Third, they were asked if they believe they have good control of their diabetes. Those reporting being diagnosed at least three years prior were recruited until all 85 participants were obtained.

The Survey Instrument

Participants were presented with an eight part survey that generally took 60-90 minutes to complete, though at least one informant required over two hours. The survey included a demographic section, a cultural consonance survey, a brief activity questionnaire, an adaptation of a semi-quantitative food frequency questionnaire (Willet 1990), an adherence to medication questionnaire (Morisky et al. 1986), the General Wellbeing Questionnaire (Bradley 1992), the ATT:19, which is a psychological adjustment to diabetes survey (Welch et al. 1994), and the

short version of the Life Orientation Questionnaire (Antonovsky 1987), measuring SOC. All scales were translated into Spanish by a professional translator and checked for accuracy by at least one other bilingual individual. The actual survey instrument appears in Appendix B.

Demographic variables included age in years, gender, marital status, monthly household income, occupation, zone (*Colonia*) of residence, household composition by age and gender, education level, time since diagnoses, self-reported good or poor diabetic control, self-reported fasting glucose in milligrams per deciliter, type and quantity of diabetes medications consumed, presence of other chronic health problems, and a list of other medications consumed regularly.

Cultural Consonance

For the cultural consonance survey, each scenario from the cultural consensus survey was used, given the high degree of sharing for each item. Participants were asked to rate how applicable each scenario is to their own personal life. Scenario agreement ratings were broken down into a two step process, first by asking if the scenario was applicable or not (*aplica o no aplica*) to the individuals' life. Then if the scenario is applicable they were asked if it was very applicable or somewhat applicable (*mucho o algo*). If the scenario was not applicable, they were asked if it was not at all applicable or only a little bit (*para nada o poco*). An attempt was made to reword the scenarios in ways that elicited positive or negative responses in a manner similar to the consensus survey. In addition to the rating tasks, some scenarios included follow up questions in order to gain greater specification over certain behaviors. For example, participants were asked how often they check their blood sugar, how often they seek a consultation with a health professional, what kind and quantity of alcohol they consume, how much water they drink, how many soft drinks they consume (both sweet and sugar free), and how many hours per day they sleep. The consonance survey questions can be seen in Table 19.

Table 19. Cultural consonance survey scenarios.

1. I eat a balanced diet that includes fresh whole fruits and vegetables.
(*Yo tengo buena alimentación que incluye frutas y verduras enteras y frescas.*)
2. I smoke.
(*Yo fumo.*)
3. I check my blood sugar no matter how good or bad my condition is controlled.
(*Yo me checo la azúcar en la sangre, no importando que tan bien o mal este controlada mi condición.*)
4. I have close friends and family to help with my diet.
(*Tengo amigos cercanos y familia para ayudarme con mi dieta.*)
5. Sometimes I eat fruits and vegetables that contain a lot of sugar.
(*A veces yo como frutas y verduras que contengan mucha azúcar.*)
6. When my blood sugar is very high, I take medications to control it.
(*Cuando tengo la azúcar muy alta, tomo medicamentos para controlarlo.*)
7. I believe my treatment is out of my hands.
(*Creo que mi tratamiento esta fuera de mis manos.*)
8. I pray and attend church.
(*Yo hago oraciones y asisto a la iglesia.*)
9. My family supports me physically and emotionally.
(*Mi familia me da apoyo físico e emocional.*)
10. I eat nopal cactus.
(*Yo como nopales.*)
11. I visit a doctor regularly.
(*Visito a un médico regularmente.*)
12. Sometimes I suffer from sadness or depression.
(*Algunas veces sufro de tristeza o depresión.*)
13. I have good communication with my doctor regularly.
(*Regularmente tengo buena comunicación con mi médico.*)
14. I am satisfied with my weight.
(*Estoy satisfecho con mi peso.*)

15. There is enough time in the day to complete all the recommended diabetes treatments.
(Hay suficiente tiempo en el día para seguir todas las indicaciones del tratamiento de la diabetes.)
16. Sometimes I get angry, even though I try to avoid it.
(A veces hago corajes, aunque intento evitarlos.)
17. I have a lasting and trusting relationship with my doctor.
(Tengo una relación duradera y de confianza con mi médico.)
18. For me, one of the biggest obstacles to overcome is the temptation of food and snacks.
(Para mí, uno de los obstáculos más grandes de superar es la tentación de la comida y antojos.)
19. I walk.
(Yo camino.)
20. My family is supportive.
(Tengo una familia que es de gran apoyo.)
21. I drink alcoholic drinks.
(Tomo bebidas alcohólicas.)
22. My treatment only includes good diet, exercise, and taking medications.
(Mi tratamiento incluye únicamente buena alimentación, ejercicio, y tomar mis medicamentos.)
23. Sometimes I experience strong emotions like fright.
(A veces, experimento emociones fuertes, como los sustos.)
24. I drink plenty of water.
(Yo tomo bastante agua.)
25. Now matter how hard I try to control my condition it is just going to get worse.
(No importa cuánto trato de controlar mi enfermedad, solo va a empeorar.)
26. I avoid sweet foods like cake and cookies.
(Evito comidas dulces, como pasteles y galletas.)
27. I drink soft drinks.
(Tomo refrescos.)
28. I have enough Money to treat my diabetes.
(Tengo suficiente dinero para tratar mi diabetes.)

29. I get enough fiber in my diet.
(*Yo obtengo suficiente fibra de mi dieta.*)
30. I have a good relationship with my doctor.
(*Tengo una buena relación con mi médico.*)
31. I keep busy with pastimes and hobbies.
(*Me mantengo ocupado con quehaceres y pasatiempos.*)
32. I eat a lot of fish and chicken, very little beef, and no pork.
(*Yo como mucho pescado y pollo, muy poca res y nada de puerco.*)
33. I live a tranquil life; avoid extreme behavior and negative attitudes.
(*Yo vivo una vida tranquila, evito comportamientos extremos y actitudes negativas.*)
34. My faith in god helps me with my diabetes.
(*Mi fe en Dios me ayuda con mi diabetes.*)
35. I sleep enough and rest well.
(*Yo duermo suficiente y descanso bien.*)
36. I have friends to chat with and do things together.
(*Tengo amigos con quien platicar y hacer cosas juntas.*)

Controls for Daily Activity

In order to control for the effects of exercise on diabetes control, an attempt was made to learn about each individual's daily physical activities. A four item scale was created to capture how many times per day each participant engages in 15 minutes of non-stop physical activity. The scale was based on ethnographic data and used examples drawn from free-lists, pile-sorts, and cultural consensus. The four items included general activities, walking, exercising, and playing sports or dancing. The actual questions appear in Table 20.

Table 20. Control questions for physical activity.

<ol style="list-style-type: none">1. How many times each day do you do general physical activities, such as going shopping, washing clothes by hand, or working in the house or garden, etc. for at least 15 minutes without stop? <i>(¿Cuántas veces al día dedica usted a actividades físicas en general, como ir de compras, lavar ropa al mano, trabajar en el jardín o casa, etc. por lo menos 15 minutos sin parar?)</i>2. How many times each day do you walk for at least 15 minutes without stop, excluding general activities? <i>(¿Cuántas veces al día dedica usted a caminar por lo menos 15 minutos sin parar, excluye actividades generales?)</i>3. How many times each day do you do exercises like yoga, go to the gym, or aerobics for at least 15 minutes without stop? <i>(¿Cuántas veces al día dedica usted a haciendo ejercicios, como el yoga, ir al gimnasio, o aerobics cardiovasculares por lo menos 15 minutos sin parar?)</i>4. How many times each week do you play sports or dance? Each time you play sports or dance, how many minutes do you do it? <i>(¿Cuántas veces por semana practica deportes o el baile? ¿En cada ocasión cuantos minutos le dedica a jugar deportes o a bailar?)</i>

Controls for Daily Food Consumption

It was also important to control for food consumption, so Willett's (1990) semi-quantitative food frequency questionnaire was adapted for use with the American Diabetes Association's diabetic food pyramid (National Institutes of Health 2009). The food pyramid is specially adapted to the needs of diabetics and is slightly different from the standard food pyramid. For diabetics the base layer is carbohydrates, with recommended 6-11 daily servings. In this case, carbohydrates include both flour and grain products such as bread and pasta, but also include starchy vegetables such as potatoes, corn, and peas. The next layer includes fresh fruits and vegetables with 2-4 and 3-5 portions respectively. Vegetables and fruits were subdivided into regular and sweet varieties, since ethnographic results showed a strong distinction along this

line. The protein categories follow, with recommended 4-6 portions of meat and meat substitutes, and 2-4 servings of dairy protein daily. The sixth category includes fats, sweets, and alcohol and has no recommended number of servings.

Participants were asked to list foods that they commonly eat. They were first asked about breakfasts, then lunches, then dinners, then snacks. Exploratory questions were asked about side dishes, garnishes, breads and tortillas, preparatory methods and beverages. Each meal was described in detail. Participants were then asked how often they eat that particular meal, less than once per week, once per week, twice, three, or four times per week or five or more times. At least two commonly consumed meals were recorded for each daily meal for each participant. In some cases participants claimed to eat the same meal each day, or so frequently they could not think of another meal that they eat commonly. Each participant was asked to provide three commonly consumed meals for each of the three daily meals and two days worth of between-meal snacks.

After collecting frequency data, the researchers returned to the detailed list of common meals and attempted to quantify each item listed. In order to do this the participant was shown what a single portion of each item looked like by using measured volumes of plastic modeling clay. The items were formed into various shapes and quantities in order to represent common foods. For items like eggs, whole fruits, and street tacos specific quantities consumed were recorded for example 1 small banana, 2 eggs, or 3 tacos. Street tacos in Guadalajara are prepared almost equally by all vendors; one only need ask about single or double tortillas and type of garnish. The number of portions consumed for each of the six categories of the food pyramid were recorded by showing the participant a single serving of an item and asking “when you eat this item do you eat this much?” If the answer is no the researcher would then ask do you eat

more or less? Followed by prompts of how much more or less, half or double, triple, etc., until the proper portion consumed is identified.

Once all items had been quantified, an average daily consumption of each of the six food pyramid categories and two ethnographic sub-categories for sweet fruits and vegetables was calculated. The calculation involved multiplying the number of servings from each category or sub-category times the frequency with which it is consumed each week. The total for each of the reported meals is then added together for each meal category and divided by the total combined frequency for each meal category.

For example if a person has one egg with one serving of beans and two tortillas for one breakfast, which they eat three times per week, they are given a score of three meat proteins (1 egg x 3 days) and nine carbohydrates (1 bean + 2 tortilla x 3 days) for that meal. If they have another breakfast of two regular quesadillas, which they eat twice per week, they are given a score of four carbohydrates (2 tortilla x 2 days) and four dairy proteins (2 cheeses x 2 days). A third breakfast is one and one half servings of cornflakes with one half serving of milk and a banana, which is also eaten about twice per week. The score for this meal is three carbohydrates (1.5 cornflakes x 2 days), one dairy (.5 milk x 2 days), and two sweet fruit (1 banana x 2 days). Each category is added for a total breakfast intake of 3 meat, 15 carbohydrates, 5 dairy, and 2 sweet fruits. These totals are then divided by 7 (the frequency total) for an average breakfast intake, .43 meat, 2.14 carbohydrate, .71 dairy, and .29 fruit.

The number of alcoholic drinks and sweet soft drinks reported in the consonance survey were also added to the fats, sweets, and alcohol category. Meal category totals are then added together for a total average daily intake of each pyramidal category. These totals were then later adjusted by subtracting the minimum recommended daily portions presented in the diabetes food

pyramid for a quantifiable measure (in average number of servings) of how closely participants follow recommended food guidelines.

Additional food questions were also asked. For example, ethnographic data showed a strong distinction between sweet and non-sweet fruits and vegetables. Interestingly, apples and bananas appeared as popular examples of sweet (bananas) and non-sweet (apples) fruits, so participants were asked how many apples they consume per week and how many bananas. Other foods of interest included oats, *nopales*, fish, chicken, beef, pork, sweets, candies and regular soft drinks, and sugar substitutes.

Controls for Adherence to Pharmaceutical Medications

Adherence to medication was accounted through Morisky et al.'s (1986) adherence to medication scale ($\alpha = .65$). The scale takes advantage of the tendency of participants to answer yes to adherence questions by reversing the tone of the questions. In this survey, a score of 4 (high score) is indicative of poor adherence while a score of 0 is indicative of good adherence. The actual questions appear in Table 21. An additional measure of pill counting had been planned whereby the information from prescription labels would be used to calculate an ideal quantity of medicine consumed, which could be compared with an actual inventory of remaining medication. However, this plan failed because Mexican pharmaceuticals do not carry prescription labels as they do within the US. For example, the popular anti-glycemic medication Metformin is available without a prescription.

Table 21. Adherence to medication scale from Morisky et al. (1986).

1. Do you ever forget to take your medicine? (¿Se le olvida a veces tomar sus medicamentos?)
2. Are you careless at times about taking your medicine? (¿A veces es descuidado cuando se trata de tomar sus medicamentos?)
3. When you feel better do you sometimes stop taking your medicine? (¿Cuando usted se siente mejor a veces deja de tomar sus medicamentos?)
4. Sometimes if you feel worse when you take the medicine, do you stop taking it? (¿Si usted se siente peor cuando toma los medicamentos, a veces los deja de tomar?)

General Well-Being Scale

Several additional formal scales were implemented as well. For example, Bradley's (1992) General Wellbeing Questionnaire ($\alpha = 0.37$) is a popular instrument discussed in the diabetes research literature. The questionnaire is a 22 item scale designed to measure wellness overall, including four subscales, depression ($\alpha = 0.11$), anxiety ($\alpha = 0.32$), energy ($\alpha = -0.80$), and positive well-being ($\alpha = 0.77$). The actual scale appears in Table 22. The scale is measured in a four point Likert scale of frequency. The scale ranges from 1 (never) through 4 (almost always). Questions follow the earlier format of asking for two dichotomous ratings. Some items are reverse-coded for analysis.

Table 22. Bradley's (1992) General Wellbeing Questionnaire.

<u>Subscale</u>	<u>Item</u>
Depression	1. I feel that I am useful and needed. (Siento que soy útil y necesario.)
Depression	2. I have crying spells or feel like it. (Tengo crisis de llanto o siento que las voy a tener.)
Depression	3. I find I can think quite clearly (Puedo pensar muy claramente.)

Depression	4. My life is pretty full. <i>(Mi vida es bastante completa.)</i>
Depression	5. I feel downhearted and blue. <i>(Me siento descorazonado y triste.)</i>
Depression	6. I enjoy the things I do. <i>(Disfruto las cosas que hago.)</i>
Anxiety	7. I feel nervous and anxious. <i>(Me siento nervioso y ansioso.)</i>
Anxiety	8. I feel afraid for no reason at all. <i>(Me siento asustado sin tener ninguna razón.)</i>
Anxiety	9. I get upset easily or feel panicky. <i>(Me molesto fácilmente o siento pánico.)</i>
Anxiety	10. I feel like I'm falling apart and going to pieces. <i>(Siento que me estoy derrumbando y que me voy a romper en pedazos.)</i>
Anxiety	11. I feel calm and can sit still easily. <i>(Me siento tranquilo y puedo permanecer sentado tranquilamente.)</i>
Anxiety	12. I fall asleep easily and get a good night's rest. <i>(Me duermo fácilmente y logro descansar bien por las noches.)</i>
Energy	13. I feel energetic, active or vigorous. <i>(Me siento lleno de energía, activo o vigoroso.)</i>
Energy	14. I feel dull or sluggish <i>(Me siento atarantado o perezoso.)</i>
Energy	15. I feel tired, worn out, used up, or exhausted. <i>(Me siento cansado, agotado, consumido, o exhausto.)</i>
Energy	16. I have been waking up feeling fresh and restored. <i>(Me he estado despertando sintiéndome fresco y restaurado.)</i>
Positive well-being	17. I have been happy, satisfied, or pleased with my personal life. <i>(He estado feliz, satisfecho, o complacido con mi vida personal.)</i>
Positive well-being	18. I have felt well adjusted to my life situation. <i>(Me he sentido bien adaptado a la circunstancia de mi vida.)</i>

Positive well-being	19. I have lived the kind of life I wanted to. (<i>He vivido la clase de vida que quise tener.</i>)
Positive well-being	20. I have felt eager to tackle my daily tasks or make new decisions. (<i>Me he sentido deseoso de realizar mis tareas diarias, o tomar nuevas decisiones.</i>)
Positive well-being	21. I have felt like I could easily handle or cope with any serious problem or major change in my life. (<i>He sentido que puedo fácilmente hacer frente a cualquier problema grave o cambio importante en mi vida.</i>)
Positive well-being	22. My daily life has been full of things that were interesting to me. (<i>Mi vida cotidiana ha estado llena de cosas que me parecieron interesantes.</i>)

Psychological Adjustment to Diabetes

Another instrument, the ATT:19 (Welch et al. 1994), was used to measure psychological adjustment to diabetes ($\alpha = 0.84$). The original 39 item version of the scale included six subscales. Subscales included diabetes stress ($\alpha = 0.79$), coping ($\alpha = -0.05$), guilt ($\alpha = 0.68$), alienation-cooperation ($\alpha = 0.16$), illness conviction, and tolerance for ambiguity. Later variations decreased the number of questions to 19, and reduced the number and structure of the subscales. Most notably are the removal of the illness conviction subscale, the reduction of the tolerance and ambiguity subscale to one question, and the dominance of the diabetes stress subscale, which includes 10 of the 19 questions. The scale and subscales are shown in Table 23.

Table 23. The ATT19: a measure of psychological adjustment to diabetes including its subscales.

<u>Subscale</u>	<u>Item</u>
Diabetes stress	1. If I did not have diabetes I think I would be quite a different person. (<i>Si no tuviera diabetes pienso que sería una persona muy diferente.</i>)
Guilt	2. I dislike being referred to as “A DIABETIC” (<i>No me gusta que me llamen “DIABÉTICO”</i>)

Diabetes stress	3. Diabetes is the worst thing that has ever happened to me. <i>(La diabetes es lo peor que me ha sucedido.)</i>
Diabetes stress	4. Most people would find it difficult to adjust to having diabetes. <i>(A la mayoría de la gente se le haría difícil adaptarse a tener diabetes.)</i>
Diabetes stress and Guilt	5. I often feel embarrassed about having diabetes. <i>(A menudo me da pena tener diabetes.)</i>
Guilt	6. There is not much I seem to be able to do to control my diabetes. <i>(Parece que no hay mucho que pueda hacer para controlar mi diabetes.)</i>
Diabetes stress and Coping	7. There is little hope of leading a normal life with diabetes. <i>(Hay poca esperanza de llevar una vida normal cuando se tiene diabetes.)</i>
Diabetes stress	8. The proper control of diabetes involves a lot of sacrifice and inconvenience. <i>(El control apropiado de la diabetes implica mucho sacrificio e inconvenientes.)</i>
Guilt	9. I try not to let people know about my diabetes. <i>(Intento no dejar que la gente se entere sobre mi diabetes.)</i>
Diabetes stress	10. Being told you have diabetes is like being sentenced to a lifetime of illness. <i>(El que se digan que tienes diabetes es como sentenciarte a una vida llena de enfermedad.)</i>
None	11. My diabetes diet does not really spoil my social life. <i>(Mi dieta diabética realmente no estropea mi vida social.)</i>
Alienation-Cooperation and Guilt	12. In general, doctors need to be a lot more sympathetic in their treatment of people with diabetes. <i>(En general, los doctores deben ser mucho más comprensivos al tratar a la gente que tiene diabetes.)</i>
Diabetes stress and Alienation-Cooperation	13. Having diabetes over a long period changes the personality. <i>(Después de un largo periodo de tener diabetes la personalidad cambia.)</i>
Diabetes stress	14. I often find it difficult to decide whether I feel sick or well. <i>(A menudo me es difícil decidir si me siento enfermo o bien.)</i>

Coping	15. Diabetes is not really a problem because it can be controlled. <i>(La diabetes no es realmente un problema porque puede ser controlada.)</i>
Tolerance and Ambiguity	16. There is really nothing you can do if you have diabetes. <i>(No hay realmente nada que usted puede hacer si tiene diabetes.)</i>
Guilt	17. There is really no-one I feel I can talk to openly about my diabetes. <i>(En realidad no hay nadie con quien siento que puedo hablar abiertamente sobre mi diabetes.)</i>
Coping	18. I believe that I have adapted well to having diabetes. <i>(Creo que me he adaptado bien a tener diabetes.)</i>
Diabetes stress	19. I often think it is unfair that I should have diabetes when other people are so healthy. <i>(A menudo pienso que es injusto que yo tenga diabetes cuando otras personas son tan sanas.)</i>

Life-Orientation or Sense of Coherence Scale

The final measurement scale is the Life-Orientation Questionnaire ($\alpha = 0.80$) developed by Antonovsky (1987). The questionnaire uses a seven-point Likert scale to measure “sense of coherence” or SOC. The scale has two versions, a long version and a shorter 13 item version. The short version was used. Participants are asked to rate their position between one of two extremes. While this scale was intended to be a written measure, in this case it was adapted for verbal use. This was done for several reasons, consistency in interviews, complexity of the process, and a low literacy rate in the study population. The scales were color coded to aid those with some reading ability in selecting an accurate response. The scale, as it was used in the field, along with a translation are presented in Table 24.

Table 24. Life-orientation Questionnaire (Antonovsky 1987).

1. Do have the feeling that you don't really care about what goes on around you? (¿Siente usted que no le importa lo que esté pasando a su alrededor?)								
Very seldom or never (Casi nunca o nunca)	1	2	3	4	5	6	7	Very often (Con mucha frecuencia)
2. Has it happened in the past that you were surprised by the behavior of people whom you thought you knew well? (¿Anteriormente le ha pasado que se sorprendió por el comportamiento de la gente que usted pensaba conocer bien?)								
Never happened (Nunca Pasa)	1	2	3	4	5	6	7	Always happened (Siempre pasa)
3. Has it happened that people whom you counted on disappointed you? (¿Le ha pasado que la gente en quien usted contaba lo defrauden o decepcionen?)								
Never happened (Nunca Pasa)	1	2	3	4	5	6	7	Always happened (Siempre pasa)
4. Until now your life has had: (Hasta ahora la vida ha tenido:)								
No clear goals or purpose at all (Nada de objetivos claros o propósito)	1	2	3	4	5	6	7	Very clear goals and purpose (Objetivos muy claros y propósito)
5. Do you have the feeling that you're being treated unfairly? (¿Siente usted que está siendo tratado injustamente?)								
Very often (Con mucho frecuencia)	1	2	3	4	5	6	7	Very seldom or never (Casi nunca o nunca)
6. Do you have the feeling that you are in an unfamiliar situation and don't know what to do? (¿Siente usted que está en una situación desconocida y no sabe qué hacer?)								
Very often (Con mucho frecuencia)	1	2	3	4	5	6	7	Very seldom or never (Casi nunca o nunca)
7. Doing the things you do every day is: (Para hacer las cosas que hace diario es:)								
A source of deep pleasure and satisfaction (Fuente de un placer profundo y de satisfacción)	1	2	3	4	5	6	7	A source of pain and boredom (Fuente de dolor y aburrimiento)
8. Do you have very mixed-up feelings and ideas? (¿Tiene usted sentimientos e ideas muy confusas?)								
Very often (Con mucha frecuencia)	1	2	3	4	5	6	7	Very seldom or never (Casi nunca o nunca)

9. Does it happen that you have feelings inside you would rather not feel? (¿Le ha pasado que tiene sentimientos dentro de usted que prefiere no sentir?)								
Very often (Con mucha frecuencia)	1	2	3	4	5	6	7	Very seldom or never (Casi nunca o nunca)
10. Many people - even those with a strong character - sometimes feel like sad sacks (losers) in certain situations. How often have you felt this way in the past? (Mucha gente, incluyendo los que tienen un carácter fuerte, a veces se sienten como perdedores en ciertas situaciones. ¿Con que frecuencia se ha sentido usted así en el pasado?)								
Never (Casi nunca o nunca)	1	2	3	4	5	6	7	Very often (Con mucha frecuencia)
11. When something happened, have you generally found that: (Cuando algo ocurre, en general usted encuentra que:)								
You overestimated or underestimated its importance (Usted sobreestimó o subestimó la importancia)	1	2	3	4	5	6	7	You saw things in the right proportion (Vio las cosas en proporción balanceada)
12. How often do you have the feeling that there's little meaning in the things you do in your daily life? (¿Con que frecuencia siente usted que las cosas que hace en su vida diaria tienen poco sentido?)								
Very often (Con mucha frecuencia)	1	2	3	4	5	6	7	Very seldom or never (Casi nunca o nunca)
13. How often do you have feelings that you're not sure you can keep under control? (¿Con que frecuencia tiene usted sentimientos de los cuales no está seguro poder controlar?)								
Very often (Con mucha frecuencia)	1	2	3	4	5	6	7	Very seldom or never (Casi nunca o nunca)

Clinical Biomedical Data

The final step in hypothesis testing included the collection of data from participants' medical records. These data were collected by UISESS staff and passed to the primary researcher. Medical data include the most recent fasting blood glucose reading (FBG), for most cases (77 cases) a second FBG (68 cases) and for some (47) a third FBG. It also includes the past three blood pressure readings, height, weight, code for assigned doctor, frequency of clinical visits, and prescribed pharmaceuticals.

Calculating Scales and Coding Variables

The first step in data analysis is to calculate new variables such as mean blood glucose (taken from the last two readings) and blood pressure levels (three reading mean), and body mass index (BMI) which used the metric formula of weight divided by height squared. Food was calculated according to the formula reported above. Adherence was calculated as the sum of the four questions then reverse coded so that greater number correspond with greater adherence.

Cultural consonance scores were calculated by subtracting each individual's response from the value provided by the cultural consensus answer key, then summing the difference. That score was then multiplied by negative one (-1) to reverse signs. All values were then made absolute negatives and the minimum value of 37.79 was added to all scores so that greater numbers correspond with greater cultural consonance.

A second cultural consonance score was also calculated since about one-third of the consonance survey overlapped with areas that have direct controls built into the protocol such as food, exercise, and taking medications. Any consonance items related to these topics (#1, 5, 10, 14, 18, 19, 21, 22, 24, 26, 27, 29, and 32) were removed and cultural consonance was again calculated as an absolute sum of the remaining items. Three additional consonance subscales were also created. These subscales correspond with major themes developed in the domain analysis, the doctor-patient relationship (items # 11, 13, 17, 30), attitudes and emotions (items #12, 16, 23, 31, 33) and social supports (items #4, 9, 20, 36).

The ATT19 psychological adjustment score was calculated by reverse coding all items except #11, 15, and 18, then summing the scores so that low scores near 19 represent poor adjustment and high scores near 95 represent positive adjustment.

Well-being is calculated as a series of subscales as well as an overall well-being score following the formula in Table 25 originally published by Bradley (1992).

Table 25. Calculation formulas for General Well-Being (Bradley 1992).

Subscale	Formula
Depression	12 - #1 + #2 - #3 - #4 + #5 -#6
Anxiety	6 + #7 + #8 + #9 + #10 - #11 - #12
Energy	6 + #13 - #14 - #15 + #16
Positive Well-Being	17+ #18 + #19 + #20 + #21 + #22
Total General Well-Being	36 - Depression - Anxiety + Positive Well-Being + Energy

The life Orientation Questionnaire (Antonovsky 1987) was scored by reverse coding items #1, 2, 3, 7, and 10, then summing all responses for a scale with a possible range of 13 to 91.

Sample Description

Eighty-five cases were collected in the final survey. Of those cases eight were ineligible for hypothesis testing because of insufficient availability of medical data, leaving 77 cases. Descriptive data are located in Table 26. The mean age of the sample is 55.95 years (median 57). Increasing age is correlated with increased consumption of non-diabetes medications ($r = 0.23$ $P = 0.03$), but not with an increase in co-morbid conditions. There are 51 women (66.2%) and 26 men (33.8%), of whom 59 are married (76.6%), two live in free union (2.6%), three are widows or widowers (3.9%), seven are divorced or separated (9.1%), and six are single (7.8%). Women tend to report more frequent medical consultations ($r = 0.28$ $P = 0.01$). More frequent medical consultation is correlated with greater self-reports of having achieved good diabetic control ($r = 0.24$ $P = 0.03$), though physiological measures of control do not follow the same patterns (see below). Monthly income ranges from MEX 0 to \$16,000 pesos, with a mean of MEX \$4088.41 (median MEX \$3000) pesos (approximate exchange rate of MEX \$12.5 pesos to US \$1 dollar; mean US \$327.07, median US \$240). Education ranges from no education at all (4

informants = 5.2%) through the equivalent of a baccalaureate (8 informants = 10.4%). The majority of the sample report having a primary (41 = 53.2%), secondary (13 = 16.9%), or high school equivalent education (11 = 14.3%). Education is inversely correlated with age ($r = -0.32$ $P < 0.01$) so that the younger people in the sample are better educated. Education and monthly income have an expected positive correlation ($r = 0.50$ $P < 0.01$). Education and monthly income both have significant correlations with well-being and several of its subscales (discussed below).

The respondents have had diabetes for a substantial amount of time with a mean of 11.31 (median 10) years since diagnosis. The majority (88.4%) of the sample consume oral hypoglycemic medications, largely Metformin and Glibenclamide. In addition, 23.4 percent consume injectible insulin, of which 14.3 percent also take oral medications. They also regularly consume a mean 1.44 (median 1) additional, non-diabetes related medications to treat a mean 1.17 (median 1) other co-morbid conditions, which is frequently hypertension.

Table 26. Descriptive statistics for sample demographics.

<u>Demographic variable</u>	<u>Frequency</u>	<u>%</u>	<u>Mean</u>	<u>Median</u>	<u>Range</u>
Gender					
Female	51	66.2			
Male	26	32.8			
Age			55.95	57	29-77
Marital status					
Married					
Free Union	59	76.6			
Widowed	2	2.6			
Divorced/separated	3	3.9			
Single	7	9.1			
	6	7.8			

Family composition					
Household size			4.58	4	1-22
Men			1.65	2	0-6
Women			1.87	2	0-5
Boys			.52	0	0-6
Girls			.57	0	0-8
Monthly income			4088.41	3000	0-16,000
Education					
None	4	5.2			
Primary	41	53.2			
Secondary	13	16.9			
Preparatory	11	14.3			
Trade/advanced	8	10.4			
Occupation					
Homemaker	33	42.9			
Retired	14	18.2			
Employed non-professional	17	22.1			
Employed professional	3	3.9			
Self-employed	7	9.1			
Student	1	1.3			
Frequency of medical visits (days)					
< once in 6 months	2	2.6			
One in 3 months	2	2.6			
More than once in 3 months, < than monthly	1	1.3			
Monthly	67	87			
More than once per month, < weekly	3	3.9			
Weekly	1	1.3			
More than once per week	1	1.3			
Self-reported diabetic control					
Yes	55	71.4			
No	22	28.6			
Years with diabetes			11.31	10	1-32
Diabetes Medicines					
Oral	68	88.4			
Injections	18	23.4			
Oral and injections	11	14.3			
Non-Diabetes Medicines			1.44	1	0-6
Co-morbid conditions			1.17	1	0-4

Diabetic Outcomes

Blood glucose was measured as the mean of two monthly readings. Mean of that average is 155.1 (mg/dl) with a range of 76 to 383 (mg/dl) (Table 27). Self-reported control of diabetes did not correlate with actual measures of control (glucose <120 mg/dl), although the proportion of good self-report and actual control are similar. There is a correlation between self-reported glucose levels and actual clinical test results ($r = 0.42$ $P < 0.01$). An independent samples t-test further demonstrates no significant difference between self-reported glucose levels and actual FBG measures ($t = 0.02$ $P = 0.98$). Self reported control did correlate with greater overall adherence to pharmaceutical consumption ($r = 0.22$ $P = 0.04$). Women average significantly higher (21.8 mg/dl) in mean blood glucose than men ($t = 1.94$ $P = 0.03$). Blood glucose monitoring (Table 28) is low with only 11.7 percent reporting at least a once-daily blood glucose check. At least once a month but less than daily checks monitoring is most common with 65 percent reporting that range. That leaves 23.4 percent checking less than once a month or not at all. Monthly glucose checking corresponds with once-monthly visits as reported by a large portion of the sample (87%). Additionally, greater frequency in blood glucose checking is positively associated with greater cultural consonance in the treatment domain ($r = 0.33$ $P < 0.01$).

Table 27. Mean blood glucose.

	<u>Mean measure</u>	<u>Self-reported mean</u>
Blood glucose mg/dl	155.10	157.10
Women	162.47	162.90
Men	140.65	144.74

Table 28. Frequency of glucose monitoring.

	<u>Frequency</u>	<u>%</u>
Frequency of glucose checking		
Daily or more than once daily	9	11.7
Less than daily, but more than once per month	27	35.1
Monthly	23	29.8
Less than monthly or not at all	18	23..4

Mean diastolic blood pressure (three readings) is 78 (mmHg) (median 78.3 mmHg) with a range of 65 to 95 (mmHg). Systolic blood pressure has a mean of 125.8 (mmHg) (median 126.7 mmHg) and a range of 110 to 163.3 (mmHg). Systolic and diastolic blood pressure are strongly correlated ($r = 0.71$ $P < 0.01$). BMI, which was calculated as weight divided by height in meters squared, had a mean of 28.49 (median 28.73) and ranged from 17.92 to 40.63. BMI was positively correlated with both systolic ($r = 0.40$ $P < 0.01$) and diastolic ($r = 0.384$ $P < 0.01$) blood pressure. BMI is also correlated with gender ($r = -0.25$ $P = 0.02$), showing that women tend to have higher BMI. Diastolic blood pressure is also correlated with gender, with men having higher diastolic blood pressure.

Abstinence from alcohol was reported by 76.6 percent of the sample. Consumption of natural water was slightly lower than recommended (2 liters per day) at a mean of 1.8 liters per day. There was a significant correlation between consumption of water and blood glucose ($r = 0.25$ $P = 0.01$). One of the primary symptoms of diabetes is increased thirst. This correlation illustrates that as blood sugar rises, so does water consumption (i.e., thirst). The self-reported number of hours slept in a day were negatively correlated with blood glucose ($r = -0.17$ $P = 0.07$) and positively correlated with systolic ($r = 0.26$ $P = 0.02$) and diastolic ($r = 0.21$ $P = 0.04$) blood pressure. Mean hours slept is 7.398 hours (median 7.5) with a range of 3 to 14 hours. See Table 29.

Table 29. Descriptive statistics for blood pressure and other physiological characteristics.

	<u>Mean</u>	<u>Median</u>	<u>Range</u>
Blood pressure			
Systolic	125.8	126.7	110-163.3
Diastolic	78	78.3	65-95
BMI	28.49	28.73	17.92 - 40.63
Water (Liters)	1.8	1.5	0-5
Sleep (Hours)	7.398	7.5	3-14

Food Frequency Short List Results

Food consumption was an important aspect of the treatment model from both cultural and biomedical perspectives. Several foods were identified as important in the domain analysis. Time did not permit a full investigation of the effects of consonance in the food-as-treatment model. However, a short section of the survey collected data about specific foods of interest (Table 30). Oats were an important food item, representing a prime source of fiber. Informants reported eating a mean 3.57 servings (median 1.5) of oats weekly. *Nopales* were also identified as an important medicinal food for diabetics. Again, informants noted the fiber content of this food. The mean number of servings of *nopales* consumed weekly was 4.3 (median 3). Apples were also mentioned as an important source of fiber, and were high on the list of foods that ought to be eaten by diabetics. A mean of 3.56 (median 3) apples are reported eaten weekly with a range of 0 to 28. Apples were diametrically opposed to bananas in the food-as-treatment model. A mean 1.77 (median 1) bananas were reportedly consumed, with a range of 0 to 14. A t-test was used to test if diabetic patients eat significantly more apples than bananas. The test showed a significant mean difference ($t = 3.23$ $P < 0.01$) between them, as would be expected based on the food-as-treatment model. This consumption-avoidance difference is also notable with meat where significantly more ($t = 6.33$ $P < 0.01$) servings of chicken and fish (mean 5.24, median 5 servings) are reportedly consumed than beef (mean 2.08, median 1). Beef, in turn was consumed significantly more ($t = 5.39$ $P < 0.01$) than pork (mean 0.54, median 0).

Table 30. Descriptive statistics for select items from the food model.

	<u>Mean servings</u>	<u>Median servings</u>	<u>Range</u>
Fish and Chicken	5.24	5	0-16
Nopales	4.30	3	0-21
Oats	3.57	1.5	0-36
Apples	3.56	3	0-28
Beef	2.08	1	0-21
Bananas	1.77	1	0-14
Pork	0.54	0	0-6

Since sweets had such a prominent place in the model, special emphasis was given (Table 31). Consumption of sweets was measured as part of the overall dietary meal pattern, as an individual category, and as sweet carbonated drinks. Interestingly there is a relation between consuming sweets and other foods. When asked about sweets directly, not as part of meals, the mean number of servings consumed weekly is 9.63 (median 3), with a range of 0 to 71.

Frequently the consumption of sweets is associated with sugary drinks, especially Coca-Cola, and sweet breads. Increased sweet soda consumption is correlated with lower consonance in the diabetes treatment domain ($r = -0.29$ $P < 0.01$). Higher consumption of sweets is correlated with decreased consumption of apples ($r = -0.21$ $P = 0.04$). Sugar substitutes were also popular with a mean weekly consumption of 8.85 serving-packets (median 3 servings). Consumption of sugar-free sodas was correlated with having a higher monthly income ($r = 0.33$ $P < 0.01$).

Table 31. Descriptive statistics for sweets and sugar substitutes.

	<u>Mean</u>	<u>Median</u>	<u>Range</u>
Sweets	9.63	3	0-71
Regular Sodas	0.31	0	0-2.5
Diet Sodas	0.28	0	0-3
Sugar substitutes	8.85	3	0-110

Self-Reported Consumption and the Diabetic Food Pyramid

Food consumption represents a primary control variable as well (Table 32). The Mexican diet is composed largely of carbohydrates in the form of beans, rice, corn tortillas, and refined-

wheat breads. The mean daily intake of carbohydrate is 8.16 servings (median 6.94), with a range of 2.73 to 32.49 servings. Sweets and fats made up the next most important category, largely due to consumption of sweet breads and fried foods. The mean daily consumption of sweets and fats in association with regular meals is 2.83 servings (median 1.64), with a range of 0 to 16.67 servings. The next most common foods consumed are meats (and nuts) with a mean consumption of 2.29 servings (median 1.9), with a range of 0 to 10.95 servings. The fourth most commonly consumed food is vegetables, which have a mean daily 1.85 servings (median 1.67). The range of vegetable consumption is 0 to 7.07 servings. Dairy products represent the fifth category of consumption with a mean daily consumption of 1.58 servings (median 1.45). Fruits were the food consumed the least with a mean daily consumption of 1.03 servings (median 0.84). Older individuals tend to consume fewer total food servings ($r = 0.26$ $P = 0.02$). This distribution turns the traditional food pyramid into a fountain (See Figure 16).

Table 32. Descriptive statistics for food consumption.

	<u>Mean</u>	<u>Median</u>	<u>Range</u>	<u>Prescribed</u>
Carbohydrates	8.16	6.94	2.73-32.49	6-11
Sweets and fats	2.83	1.64	0-16.67	0
Meat and nuts	2.29	1.9	0-10.95	2-3
Vegetable	1.85	1.67	0-7.07	3-5
Dairy	1.58	1.45	0-6.60	2-3
Fruit	1.03	0.84	0-7.14	2-4

The number of servings of food for each category was subtracted from the minimum daily servings prescribed by the American Diabetes Association's diabetic food pyramid (NIH 2009). The diabetes food pyramid is currently being phased out. Food pyramid guidelines from 2009 called for 6 to 11 servings of carbohydrates, 3 to 5 servings of vegetables, 2 to 4 servings of fruit, 2 to 3 servings of meat or nuts, 2 to 3 servings of dairy, and 0 servings of fats, sweets, and alcohol. After subtracting prescribed quantities from reported quantities, the six categories were summed to have a single variable that summarizes food intake. This variable was slightly

abnormally distributed so it was recoded to bring a few very high cases of consumption in line with normal distribution. The mean serving value of 2.73 and median serving value of 0.11 servings suggests that those who over eat, over eat a great deal. The range for total serving intake above and below prescribed levels is 5.46 servings below to 43.08 servings over. Increased number of servings was significantly correlated with higher monthly income ($r = 0.36$ $P < 0.01$).

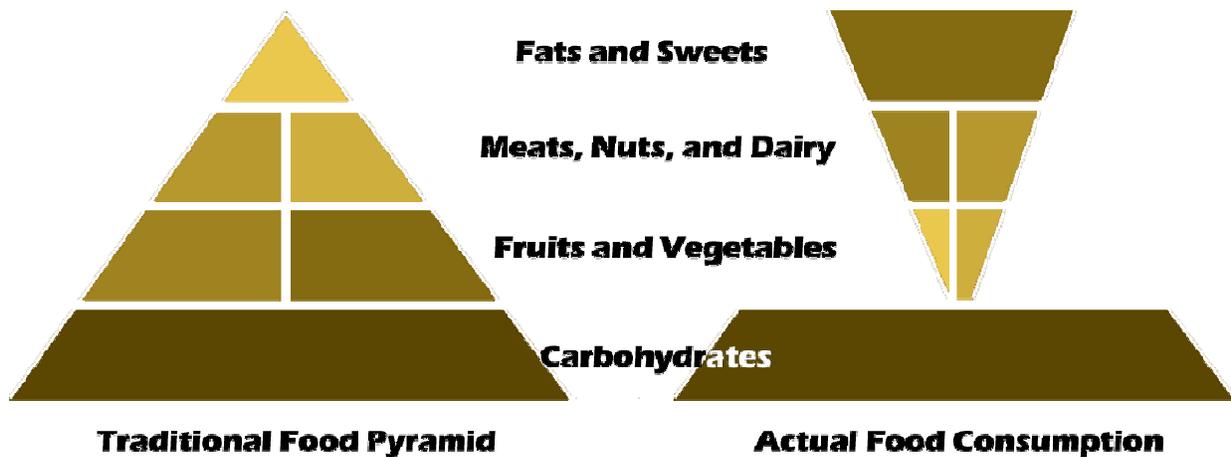


Figure 16. Diabetes food pyramid versus actual consumption.

Physical Activity Results

Physical activity was another important control variable. Activity was recorded in units of 15 minutes. Total activity has a 4.83 mean units, or 72.45 minutes per day (median 4 units or 1 hour of activity) and a range of 0 to 22 units. In the area of general activity, one hour was a common response and was used as a default where informants claimed some general activity but were unable to quantify it. Total activity was a strongly negatively skewed variable. For hypothesis testing, the activity control was dichotomized above and below the median of one hour daily. Within the sample, 45.5% get at least 1 hour of physical exercise daily. See Table 33.

Table 33. Descriptive statistics for physical activity.

	<u>Mean Units</u>	<u>Mean Minutes</u>	<u>Range in Units</u>	<u>Range in Minutes</u>
Total activity	4.83	72.45	0-22	0-330
General activity	2.85	42.75	0-14	0-210
Walking	1.34	20.10	0-8	0-120
Exercise	0.42	6.24	0-8	0-120
Sport/dance	0.23	3.48	0-3.4	0-51

Greater total physical activity was associated with being female ($r = -0.39$ $P < 0.01$), with being more adherent to pharmaceutical consumption ($r = 0.25$ $P = 0.02$), with being more culturally consonant in the treatment domain ($r = 0.29$ $P < 0.01$), and with several aspects of well-being and psychological adjustment (see below). General activity contributed a mean 2.85 units of activity to the total. The range is 0 to 14 units. Walking is the strongest culturally mandated activity. It contributed 1.34 units daily; the range is 0 to 8. Explicit exercise like aerobics, yoga, or going to the gym contributed a mean 0.42 units daily and range of 0 to 8. Sports and dancing contributed a mean 0.23 units daily with a range of 0 to 3.4 units.

Results for Pharmaceutical Consumption

Controls were also needed for consuming pharmaceuticals. There were three hypoglycemic medications consumed regularly, Metformin, Glibenclamide, and insulin (Table 34). There were 56 Metformin users. The mean consumption among these users is 1763.84 milligrams (median 1700 mg) per day, with a range of 850 to 5100 milligrams per day. Metformin has a largely tri-modal distribution based on the popularity of 850 milligrams tablets. Within that distribution, 23.2 percent consume 850 milligrams per day, 48.2 percent consume 1700 milligrams per day, and 19.6 percent consume 2550 milligrams per day. This accounts for 91 percent of all Metformin users. There is a correlation with greater Metformin consumption and greater BMI ($r = 0.25$ $P = 0.03$). Glibenclamide was another popular hypoglycemic pharmaceutical. Fifty participants consume a mean 13.99 milligrams of Glibenclamide per day

(median 10 mg). The range is from 2 to 30 milligrams per day. There is a single mode of 10 milligrams per day, which represents 48 percent of all Glibenclamide users. Insulin was the third most common hypoglycemic pharmaceutical used, with 21 injection users in the test sample. Insulin is measured in units. One unit of insulin is equal one-hundredth of a milliliter (1/100 ml). Insulin users consumed a mean 30.52 (median 30) units per day. The distribution was normal with a range of 9 to 76 units per day.

Table 34. Descriptive statistics for pharmaceutical consumption.

	<u>Mean</u>	<u>Median</u>	<u>Range</u>
Hypoglycemics			
Metformin (mg)	1763.84	1700	850-5100
Glibenclamide (mg)	13.99	10	2-30
Insulin (units)	30.52	30	9-76

Since all participants had been diagnosed for at least one year (mean 11.31 years) it was assumed that the profile of pharmaceutical consumption had generally been stabilized to fit each patient's needs, so that adherence to the pharmaceutical treatment was the primary variable of interest. Adherence outcomes were in the form of a five-point scale with a possible range of 0 to 4, with 0 representing being completely adherent and 4 being completely non-adherent. Those scores were reverse coded so that greater numbers correspond with greater degrees of adherence, 4 representing complete adherence (Table 35). The mean adherence score, after recoding, is 2.7 (median 3) and tends to be skewed toward greater adherence. Complete adherence accounts for 39 percent of the sample while complete lack of adherence accounts for only 7.8 percent. Even when combined with the next lowest level of adherence, non-adherence only accounts for about 20 percent (19.5%) of the sample. The middle range, representing mostly but not completely adherent individuals, constitutes the remaining 41 percent of the test sample. Since the variable was abnormal, it was dichotomized. The dichotomized control variable represents complete adherence versus not completely adherent.

Table 35. Descriptive statistics for the adherence scale.

	<u>Mean</u>	<u>Median</u>	<u>Frequency</u>	<u>%</u>
Adherence Scale	2.7	3		
4. Completely adherent			30	39.0
3. Mostly adherent			15	19.5
2. Somewhat adherent			17	22.1
1. Very little adherence			9	11.7
0. Not adherent			6	7.8

Results Related to Well-Being

The well-being questionnaire and all of its subscales have a minimum score of 0. The entire scale is composed of 22 items with a maximum score of three per item, yielding a total maximum possible score of 66. Overall, total well-being had a mean score of 46.45 (median 49, SD = 11.66). The depression subscale is composed of six items for a maximum score of 18. The depression subscale had a mean score of 4.85 (median 4, SD = 3.41). The anxiety subscale is composed of six items for maximum score of 18. Anxiety had a mean score of 6.21 (median 6, SD = 4.18). The energy subscale is composed of four items for a maximum of 12. The energy subscale has a mean score of 7.39 (median 7, SD = 3.14). The positive well-being subscale is composed six items for a maximum score of 18. Positive well-being has the highest mean of the subscales, with a mean score of 14.12 (median 15, SD = 3.51). See Table 36.

Table 36. Descriptive statistics for Bradley's (1992) General Well-Being Questionnaire.

	<u>Range potential</u>	<u>Mean</u>	<u>Median</u>	<u>SD</u>
Total Overall Well-Being	0-66	46.45	49	11.66
Depression	0-18	4.85	4	3.41
Anxiety	0-18	6.21	6	4.18
Energy	0-12	7.39	7	3.14
Positive well-being	0-18	14.12	15	3.51

Well-being and its subscales are correlated with several key demographics and other related variables (see Table 41). For example total overall well-being is positively correlated with education ($r = 0.25$ $P = 0.02$) and monthly income ($r = 0.24$ $P = 0.04$). In turn, depression is negatively correlated with both variables, education ($r = -0.28$ $P = 0.01$) and monthly income ($r =$

-0.27 $P = 0.02$). Furthermore, education was also negatively correlated with anxiety ($r = -0.24$ $P = 0.03$) and greater monthly income was correlated with greater positive well-being ($r = 0.27$ $P = 0.02$). Well-being was also related to the number of years since being diagnosed with diabetes. More time since diagnoses correlates with greater anxiety ($r = 0.23$ $P = 0.04$), less energy ($r = -0.22$ $P = 0.04$), and lower overall well-being ($r = -0.23$ $P = 0.04$). Having a greater number of co-morbid conditions alongside diabetes is associated with greater anxiety ($r = 0.25$ $P = 0.02$), reduced energy ($r = -0.31$ $P < 0.01$), less positive well-being ($r = -0.31$ $P < 0.01$), and lower total overall well-being ($r = -0.33$ $P < 0.01$).

Greater energy was associated with self-reports of good diabetic control ($r = 0.22$ $P = 0.04$). Well-being was associated with increased physical activity for increased energy ($r = 0.33$ $P < 0.01$), positive well-being ($r = 0.27$ $P = 0.01$), and total general well-being ($r = 0.24$ $P = 0.03$). Greater adherence to pharmaceutical routines is correlated with greater depression ($r = 0.28$ $P = 0.01$) and anxiety ($r = 0.28$ $P = 0.01$), and lower energy ($r = -0.32$ $P < 0.01$) and total general well-being ($r = -0.31$ $P < 0.01$). Greater consumption of non-diabetes medications also negatively impacts well-being, with lower energy ($r = -0.28$ $P = 0.01$), lower positive well-being ($r = -0.28$ $P = 0.01$), and lower total overall well-being ($r = -0.25$ $P = 0.02$).

Results for Psychological Adjustment

The ATT19 is a 19 item scale used to measure psychological adjustment to diabetes (Welch et al. 1994). Each item has a possible response range of one to five, providing a minimum score for low psychological adjustment of 19, and an opposing high score of 95. The mean score is 59.10 (median 59.5 $SD = 14.19$). Actual scores range from 31 to 87 and are mostly normally distributed.

Importantly, psychological adjustment is correlated with total overall well-being ($r = 0.34$ $P < 0.01$) and all four subscales. Better psychological adjustment tends to include less depression ($r = -0.32$ $P < 0.01$), lower anxiety ($r = -0.28$ $P = 0.01$), more energy ($r = 0.25$ $P = 0.02$), and greater positive well-being ($r = 0.28$ $P = 0.01$). Psychological adjustment is correlated with age ($r = -0.26$ $P = 0.02$), where increased age represents less psychological adjustment. Poor psychological adjustment is also correlated with increased medical consultations ($r = -0.22$ $P = 0.04$). Better psychological adjustment is associated with more education ($r = 0.32$ $P < 0.01$) and with greater physical activity ($r = 0.31$ $P < 0.01$).

Results for Life-Orientation or Sense of Coherence

Antonovsky's Life Orientation Questionnaire measures an individual's stress-coping orientation, what has been called a sense of coherence. The short version has 13 items rated from one to seven. Once some items are reverse coded for consistency, the minimum possible score is 13 and the maximum is 91. Actual scores range from 22 to 88, with a mostly normal distribution, though bordering on skew (-0.87). The mean score is 63.6 (median 67.00 $SD = 13.91$).

Interestingly, SOC is correlated with age ($r = -0.28$ $P = 0.01$), where increased age reflects a lower SOC. There was a similar relation with SOC and number of years since diagnosis ($r = 0.23$ $P = 0.03$), where more years since diagnoses tends to mean reduced SOC, and for the number of co-morbid conditions ($r = 0.32$ $P < 0.01$). There is a positive correlation between SOC and higher education ($r = -0.22$ $P = 0.04$) as well as SOC and better psychological adjustment ($r = 0.42$ $P < 0.01$).

Data Analysis: Household Imbalance and Role Strain

In specifying the regression model for goodness of fit during data analysis, three household composition variables, total number of individuals living in the household, total number of adult males living in the household, and total number of adult females living in the household, stood out in relation to cultural consonance in the treatment domain. These variables were explored further. First, correlations were examined. Here the strongest relation is between cultural consonance and the number of adult females in the house ($r = 0.20$ $P = 0.08$). Given unusual regression outcomes and the fact that this is a two-tailed p-value with marginal significance, females in the house became the focal point for analysis. In addition, the number of adult males in the house impacted the goodness of fit in the regression model and has a weak association with consonance in the treatment domain. Here, the p-value is not significant but is leaning towards significance in a negative direction ($r = -0.18$ $P = 0.12$). There is a positive correlation between number of adult males and mean FBG ($r = 0.23$ $P = 0.05$), the main outcome measure. Total household members had no direct correlation with consonance in the treatment domain, though as expected it is highly correlated with both the number of adult males and females in a household.

Other work that has associated sickness with household stress (Brookes 2007; Dressler 1994; Oths 1994; 1999) and the above circumstances, along with reflection on the problem, suggest that the opposing relationships between men, women, and cultural consonance in treatment represent household level stress in the form of disproportionate gender ratios in the distribution of overall household activity. This could be called role strain in accordance with the classic sociological literature (Goode 1960). In addition to the gender ratios, the total number of people living in a house also appears to raise household stress levels as was discussed in the

ethnographic description. In order to operationalize this issue the ratio of adult males and adult females in each household was calculated, and that value was multiplied by the total number of people living in the household. This new household stress variable provided a better fit for the regression model. The lowest score is 0, indicating little household stress. The high score is 10. Mean household stress is 4.108 (median 4.00 SD = 2.80), with a mostly normal distribution.

Cultural Consonance in the Domain of Food-As-Treatment

The consensus model of food-as-treatment was used to measure cultural consonance in the domain. The consensus model showed that there were foods that should clearly be consumed, and those with clear restrictions to avoid them. One part of the survey instrument asked about the intake of various foods. This included alcohol, sodas, bananas, pork, sweets, apples, oats, *nopales*, chicken, fish, beef, water, and sugar substitutes. Beef, water, and sugar substitute consumption did not have culturally specified limits for consumption so they were omitted from the consonance measure. The remaining nine items were recoded so that they are dichotomous variables representing consumption of the food, or not. Consuming foods to be avoided earned a score of 0, while avoidance earned a 1. Conversely, not consuming prescribed foods earned a score of 0 and consumption earned a 1. The dichotomous scores were summed to create a measure of overall consonance in the food model. The scale is set so that following cultural prescriptions earns a higher score.

It was hypothesized that cultural consonance in the domain of food-as-treatment represents the meaningful element of treatment as discussed in the opening literature review. As such, consonance in the domain should impact diabetic outcomes, especially BMI. To test the hypothesis, BMI was entered into a least squares regression analysis as the dependent variable. Independent variables age, gender, activity level, total servings above and below prescribed diet,

and consonance in the food model were entered. Being male and consonant in the food model are both significant predictors of lower BMI (Table 37), supporting the hypothesis.

Table 37. Standardized Beta regression coefficients for dependent variable BMI.

	<u>Model 1</u>	<u>Model 2</u>
Gender	-.26*	-.22*
Age	-.02	.01
Activity level	-.07	<-.01
Total servings above and below prescription	.04	-.07
Consonance in food model		-.27**
R^2	.05	.10

Note: * = significant at .10 ** = significant at .05 level.

Consonance in the food model is associated with lower carbohydrate intake ($r = -0.40$ $P < 0.01$), lower sweet and fat consumption ($r = -0.59$ $P < .01$), and increased fruit consumption ($r = 0.37$ $P < 0.01$). As noted from above, increased fruit consumption included many apples and few bananas. This suggests that apples have substantial symbolic power and that informants are gaining greater benefit than the nutrients alone provide. Overall, it appears that being consonant in a short list of medicinal foods is indicative of better eating in general.

Results for Cultural Consonance in the Treatment Domain

Cultural consonance in the treatment domain is a variable of great interest. After being reverse coded so that greater values reflect greater cultural consonance, the minimum score possible became 0 with a potential maximum of 108. The actual scores range between 1 and 36.58, with a mean of 23.59 (median 23.00, $SD = 7.94$). Consonance is approximately normally distributed. As expected greater consonance in the overall treatment domain is correlated with specific aspects of treatment such as more frequent blood glucose monitoring ($r = 0.36$ $P < 0.01$), more frequent medical consultations ($r = 0.34$ $P < 0.01$), lower food intake, notably with reduced

carbohydrate and fat and sweet consumption, especially fewer sweet sodas ($r = -0.34$ $P < 0.01$). It also includes greater consumption of medicinal *nopales* ($r = 0.31$ $P < 0.01$), greater water consumption, and less beef consumption. Greater consonance is also indicative of greater physical activity ($r = 0.27$ $P < 0.01$).

Cultural Consonance in the Treatment Domain and FBG

The main hypothesis was tested using binary logistic regression. Mean FBG was calculated then dichotomized at the recommended (ADA 2010) level of good glucose control (110 mg/dl) and input as the dependent regression variable. Independent variables included gender (female/male), monthly income (z-score), total activity (at least 1 hour daily or not), servings of food above or below prescribed levels (z-score), adherence to pharmaceuticals (adherent or not), and cultural consonance in the treatment domain (z-score). The hypothesis that cultural consonance in the treatment domain would predict better diabetes control is not supported.

The relationship of cultural consonance and blood glucose control is positive, rather than the predicted negative. Well-controlled blood glucose can be predicted by male gender, lower monthly income, greater total activity level, and lower cultural consonance in the treatment domain. See regression coefficients in Table 38. The positive relation between higher FBG and cultural consonance was initially puzzling, since it was anticipated that increased cultural consonance in treatment would lead to reduced FBG.

Table 38. Logistic regression B coefficients and odds ratios for hypothesis cultural consonance will predict diabetes control, with control measured at 110 mg/dl.

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>	
	<u>B</u>	<u>Odds Ratio</u>	<u>B</u>	<u>Odds Ratio</u>	<u>B</u>	<u>Odds Ratio</u>
Income	.58	1.79	.79*	2.21	.95*	2.58
Gender	-.82	.44	-1.28*	.28	-1.34*	.26
Activity level			-1.01	.36	-1.44*	.24
Total servings above and below Prescription			-.31	.73	-.15	.86
Adherence to medications			-.36	.70	-.38	.69
Cultural consonance in treatment					.10**	1.10
Nagelkerke R^2	.07		.12		.22	

Note: * = significant at .10 level; ** = significant at .05 level

Since the distribution of control was strongly skewed, especially having a low frequency of well-controlled informants, the test was undertaken again. The second test used a more evenly distributed measure of control. The control line was moved to the median FBG level (140 mg/dl), which also represents the diagnostic limit of clinical diabetes. A similar result was achieved with the lower control standard (see coefficients in Table 38). This indicates that cultural consonance in treatment is a reliable predictor of high blood glucose, or poor diabetic control. This was contrary to the original hypothesis and presented something of a puzzle to be worked out.

Table 39. Logistic regression B coefficients and odds ratios for hypothesis cultural consonance will predict diabetes control, with control measured at 140 mg/dl.

	<i>Model 1</i>		<i>Model 2</i>		<i>Model 3</i>		<i>Model 4</i>	
	<u>B</u>	<u>Odds Ratio</u>						
Income	.60*	1.83	.76**	2.14	.85**	2.34	.89**	2.44
Gender	-.18	.84	-.47	.63	-.49	.62	-.36	.70
Activity level			-.80	.45	-1.08*	.34	-.95	.39
Total servings above and below Prescription			-.27	.76	-.18	.83	-.40	.67
Adherence to medications			-.24	.79	-.24	.79	-.23	.80
Cultural consonance in Treatment					.06*	1.07	.08**	1.08
Role Strain							.26**	1.30
Nagelkerke R^2	.70		.12		.17		.26	

Note: * = significant at .10 level; ** = significant at .05 level

An Alternative Hypothesis: Sickness Gravity

An understanding of the above puzzle can be reached by making a shift in how the dependent variable is conceptualized. A visual exploration of the data provides the first clue. As can be seen in Figure 17, most informants fall into the lower FBG ranges. Among those with high FBG, only one falls into the lower range of cultural consonance in treatment. This leaves quadrant 1 in the graph almost empty. One would expect high FBG would be common among known diabetics who do not participate in treatment (are not consonant in the treatment model). However, this is not the case. The highest levels of FBG are associated with higher levels of consonance in the treatment model. On the other hand, lower levels of FBG are all associated with less cultural consonance in treatment. Note that only one informant has a score of 0 in treatment consonance. That informant also has blood sugar level well within the normal range.

If one considers the problem from an emic perspective, it appears that greater severity, or what Young and Garro (1980) call gravity, is pushing participation in the treatment model. This conclusion may be objectionable at first because of the well known fact that knowledge of one's medical condition is not sufficient to motivate treatment participation. However, it should be pointed out, as noted above, this is a sample of active treatment seekers. In this case, the biological measures have interpretive meaning for the treatment seeking diabetic. That meaning is representative of the gravity of their condition. It is therefore hypothesized that greater sickness gravity drives participation in the treatment model.

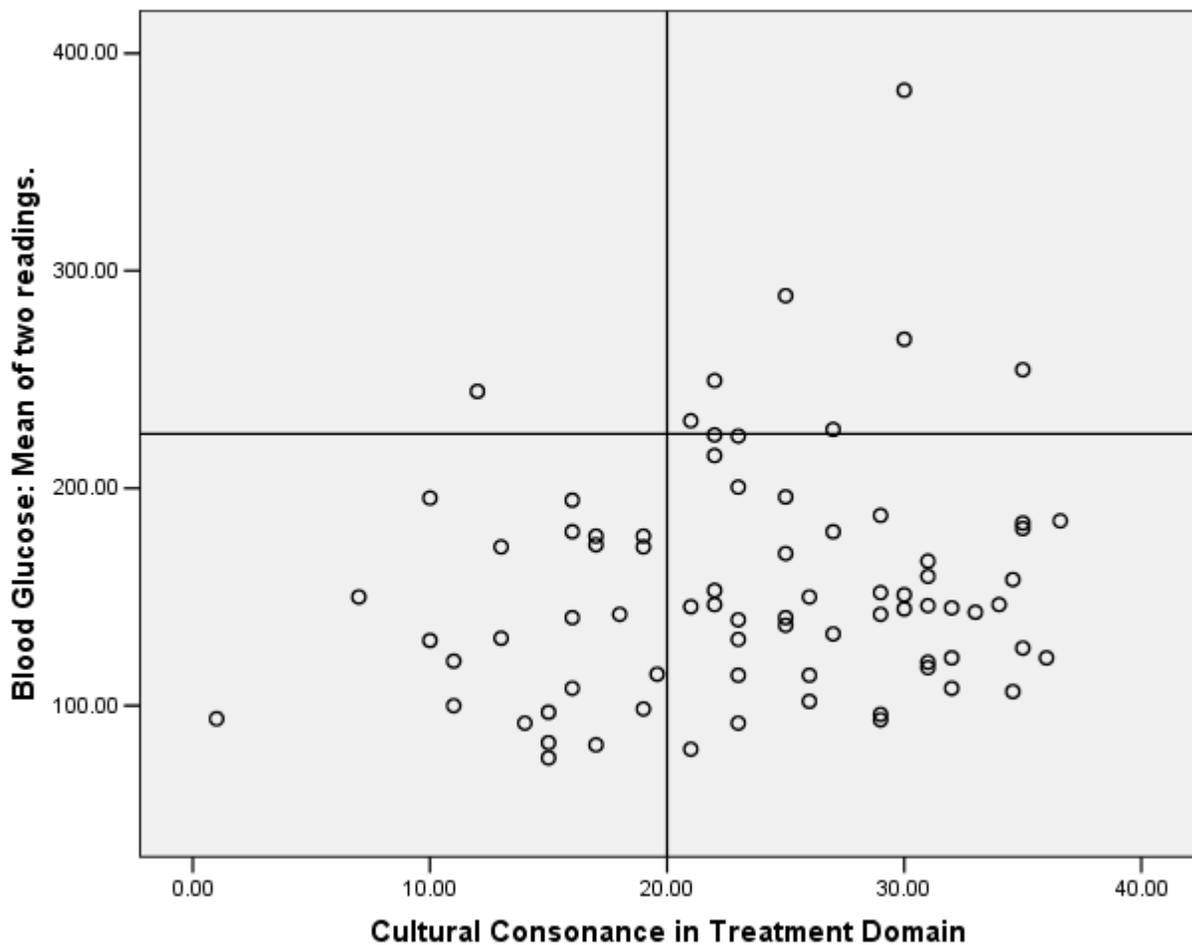


Figure 17. Scatter plot of mean blood glucose by cultural consonance in treatment.

In order to test these findings additional analyses were performed using linear regression analysis. The main outcome variable, mean FBG, can be used as a continuous measure of disease gravity. It appears that as gravity goes up, cultural consonance in treatment will go up as well, as people seek out culturally appropriate sources of information and implement culturally sanctioned treatment practices. In this case, FBG as gravity can be predicted on gender, household stress and cultural consonance in the treatment domain. See regression coefficients in Table 40.

Table 40. Standardized Beta regression coefficients for hypothesis that cultural consonance is positively related to severity of diabetes, including the entire sample of 77 cases.

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
Age	-.09	-.12	-.11	-.05
Gender	-.18	-.31**	-.30**	-.29**
Activity level		-.20	-.17	-.20
Total servings above and below prescription		.09	.02	.07
Adherence to medications		-.10	-.09	-.72
Household stress/role strain			.20*	.25**
Cultural consonance in treatment				.25**
R^2	.05	.10	.14	.19

Note: * = significant at .10 level; ** = significant at .05 level

After re-conceptualizing FBG as a measure of gravity rather than a measure of control, the idea of role strain took on even greater importance. It appeared that role strain might be driving the increase in FBG. This raised questions about the possibility of an interaction effect between role strain and cultural consonance in treatment. The interaction effect was tested, resulting in a main effects model only. There were two significant main effects, one for each variable, but no interaction. See regression coefficients in Table 41.

Table 41. Standardized Beta regression coefficients for main effects versus interaction effects of hypothesis cultural consonance are positively related to diabetes severity.

	<u>Model 1</u>	<u>Model 2</u>
Role strain	.30**	.30**
Cultural consonance in treatment	.24*	.24*
<i>Interaction</i>		.05
<i>R</i> ²	.11	.11

Note: * = significant at .05 level; ** = significant at .01 level

Since there is no interaction it was hypothesized that role strain must have an effect on both FBG and cultural consonance in treatment. This line of thinking fits the pieces of the model into a better logical causal sequence. A linear regression was used to test this hypothesis. Cultural consonance was used as the dependent variable and mean FBG as an independent variable. See Table 42 for regression coefficients. Cultural consonance can be predicted by age, total food consumption, role strain, and mean FBG

Table 42. Standardized Beta regression coefficients with cultural consonance in treatment domain as dependent variable.

	<u>Model 1</u>	<u>Model 2</u>	<u>Model 3</u>	<u>Model 4</u>
Age	-.24**	-.23**	-.25**	-.22**
Activity level		.19*	.17	.18
Total servings above and below prescription		-.27**	-.22*	-.20*
Adherence to medications		-.01	-.02	-.01
Role strain			-.17	-.22*
Mean FBG				.21**
<i>R</i> ²	.06	.19	.22	.26

Note: * = significant at .10 level; ** = significant at .05 level

Since mean FBG is driving consonance in the treatment model it is interesting to consider what effects this may have on well-being. Bradley's (1992) well-being scale was used as an outcome measure, with cultural consonance in the treatment domain being a significant predictor

of better general well-being. Blood glucose had been entered in earlier models in order to test if the severity of diabetes had an impact on well-being, but the results were not significant. The addition of Antonovsky's life-orientation scale (Table 43) increases the variance explained. It is clear that there is some kind of relationship SOC, cultural consonance, and well-being.

However, this project is not able to articulate the nature of the relations.

Table 43. Standardized Beta regression coefficients with general well-being as dependent variable.

	<i>Model 1</i>	<i>Model 2</i>	<i>Model 3</i>	<i>Model 4</i>
Activity level	.27**	.26**	.18*	.13
Total servings above and below prescription	.20*	.15	.24**	.08
Adherence to medications	.15	.14	.14	.05
Monthly Income		.20**	.25**	.05
Cultural consonance in treatment			.37*+	.16*
Life orientation				.64*+
R^2	.11	.15	.26	.57

Note: * = significant at .10 level; ** = significant at .05 level ***= significant at .01 *+ significant = <.001 level

CHAPTER SEVEN: DISCUSSION OF RESULTS

The overall results of these analyses are complex. Two models show the relationship between meaning and health outcomes. The first is straight-forward, consonance in the food-as-treatment model leads to lower BMI. The second is not so easily conceived, so it was desirable to create a model flow chart to represent the various inputs and outputs. The flow chart is presented in Figure 18. As can be seen in the chart, role strain is a major contributor to the model, leading to higher FBG and lower cultural consonance in treatment. Being female also adds to having higher glucose. Having high glucose leads to greater cultural consonance in the treatment model through participants' higher levels of perceived gravity.

Greater consonance in the treatment model is associated with greater activity and pharmaceutical consumption, as well as fewer servings of food. Treatment variables of food and activity are related to each other inversely and reciprocally. That is, as one increases the other decreases. They are also reciprocally linked to the larger cultural model of treatment, though adherence to medications does not follow the same pattern. It appears that taking medications is motivated by participation in the cultural model of treatment, and not vice-versa. Importantly, consonance is also associated with increased general well-being. It predicts three of the four well-being subscales, including less depression and anxiety and greater positive well-being.

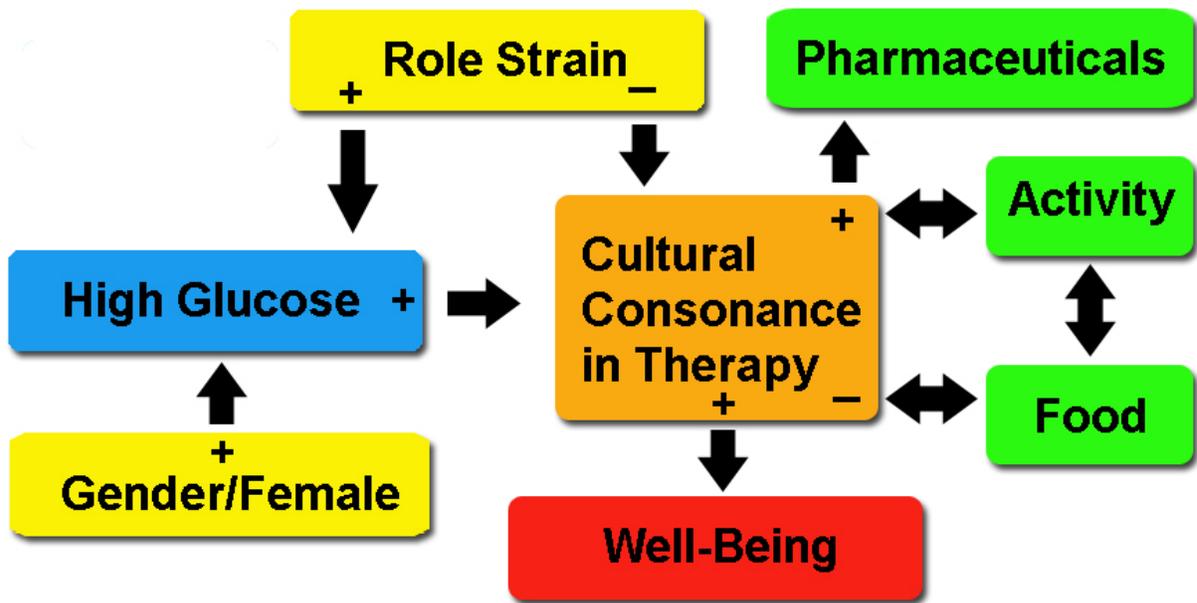


Figure 18. Flow chart showing significant relationships between key variables in type 2 diabetes treatment.

Patient-Centered Meaning and the Treatment Process

In this sample one thing that promotes hyperglycemia is the role strain of living in a household with an imbalance of the sexes (gender ratio with greater proportions of men to women), especially where there are greater numbers of people in the household. Familial factors of this kind have been reported in other contexts. For example, Dressler (1994) found that at the family level in the United Kingdom, lifestyle incongruity predicted households with chronically ill members. In Peru, Oths (1999) found that Peruvian women living in households with few or no other women tend to suffer greater rates of *debilidad*. Brookes (2007) found similar results in Peru with the folk illness *chocake*. In the current sample, being female also has a direct effect on higher glucose. In the ethnographic sense, role strain exists much as it does in the classical sociological literature (Goode 1960). Distress ensues where one is unable to meet the social obligations associated with one's social roles. This distress contributes to negative health outcomes directly by exacerbating hyperglycemia and indirectly by reducing one's ability to

participate in treatment, as is seen in its relationship with reduced cultural consonance in the therapeutic model.

The argument outlined above indicates that high glucose levels get interpreted as more severe, even where patients are not medically numerate. This is because high glucose levels get treated more seriously by doctors. Patients are told that their situation is more severe and they are pushed harder to comply. The patients do not need to know the technical details about their glucose reading, only what it means to them. Measures of blood glucose are equated with degrees of sickness gravity. Where the doctor interprets it badly the patient will tend to put more emphasis on the issue and become more consonant with therapeutic behaviors. As the gravity of the situation increases, so does the intensity of therapeutic participation. Cultural consonance in the treatment domain is a measure of that participation intensity.

What supports this notion is the near absence of cases of high glucose and low consonance. One must ask why there are not many cases of high blood glucose where people are not treating their disease, that is, where they have low participation in the cultural model of therapy. High blood glucose would be expected with non-treatment cases, given diabetes' necessary association with hyperglycemia. If one has a hyperglycemic condition and does not participate in behaviors known to reduce glucose levels, then a continuation and likely concentration of blood glucose is expected. However, this is not the case. Those with high glucose all fall within the higher end of participation. The most expedient explanation is that something about high glucose is motivating participation in treatment. The most sensible explanation for that relation is that blood glucose serves as a marker of gravity. High glucose means more gravity and therefore, more intensive and extensive participation in therapeutic

behaviors. Low glucose readings mean that one is “not-so-bad” and provides more opportunity to deviate from treatment as a reward for “doing a good job.”

This calls attention to one of the issues raised in the literature review, Hunt et al.’s (1998) argument that motivation to participate in treatment goes beyond strict psychological models of treatment participation. They argue that participation is motivated by ongoing experiences with illness and treatment successes or failures. The model they propose has a strong psychological component because it relies on stimulus-response conditioning. The concept is not locked into a strictly psychological frame though, because the authors describe individual patients interacting reciprocally with the environment shaping it and being shaped by it. This model strongly resembles Antonovsky’s SOC concept and has some bearing on the project at hand.

The psychological approach was considered in this sample using three main variables, psychological adjustment to diabetes, SOC, and self reports of having diabetic control or not. Psychological adjustment to diabetes was selected because the scale was developed by psychologists and measures psychological factors associated with diabetes care. SOC was selected because it has such a strong resemblance to the reward model described by Hunt et al. (1998). If positive reinforcement is derived through successful coping this should correspond with a higher SOC, but only in a very general way. The final variable includes self-reported control so that there is a control variable for feelings of being in control. This should correlate with the SOC if reinforcement is coming through controlled glucose.

These variables were entered as independent variables in a linear regression analysis. Blood glucose was entered as a dependent variable. There were no significant predictors of blood glucose, indicating that the psychological factors do not impact the disease physiology. When the dependent variable is switched to cultural consonance in the therapeutic domain,

Antonovsky's life orientation scale becomes a significant predictor. The ATT psychological scale does not affect participation and neither do self-reports, which might represent feelings of being in control. This does not rule out a psychological contributor to treatment motivation, as the life orientation aspect partially supports the conclusions drawn by Hunt et al. (1998). What it does demonstrate is that a simple conditioning model is not the best explanation, and that any conditioning involved is broad, not limited to diabetes control. This is further supported by the regression results, where the relationship between psychological adjustment and participation in treatment is negative. This indicates that when people feel well-adjusted to diabetes they may tend to worry less and participate less in their treatment, though this aspect is not statistically significant in this sample.

While Mexican diabetic patients may not be acutely knowledgeable about their blood glucose levels, they do develop a sense of it as a measure of the gravity of their condition. This would suggest that participation in the model is considered from at least two vantage points by diabetic patients, internally and externally. This supports the argument made by Hunt et al (1998) that diabetic patients are evaluating their condition, not simply acting from an internal or external locus of control. The evaluation criteria identified through the current project entails internal, subjective feelings of well-being along with evaluation of inputs from others within diabetic patients' individual social networks, especially medical professionals.

Young and Garro (1980; 1981) have identified gravity as a key factor in medical decision making in Mexico. In their case, the researchers examined medical treatment *seeking* behaviors. Their data show that with greater gravity, informants tend to seek biomedical treatment more expediently. The data from the current study extends this notion so that when already participating in medical treatment, greater gravity leads to greater participation. This

participation may or may not appear intensive from a narrow biomedical perspective, meaning that patients may or may not more strictly adhere to their diet, exercise programs, or pharmaceutical prescriptions. For example, García de Alba et al. (2006) report that poor diabetic control is associated with greater consumption of pharmaceuticals, especially taking insulin. This represents an intensification of the treatment regimen, though it does not extend the therapeutic mode. From the data provided in the current study it appears that informants will participate more extensively in treatment as their condition worsens. This may include reducing stress, controlling emotions and building stronger family ties, among other things.

Making the distinction between extensive and intensive treatment participation helps explain the improved health seen as the final outcome, well-being. More extensive participation in the treatment model increases internal feelings of well-being, even when it does not translate into a placebo-like response in the sense that neuroscience would appreciate. The feelings of increased positive well-being and reduced anxiety and depression may be mutually reinforcing with treatment participation, helping patients sustain their efforts, though such claims would need longitudinal validation.

Positive well-being could cause confusion in cases where the patient experiences stagnantly poor or declining clinical outcomes. In these cases the patient may feel, because of extensive treatment, that they are doing all they can to control their condition. It may be that when they are told to do more, the prescription is for more intensive treatment participation, though this may not be explicitly clear to patients. Patients may expend effort on non-clinical behaviors and feel better for doing so. They feel their treatment has worked. However, when clinical exam results do not follow the improvement pattern, patients become confused. The patient does not understand what he or she is doing wrong. They often begin to question the

validity of the test results. In this situation, the patients' internal feelings do not match external "reality," causing conflict and confusion. This can result in poor control as well as a label of being non-adherent. It can create a strong sense of frustration for the patient and doctor alike.

Dividing the evaluation process into internal and external evaluations advances the problem put forth by Hunt and her colleagues (Hunt et al. 1989; Hunt et al. 1998a; Hunt et al. 1998b; Hunt and Arar 2001; Hunt et al. 2000), which describes a major disconnect between patient and provider perspectives in diabetes treatment. As the argument goes, patients must work within the constraints of their daily lives, so they attempt to incorporate their personal experiences with treatment recommendations. The physicians and physiological measures represent the external evaluation criteria, while feelings of well-being and an association between perceived behaviors and perceived outcomes represent the internal evaluations. Conflict with these evaluations will lead to compromises, which are not always favorable to medical personnel.

Salutogenic Factors

This research takes a salutogenic approach because it does not ask about sick persons per se, but about participation in health promoting behaviors. All the participants were active treatment seeking diabetics. Another salutogenic feature of this research is that it examines treatment adherence broadly. It is not narrowly defined as non-adherence. Consider how treatment has been conceptualized in much of the adherence literature. In most cases, it is defined as consuming prescribed pharmaceuticals. However, the definition is a misnomer because by the time the results are published, what get reported are those things that interfere with consuming medications. This is non-adherence, the pathogenic approach to treatment participation. To illustrate how common this approach is a search was performed on a popular

search engine. The search term was “treatment adherence.” The engine returned many results, though the first example came up on the first page. The search returned a recent scholarly publication describing a study of adherence to treatment among schizophrenics (Aldebot and Weisman de Mamani 2009). The authors begin their article by noting lack of adherence as a prime concern in treatment. They are not concerned with what motivates adherence, but rather what motivates non-adherence. The discussion focuses on the relation between low adherence and higher rates of schizophrenic relapse and poorer course of illness. They explain lack of adherence through coping styles, where denial as a coping style leads to poor outcomes. They do not discuss how greater adherence may or may not contribute to better outcomes. This is a typical example of the treatment adherence literature.

In another example related to diabetes, Mann et al (2009) tried to identify factors that would predict treatment adherence. Adherence was immediately defined as consumption of pharmaceuticals, a very narrow definition of treatment. The authors then go on to identify predictors for low adherence to pharmaceutical consumption. Reported predictors of low adherence are 1) believing you have diabetes only when your sugar is high, 2) saying there was no need to take medicine when one’s glucose is normal, 3) worrying about side-effects of diabetes medicines, 4) lack of self-confidence in controlling diabetes, and 5) feeling medicines are hard to take. The authors call these issues of “disease and medication beliefs” (Mann et al. 2009:278). The findings state that these beliefs are inconsistent with a chronic disease model of diabetes. It is assumed that what the authors mean is that those receiving diabetes treatment prescriptions hold different beliefs about the problem than those who prescribe the treatments.

The current project defines treatment broadly, using a variety of specific therapeutic elements. It asks how much individuals participate in culturally agreed upon thoughts and

behaviors. Since the domain is so broad, the culturally defined model extends beyond clinically prescribed treatment and self-care behaviors to include a wide range of therapeutic factors. Some of the particular elements of the therapeutic model, such as participation in family activities, are universal. All informants have familial relations. Because of this universal aspect, participation in the model becomes a question of degree rather than kind.

Based on the outcome of the project at hand, it seems reasonable to make a soft distinction between clinical treatment and other therapeutic factors. The distinction is soft because treatment should be considered a subset of therapy, since treatment items can also be therapeutic, but therapeutic items are not necessarily considered treatment. For example, having faith in God or friends to chat with, and monitoring blood glucose or consuming medications are all therapeutic, though only the latter would qualify as treatment. Here, treatments are technical interventions. This distinction would benefit clinical trials by providing an additional layer of clinical control. Treatment efficacy and therapeutic efficacy could both be measured. This would extend the existing anthropological distinction between disease and illness, and curing and healing. Disease could be cured through treatment while illness is healed therapeutically. Since the broad culturally prescribed therapeutic model extends beyond clinically prescribed treatment model, it is important to get a patient-centered view of the therapeutic model and their participation in it.

Treatment Efficacy

Meanings as they are construed in this project are layered. They are complex, and they clearly affect health behaviors and outcomes. This project was introduced by asking the question of medical efficacy. Specifically it asks about the role of socially constructed meaning in health outcomes. In this project, the most direct evidence for the efficacy of meaning in diabetes

patients is the association between cultural consonance in the food-as-treatment model and reduced BMI. After controlling for the quantity of food eaten and daily exercise, the meaning component has the greatest impact. With weight management being a key factor in overall diabetes treatment, this finding has practical significance for food intervention programs. Specifically, food intervention programs could be more effective by building interventions around cultural models of healthy eating. In addition, meaningfulness as cultural consonance was predictable based on the quality of foods consumed, where more fruit consumption and less fat and sweet consumption are key profiles. Those who eat the culturally prescribed diet and eat items like apples and *nopales* and avoid pork and bananas actually make better food choices in general.

Furthermore, if one considers the anthropological distinction between disease as a biological dysfunction and illness as the experience of sickness, along with an association between curing disease and healing illness, then it is clear that culturally defined treatment is effective in healing illness, even if it does not have a cross sectional impact on disease. This is evident in the association between cultural consonance as a measure of the extent of participation in therapeutic behaviors and more well-being. Feeling better is a patient's top priority (Hunt et al 1997; 1998; Hunt and Arar 2001), so consideration of subjective well-being should be included as a criterion for efficacy.

As was seen in the review of placebo literature, clinical practitioners use placebos to help patients. This approach offers a way to effectively guide doctors in their choices of recommendations. Rather than, or in addition to, passing out a low-potency pharmaceutical, specific cultural elements could be promoted. It may be as simple as a checklist approach toward solving the integration of social and psychological issues in the medical clinic, but a

checklist would be an improvement over the current system. As has been shown in research on clinical use of placebos (Astinet et al. 2006), doctors are most often hesitant to address psychosocial problems in the clinic because of feeling a lack of training and the unavailability of simple clinical tools. This research points out how such simple tools and training could be facilitated through consensus modeling of therapeutic domains.

Further Insights about Treatment and Therapy

When considering the idea of treatment efficacy, there are a number of ways to conceive the process. The dominant standard is the physiological or clinical trial standard. Subjective well-being, or what makes one feel better, represents a different standard. To illustrate this point we can consider two notable instances of food-as-treatment uncovered in this project but not previously discussed. On one hand is the case of consuming *nopales* to treat diabetes. On the other hand is consuming *gorgojos* (small weevils), also to treat diabetes among other ailments. Many people eat *nopales*, and they are well known for their medicinal properties. The *gorgojos* represent a new treatment, but one that is spreading through Latin America rather quickly.

Nopales are a culturally salient part of the Mexican diet. Any market, traditional or modern, will be equipped with a *nopale* station. They are sold as complete pads, less the shaved spines, or chopped into small rectangles. The cultural belief that *nopales* have medicinal properties has been put to the test in trials. Results have shown an association with a reduction in blood glucose levels. In one trial using a pig model, diabetes mellitus was induced in experimental subjects using streptozotocin. A *nopale* extract (*Opuntia lindheimeri*) was introduced orally and blood glucose levels monitored for dose and time. There was no notable effect for oral application. In a second trial arm, the experiment introduced the extract intravenously, which resulted in both a dose and time dependent reduction in glucose levels.

Bacardi-Gascon et al. (2007) ran a dietary experiment where participants ate specific breakfasts, either with or without *nopales*. Each informant was randomly assigned a breakfast. This breakfast was eaten three times without *nopales*. Measures of post-prandial blood glucose were taken for each meal and averaged. The process was then repeated with approximately one serving (85 g) of *nopales* added to each experimental breakfast. Results showed that while there was macronutrient based variation in the effect of *nopales* across breakfasts, the effect was consistent and showed a significant reduction in post-prandial glucose levels. In the current project sample, only 13 percent of informants report eating at least one serving of *nopales* on a daily average and over 61 percent report eating less than half a serving on a daily average. This means that while Mexicans eat more *nopales*, few eat what appears to be an effective quantity.

In another study (Bush et al. 2007), 804 patients were questioned about herbal medications they consume. The list contained 22 herbal medicines, including *nopales*. The lists were compared to prescription drug profiles and screened for potentially adverse drug-herb interaction effects. Where potential effects were noted (6%) participants' medical records were reviewed for actual incidences of adverse interaction effects. There were 85 potential interactions and 12 documented events. Within the 85 potential interactions, 35 were related to hypoglycemic medications, especially metformin (17) and glyburide (10). These two drugs and their accompanying hypoglycemic events accounted for eight of the 12 actual incidents or 1 percent of the entire population.

As has been demonstrated by the results of this project, *nopales* are an important element in the Mexican food-as-treatment model. The result of this project corroborates the findings of Romero-Cerecero et al. (2009), where among 259 diabetic patients, having higher blood glucose (>200 mg/dl) was predictive of consuming greater quantities of *nopales*. In the language used in

the current project, this would be equal to greater blood glucose predicting greater cultural consonance in the broadly conceived treatment model. Eating *nopales* is one discreet element of that model. What the above researches do not tell us is what the pharmacological agent is and what dose is effective.

When one turns to the case of entomophagy, there is little compelling evidence to suggest a physiologically active agent. This bug eating trend has spread across Latin America from Argentina to Mexico. It involves consuming live darkling beetles (*palembus ulomoides dermestoides*). These creatures are commonly called weevils in the USA, but locally in Guadalajara, they are called *gorgojos* or *gorgojos curativos*. Some public information on this trend is available in Spanish, but little has been written in English. The bulk of the Spanish language information has been written by natural remedy activists and their detractors. Scientific or peer-reviewed literature is almost non-existent.

Gorgojos are small (about .5 centimeters), shiny black beetles that feed on dried grain crops like corn, beans, wheat, and oats. In most parts of North America, they are considered a pest and there is an active literature surrounding their control. From a medicinal perspective, *gorgojos* are claimed to cure a number of major illnesses. In addition to diabetes treatment, they are used to treat AIDS, cancer, asthma and to a host of other illnesses. According to informants in Mexico, and information available on the Internet, *gorgojos* fortify and improve individuals' immune systems. The enhanced immune function then allows the body to fight each disease naturally.

Gorgojos were encountered while collecting survey data. One informant, a diabetes patient who also happened to be an IMSS nurse, reported consuming *gorgojos* as his sole diabetes treatment. The informant was being interviewed in his home. When asked about which

medications he consumes for his diabetes – he responded with a grin, “*animalitos*” (little animals). Upon probing, he explained that he and his mother both consume *gorgojos* as their sole treatment to control diabetes. Additionally, he claimed to have fasting blood glucose levels of about 110 milligrams/deciliter (a generally acceptable level of control). Later analysis revealed that his actual average control is slightly higher than the self reported level. His most recent glucose readings indicated a downward trend corresponding with his claimed initiation of *gorgojo* treatment. Additionally, his result reached a minimal level of control (120 mg/dl). He also claimed that the regimen of *gorgojos* had reversed his mother’s disability allowing her to walk again, at least part of the time.

No other informants directly commented on this type of treatment, but it offered an interesting glimpse into medical entomophagy and an extreme alternative treatment. After completing this particular interview, additional information was informally sought regarding the unorthodox treatment. In general, people in Guadalajara were aware of *gorgojos*, though few claimed to know much about them. Insights offered by informants reflected the various views expressed in a simple Google search. One incidental informant claimed that her mother consumed *gorgojos* for cancer, but could not provide details about the treatment. The mother was reluctant to discuss the issue. One medical doctor laughed at the line of questioning, stating that *gorgojos* are just another popular miracle cure-all. The doctor compared *gorgojos* with both the snake-oils peddled in the American West and another popular cure advertised on local Mexican television. This one claims to cure nearly two dozen ailments. A third informant, a naturopathic health practitioner was more neutral, laying doubt on the curative properties of *gorgojos*, while simultaneously describing the strong beliefs expressed by some *gorgojos* treatment consumers.

Gorgojos are easy to acquire, both locally in Guadalajara and through the Internet. The first informant claimed that the *gorgojos* he consumed were from Argentina, while another claimed to have obtained the original stock through a local dealer. Both consumers bred additional *gorgojos* in their homes. According to a Wall Street Journal Report (Moffett 2003) *gorgojos curativos* were originally brought to Argentina from Paraguay in 1991 by a farmer suffering from skin cancer. News of the farmer's recovery spread, and within 10 years, attempts to document their miraculous curative abilities began. The effort included collecting testimonials from those self-treated with the bugs.

The survey informant demonstrated his breeding procedure, which involved a three liter plastic container, filled one-fourth with oats, and then covered with banana peels. The container held hundreds of adult beetles and thousands of larvae. The larvae can safely be frozen in a common household freezer in order to induce suspended animation, and then later thawed for development into a reproductive adult. It appears that acquiring a small quantity, followed by home breeding is the preferred method of maintaining a stock of *gorgojos*.

The first informant described the diabetes treatment regimen he and his mother followed. The first day one eats a single *gorgojo*, continuing to add one *gorgojo* each day until one consumes 70 *gorgojos* per day. Once 70 *gorgojos* is reached, the following day, one reduces intake by one *gorgojo* and continues to reduce one *gorgojo* each day until one consumes 30 *gorgojos* per day. Once 30 *gorgojos* is reached it is maintained, which is different from what was reported for cancer treatment. For cancer, one would discontinue consumption upon declining to 30 per day, and then reinitiate the process at some point in the future. Informants were unable to specify exactly when active treatment would begin again.

Gorgojos are consumed live with an apparent preference for taking them submerged in a liquid, like lemonade. In informal discussions, many informants cringed at the idea, implying that there must be some power in the medication if delivery is so revolting. It may be that if *gorgojos* have any physiological properties that aid human biological function when ingested, it is their production of benzoquinones and alkenes (Villaverde et al. 2009). The toxins are generated within the *gorgojos*' defense glands. This toxic cocktail has been shown to effect tracheal tissue in animal models. It could be effective in treating some respiratory ailments (Santos et al. 2010).

Another possibility exists for a pharmacologically active component to *gorgojos*, a parasitic fungus (*Paecilomyces farinosus*) that is known to grow externally on the exoskeleton. The fungus has been shown to have glucose reducing properties (Huai-En et al. 2010). The *gorgojos* personally inspected did not have obvious signs of fungal growth, as should have been apparent if they were to supply a sufficient quantity of the active agent. Little else is known about any active physiological properties of the *gorgojo*.

Overall, the contrast between *gorgojo* treatment and *nopale* treatment raises questions about how we judge treatment efficacy, and especially how we behave in relation to our cultural understandings. Where there is scientific evidence for physiological efficacy with *nopales*, few participate in *nopale* consumption on a level that would be considered clinically effective, though, many participate at a lower level. As pointed out by Romero-Cerecero et al (2009) as well as argued above, for those actively participating in treatment, greater participation is predicted by higher glucose levels, indicating greater disease severity. It is likely that both groups, *nopale* and *gorgojo* eaters are being motivated to participate in treatment because it

makes them feel better, indicating that treating illness is as important, possibly more important than treating the disease.

Proponents of *gorgojo* treatment welcome scientific study, believing they have genuinely discovered an inexpensive treatment for some of the deadliest diseases known in Latin America. They call it a miracle and a gift from God (Moffett 2003). Regardless of any physiologically effective properties, there appears to be great ethnomedical value and further investigation should be made. A key factor in such a study would be to examine the cultural construction of hope. Hope has been identified as a factor in clinical trials (Brown 2007; Kaptchuk et al. 2009) and it appears to be at work with the spread of *gorgojo* treatment through Latin America. There, many hope for a cheap and effective treatment. In this context, it appears that hope is a macro level as well as individual level indicator of benefit from treatment participation. If a cultural model of medical hoping could be obtained greater predictability for things like placebo responses could be made. It may turn out that a large piece of the efficacy of symbolic healing is an issue of hope.

Centripetal Forces

Another interesting consideration of treatment efficacy is the relation between information seeking and participation in the culturally defined treatment model. In the domain analysis one of the most salient, but opaque, aspects of informant responses was the mandate to seek information. Information seeking was explored, but initially revealed little about how it might be helpful. Later analysis indicated that the act of information seeking is a socially integrating activity, what Quinn and Strauss (1997) would call a centripetal force. One seeks out information from credible culture brokers, such as doctors, medical systems, governments, and schools. Seeking information is an attempt to integrate oneself into society in order to reap the

benefits of shared knowledge and social supports. Given the relation between social integration and health, information seeking must be a salutogenic process.

Furthermore, considering an evolutionary trajectory, it would seem that sickness and especially subsequent therapy act as culturally centripetal forces bringing people together into greater social integration. Therapies that improve social integration are likely to be more effective than treatments that reduce social integration. For example, Mexican biomedicine and biomedicine generally could be made more effective by more formally including family members in the clinical process.

Transforming Sick Roles to Therapeutic Roles

Social roles are important in the therapeutic sense. The meanings associated with our roles may be the most central aspects of the therapeutic experience. This project calls into question some of the traditional sociological understandings of the sick role and its associated patient role. The findings have implications for anthropological and sociological theory, demonstrating support for an explicit theory of culture as meaning. Since the project pinpointed multiple ways that meaning can impact health outcomes, it is fitting to return to an understanding of meaning as discussed in the literature review. Meaning is that which allows inference. For example eating apples means eating “well,” and having high FBG means greater “sickness gravity.” The following section discusses how meaning gets attached to social roles, especially sick roles and patient roles.

Social Roles, Values, and Norms

Oddly enough, the discussion starts with an examination of human values. In two unrelated but similar projects, D’Andrade (2008) and Morris (1956) both concluded that there is a difference between personal values and social values, and, that these differences are related to

how values adhere to social roles. D'Andrade (2008) describes a three society study that included Japan, Vietnam, and the US. He notes that values are different between the societies, but only marginally so. Each society falls less than one-half of a standard deviation apart on a standardized values scale. With similar results, Morris (1956) and D'Andrade (2008) both conclude that values are not the primary difference between cultures.

Such findings led D'Andrade (2008) to question what accounts for differences between culture groups if it is not values. He concludes that norms and normative practices make the difference. According to D'Andrade "norms specify what should be done, where and when, by whom and to whom" (D'Andrade 2008 Pp. 111). Going back to the lit review, these norms are constructed on the principle that X counts as Y in some context C. D'Andrade (2008) calls this the what-counts-as-what principle.

This principle is well illustrated with an instructive account of Japanese versus US daycare practices. In this study, daycare activities were recorded for each culture group. Recordings were played back for the opposing culture group and participants were asked to talk about the activities they saw. Results showed that Americans feel the Japanese school is too noisy, chaotic, and find it unsafe. Americans also reported feeling that Japanese teachers did not work with children, but rather worked around them. Furthermore, Americans disagreed with feeding children as old as three years. Informants cited believing that feeding a child of three years would spoil the child. Finally, the Americans believe that Americans teach their children to think independently and the Japanese do not. Americans claim to teach this independence by providing choices and explanations, yet as noted in the study, American adults retain control of the process of choosing. This means that independence is limited to a narrow set of choices found within a strict set of boundaries, the choices are independent, but the boundaries are not.

For the Japanese, one of the Americans' most disagreeable behaviors is treating children as adults. They noted specific habits of dressing children in adult clothing and using adult table utensils. They explained that childhood is a separate stage of life, and should be treated accordingly. The Japanese informants criticized Americans in the videos as lazy. They said that the American daycare is strict and rigid. This was especially so where workers did not play with children and they did not participate or communicate on the children's level. Both groups underplayed the similarities between the daycare activities and emphasized the differences.

D'Andrade points out the prime differences expressed by the informants revolve around normative practices. He explains that

“the reason the relatively small differences in normative practices are responded to so sharply and with such criticism seems to be the following: the viewer looks at what the person from the other society is doing, notices a regular difference, and then imagines that the person doing that thing has the values – or lack of values – that would have to be the case if the viewer were to do the same thing... but the inference is wrong”

(D'Andrade 2008 Pp. 111).

He continues the argument by noting that for an American, to feed a three-year-old would be a failure to help the child reach the adult standard. Helping the child to reach adult standards is what *ought* to be done. It therefore appears to Americans that when the Japanese teacher feeds the child that she does not value independence. Equally, he argues, Japanese children are allowed to chose between group participation, and independent activities in order to respect their autonomy. This is a frame that Americans have difficulties generating.

One of the interesting aspects of the what-counts-as-what principle is that “X equals Y” and “C” are mutually constituted in an inductive-deductive process. We recognize a context C,

and make inferences about it such as appropriate social norms. However, we can be mistaken about the context and make horribly incorrect inferences about what is going on. Conversely, if we do not recognize the context we can infer it based on a valuation of behaviors and social norms. We should not worry about the kind of systemic conflict represented by the inductive-deductive problem, as it is a result of the functioning of our biological system. Systems theory tells us that for a system to be adaptable, it needs this kind of built in conflict (Bausch 2001).

What is most important about this discussion is how norms link up with values as they guide behaviors. The linkage between norms and values is a space of symbolic inferences. It is a space where meaning is created. As D'Andrade explains:

“Values are relatively abstract schemas and very different actions can be framed as fulfilling or not fulfilling a value. Each society, in institutionalizing values into action systems, makes its own interpretive linkage about which values apply to which norms and practices.

Outsiders, however, do not know which value is being linked to what norms and actions.

Perhaps it is difficult for people to realize that the relation of values to actions is not that of a rigid designator, such as a person's name, but rather a learned perspective about what-counts-as-what. Just because someone watches TV a lot does not mean they really value watching TV – it may be that they just have nothing better to do” (D'Andrade 2008:112).

In this example, TV watching is taken to mean that someone enjoys TV, but the meaning may be quite different.

D'Andrade (2008) argues that values have little direct effect on behavior and that attitudes are better behavioral predictors. He suggests that these attitudes are not highly individual constructs but rather a narrow range of culturally acceptable options. The lack of connection between values and behavior may be due to a discrepancy between personal values

and cultural practices. D'Andrade (2008) and Morris (1956) both argue this point. The values and norms that we usually see enacted are social values and norms, related to social roles, not personal values associated with individual agents.

Social values are called institutionalized values (D'Andrade 2008). Institutional values are used to evaluate and assess role performances through consensually agreed upon value standards. D'Andrade (2008) and Morris (1956) both agree that institutional values often supersede personal values when roles are actually enacted. This is because role performances will be judged by others. The judgment will be based on the social standard, so performance leans toward enacting socially standard behaviors. Personal values do not need to agree with institutionalized values, though where there is sufficient disharmony stress will result.

The Sick Role Revisited

In relation to the current study, the argument made by D'Andrade (2008) and Morris (1956) help to inform issues related to the sick role, patient roles, and participation in therapy. Examining the results of the current project in light of D'Andrade's (2008) findings suggests that invoking the sick role marks a shift in the value hierarchy that frames the social interaction. Invoking the sick role is a petition to reprioritize values, placing benevolence above all. The sick role legitimizes a shift in social norms, because it marks a change in social context that is not obvious on the surface. This is like the American and Japanese daycares, where the context is incorrectly inferred. With the sick role, the sickness is not always apparent and others infer that the context is normal when it actually is not.

The same seems to be true in Guadalajara. Adopting the sick role appears to mark a shift in values from productivity to benevolence. This comes with an attendant shift in norms and linkages between norms and values. For example, Americans and Mexicans share the value that

D'Andrade describes as “getting something done.” Although, many would argue that Mexicans do not value getting things done the way Americans do. They would cite the relaxed timetables common to Latin America and the frequent indulgence of engaging the here-and-now of life. However, this is a mistake. The value is similar between the two nations, only the value judgments related to norms are different. In Mexico, passing time with relatives qualifies as “doing something.” In pile sorting exercises, “resting” was more strongly associated with “family activities” than it was with “sleep.” The difference is what counts as a productive activity. Sharing a meal with the family could be considered resting from either American or Mexican perspectives. However, the meaning of resting is very different in each country. In the US, resting is a non-productive activity. This is not true of Mexico. Mexicans would say that resting, such as sharing a meal, produces family unity and close personal ties. The product is social cohesion.

When *Tapatíos* take on the sick role, it could be seen as a shift in linkages between values and norms as well as a shift in value priorities. Values are shifted towards benevolence, but there is also a shift in the norms associated with the values. For example, caring and providing for one's family is valued, and is institutionally linked with parental and other family roles. Normally, activities like preparing meals, house cleaning, providing money, food, clothing, or other daily needs constitutes taking care of one's family. In the case of the sick role, the strained individual exchanges patient activities in place of these norms. They reason – I am sick and may die; if I die I won't be doing my family any good, in fact it will cause them harm; in order to continue serving my family I need to take care of myself (take on the patient role). What has changed is what counts as providing for one's family. Taking care of one's family may require therapeutic activities rather than household chores.

Taking on the sick role relieves one from social obligations. When dealing with chronic disease, release from role obligations is not always possible, so role changes are made and complete role withdrawal is avoided. The sick role socially legitimizes such role changes. Such legitimization is especially necessary where new roles require abnormal adaptations. This release of responsibilities does not occur by simply withdrawing from a role. One must announce being sick to get reprieve from obligations. The exception to this would be where a role has little social impact, one could simply withdraw from it. Where obligations are not fulfilled, the reduction in productivity must be absorbed by the relevant social network. If obligations must be met through unconventional means, especially contradictory means (crossing gender work roles for example), the sick role may buffer the stigmatizing effect.

In this context, sickness is not necessarily deviance as Parsons conceives it, though it could easily represent inherent conflict in the system. This is especially true where individual desires and capacities conflict with social norms and role obligations. Really, it is only in cases where individuals conflict with norm performance that the sick role can be invoked to legitimize the abnormal behavior. The sick role in this case is not just utilized by the sick person, but also by others in their social network. Children of sick persons may need to do extra chores that exclude them from peer-oriented activities. They invoke the parent's sick role to buffer the lack of fulfillment of their own friend role, or to explain why older boys may have to cook meals or clean their own clothes.

In Mexico women suffer a greater diabetes disease load, with some women invoke the sick role to legitimize their transition to the patient role. These women feel bad, so they have sought medical care, or under routine care, they have been told they are sick. In order to serve their highest purpose, supporting their families for example, they must be alive, and preferably

well. Since they are sick, they perform according to the model of being diabetic. While correct social performance of the diabetic role does not reduce their blood sugar, it does have therapeutic effect for depression and anxiety, and leads to improved overall well-being. Performance of the patient role requires adjustments on the part of the social network. These adjustments are legitimized by the sick role. The sick role legitimizes changes in social norms and individual behaviors such as role withdrawal, role substitutions, delays in fulfilling obligations, or dissolution of obligations. D'Andrade (2008) argues that one of the most important functions of values is to legitimate actions, including punitive sanctions for failures to act correctly. In the case of the sick role, what the value system legitimizes is the absence of sanctions for breaking norms.

The Patient Role

It appears that much of what has been attributed to the sick role is actually better accounted for by the therapeutic role. The sick role is not just an individual status, but rather applies to an entire social network. When someone fails to meet their social role obligations because they are sick, the social network must absorb the change. The changes will include either functioning without the sick persons productivity, or substituting an alter for the sick ego. The sick person, his or her role alters, and those left unfulfilled through failure to meet social obligations, are all impacted by the sickness and can claim altered sick role status.

The degree or frequency to which one would invoke the sick role will be directly related to the size of ones social networks, ones status within those networks, and the network's ability to absorb the changes. In networks where the sick person carries a high degree of network productivity or where the sick person is a central hub for the network, networks will be impacted more by sickness episodes. This will be reduced in proportion to the availability of adequate

substitutes. Where social networks can absorb the reduced productivity or has resources to support the sick person's dependency, there will not be great pressure to resume normal roles. This could result in role substitutes taking the role permanently. Networks with few resources or with inadequate role substitutes will apply pressure to the sick individual to return to their previous status or to perform previous roles satisfactorily. Failure to absorb sickness into the network is likely to result in increased stigma and possibly the collapse of the social network. This is a point of intra-cultural variability that is not accounted for in Parson's model.

Where sickness creates conflict within the social network, alters may begin to press for legitimization of the sick role. The highest legitimizing source will be culturally dependent. In Guadalajara, this includes the physicians at the government sponsored health clinic. Individual demonstrations of legitimate claims to the sick role may include escalating degrees of legitimization. A person may simply be able to claim the sick role to be excused from participating in the weekly soccer match, but would need to visit the doctor to receive an excuse to miss work. Therapeutic behaviors are likely to escalate as one becomes sicker as well. One may self treat, visit mid-level health brokers like therapist and pharmacists. One may seek alternative health services. Eventually one may visit medical doctors, or see other specialist medical practitioners. In all likelihood, individuals will employ a strategy that involves a mixture of recourse.

Since the sick role is the absence or exemption of a role, it represents an abnormal condition to the system. In order to maintain equilibrium the system must return to normal or stabilize, which can be accomplished by either having previous roles resumed, a regression to the previous norm, or jumping to a new stable norm. The jump to a new norm may or may not

require further adjustments from the sick role-exempt status. Either way, taking on a therapeutic role increases the probability of successful systemic adjustment.

On Placebo Effects

Much of this study was couched in a discussion of placebo effects in clinical trials and practice. While it did not address placebo effects directly, it does inform those studies. First, it addresses clinical efficacy and helps to understand how clinical encounters are socially constructed. What happens in the clinic did not start there, nor does it end there. The clinical experience is yet another context in which we can enact social roles and express social values. For the clinician and others interested in placebo effects, one of the strongest points made here is the distinction between intensive and extensive treatment. Using such a distinction could be helpful in distinguishing between treatment effects in a particular sense and therapeutic effects in the more general sense. This distinction would be useful in placebo effects research because it helps to resolve the argument over the power of the placebo. Those interested in the psychobiology or neuro-scientific perspective of placebo effects will focus on treatment effects, while those with broader social interests will tend more towards therapeutic effects. Either way, each group can measure one specific effect and control for the other. Eventually, the division of labor should no longer be necessary because the evidence should support a single process underlying the symbolic impact of therapy in general and treatment in particular.

This research has also been supportive of the ideas proposed by Thompson et al. (2009), that performance matters in a placebo response. What was not supported is the notion that performance is a non-cognitive, non-meaningful experience. The enactment of social roles is a performance that is about as meaningful as any performance can be, but role performance is half cognitive and half behavioral. The links between them are meaningful. In many ways,

comparing cultural consonance in a domain in relation to cultural knowledge of the domain is a measure of performance, though in this case the performance is often linguistic. This does not have to be the case. Other measures of behavioral consonance could be developed, as is discussed below.

Improving Outcomes in Mexico

One of the primary areas where diabetic outcomes could be improved is with the issue of numeracy. The lay diabetic has little understanding of the monitoring system employed by the biomedical professionals, namely blood glucose levels. It was observed in the US and Mexico that those who test their blood glucose regularly do not understand how to affect change in the number. For example, post-prandial glucose checking is most common, resulting with individuals knowing their glucose level, but being unable to integrate that knowledge with other schemas and scripts. It may be better to have glucose testing performed before food ingestion, providing diabetics with a system for adjusting macronutrient intake in accordance with glucose levels. This problem is not limited to Mexico, but likely includes the global diabetic population. In Mexico, the problem is compounded by a lack of monitoring equipment, especially glucose test strips. Only the wealthiest of the middle class can afford daily glucose monitoring. Future research should examine the cost effectiveness of providing glucose monitoring equipment over treatment of long-term complications like dialysis and amputations.

Study Limitations and Future Directions

This study had several limitations. First, it was underfunded, which had several impacts. Lack of funding minimized the number of person-hours available to conduct interviews, which in turn limited treatment adherence controls, and did not allow for a more elaborate development of the food model. The same holds for models of daily activity. More robust measures may be

needed in future research. Budget shortages also affected outcome measures. For example, having measures of glycolated hemoglobin would have been better, as would measures of C-reactive protein.

The study could be improved by including a larger sample. This could be accomplished by expanding sampling to include patients from additional IMSS clinics. In addition, greater consideration of productive activities and social networks would have given the project a stronger understanding of the meaning of social roles. It would be interesting to examine therapeutic behaviors in relation to social networks, so that a measure of social integration and health could be taken. There could be an emphasis on information seeking, identifying key culture brokers. It would also be interesting to witness doctor-patient interactions in the clinic itself and compare informant reports between the clinical and casual settings.

It would be interesting to follow the participants in the current study longitudinally to see if duration could be added to the intensity by extent model proposed above. In this case, it would be hypothesized that those who maintain intensive, extensive treatment over a longer period would see an additional treatment effect in reduced glucose levels. Adding time to the equation may reveal the original effect hypothesized.

Future research should include a larger emotional component. It would be interesting to see how emotions, especially trust and hope, are culturally constructed around coping with type 2 diabetes. This could be particularly powerful in relation to food models. Food can represent conflicting emotional issues since food is treatment, and it is therapeutic. The therapeutic aspects are often at odds with treatment models. This kind of research project would work well for developing behavioral measures of cultural consonance, as food intake and daily activities could be observed without self-reports. Greater cultural consonance in emotional coping should

correlate with better physiological outcomes, like lower BMI and greater glucose control as well better well being.

CHAPTER EIGHT: CONCLUSION

This project makes many contributions toward understanding the impact of cultural systems on health. The project started with a broad interest in mind-body issues but focused in on symbolic healing in a biomedical context, namely placebo effects. The placebo problem was reviewed from the perspective of neuroscience and from anthropology. It was conceptualized as a problem of meaning and meaningfulness. The literature review developed a theory of meaning and outlined various types of meaning systems in which humans participate. Especially important is that meaning was equated with the capacity to make inferences. The theory of meaning was then attached to an explicit cognitive theory of culture (D'Andrade 1984). This theory treats culture as a system of meaning. It became clear that a great deal of the knowledge and beliefs that patients hold about the clinic do not derive from the clinic itself, and are not constrained by the boundaries of the clinic. The clinical context is embedded in a cultural system, which facilitates its functionality.

The project presented here focused on type 2 diabetes treatment in Urban Mexico. Diabetes management represents a broad spectrum of treatment behaviors including constant lifestyle choices. This makes diabetes an excellent area to study treatment in a very broad sense. Studying diabetes among the Mexican middle and working classes fit well, as these groups are struggling with issues of modernization, including rapidly increasing rates of type 2 diabetes. Such issues were discussed in the ethnographic chapter.

The project was designed to test hypotheses about the impact of culturally constructed meaning on health. It started with a qualitative investigation of type 2 diabetes treatment, taking a broad approach based loosely on Kleinman's (1980) explanatory models and Antonovsky's (1979; 1987) salutogenic theory. This included a three-way sampling strategy in order to get at treatment knowledge distributed across professional, folk, and lay understandings of the disease.

The first stage of data collection involved eliciting domain content through cognitive free-listing. Free-listing exercises showed that a great deal of the domain content is drawn from professional biomedicine. Food and healthy eating were the most important items in the free-lists, reflecting Finkler's (1991) insights about Mexican biomedicine's concern for diet. Exercise and consumption of pharmaceuticals were also important, as was visiting the doctor and performing self-care behaviors. However, there were additional items mentioned as treatment-related behaviors that do not fall within biomedical prescription. Some of these items included having positive social relationships such as friends, family, and God. Others dealt with psychosocial aspects of life such as keeping oneself occupied and not experiencing strong emotions.

Since there was a large amount of information elicited in free-lists, it had to be pared down to a manageable level for card sorting tasks. Three sets of cards were developed including a set for core treatments, a set for food, and a set for emotional and behavioral factors. Card sorting tasks showed a preference for dividing all treatment items into things one should do or consume and things one should avoid. This consumption-avoidance model fits well with the Spanish phrase *tomar y evitar*. Pile sorting on the food tasks enabled a consensus model of food and eating, which were later associated with better health outcomes.

Additional consensus items were tested using a formal survey. Scenarios representing a variety of items from the core treatment model were included so that the consensus model of treatment would be broad. Consensus was achieved, and the consensus model was then used as a baseline for comparing individual treatment beliefs and behaviors with cultural models of appropriate treatment beliefs and behaviors. Cultural consonance measures the fit between these two. These measures of fitness were then compared with clinical diabetes outcomes of BMI and fasting blood glucose. After controlling for covariates of age and gender, total activity, and total servings of food consumed, greater cultural consonance in the food-as-treatment model was predictive of reduced BMI. This indicates an impact of meaningfulness on physiological outcomes, a measurement of what Moerman (2002) would call a meaning response. It is notable that participants who are consonant with a short list of foods tend to make better food choices in general, including eating more healthy fruits like apples and consuming fewer sweets and fats. This has implications for dietary intervention programs, suggesting that programs that are sensitive to cultural models of eating may find greater success.

The predicted relationship between greater cultural consonance in the broad treatment model and good diabetic control as measured by having fasting blood glucose below 120 mg/dl was not observed. Had this relationship been observed it would have been indicative of the impact that meaning has on physiology. Instead, there is a relationship between greater cultural consonance in the treatment domain and higher, rather than lower, fasting blood glucose. This has been interpreted as a different case of meaning. Here biological measures impact the meaning of one's social roles and their associated behavioral norms. Diabetic patients receive culturally encoded messages about the gravity of their situation through their doctor's interpretation and translation of test results. Those with high numbers get the message that their

condition is bad and that more action is needed. Those with low numbers are told they are OK, and may continue as they have.

Those with negative outcomes are more motivated to participate in a broad array of therapeutic behaviors, though this does not always include an intensification of clinical treatment like better adherence to pharmaceuticals. It may be important to make distinctions between treatment and therapy in health interventions so that treatment refers to clinically prescribed behaviors and therapy to broader culturally prescribed health behaviors. Another distinction between the intensity of participation and the extent of participation in these behaviors may be valuable. It was suggested that patients who feel highly engaged in their sickness management might feel this way because they are participating in a broad array of therapeutic behaviors, without participating more fully in clinical treatment. From the clinical perspective, it would be advisable for clinicians to take greater consideration of this patient perspective

Furthermore, since greater participation in the cultural model of therapy does lead to greater well-being it was suggested that a checklist of culturally prescribed therapies could be generated to help clinicians help patients feel better. Such a checklist could be used in the clinic much like placebo treatments are currently used, with the added benefit that there is no guesswork (maybe it will help or maybe not) like there is in placebo prescriptions, and it provides clinicians a means of handling psycho-social problems without special training.

Ultimately, this project was concerned with the role of meaning in clinical encounters and its impact on physiology. This impact appears three-fold in this project. First is the impact of not meeting role expectations, which leads to role strain. Second is the impact of eating the culturally prescribed diet and attaining a lower BMI. The third impact is the meaning of one's condition, based on external monitoring, and how it motivates therapeutic behaviors. Therefore,

while cultural meaning does not have a cross-sectional impact on improved fasting blood glucose, it does have a salutogenic impact on health that reaches beyond the limits of the medical clinic.

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APPENDIX A: CULTURAL CONSENSUS SURVEY INSTRUMENT

1. ¿Cuántos años tiene usted?	2. Sexo:	M	F	3. ¿Cuál es su estado civil?			
4. ¿Aproximadamente de cuanto son sus ingresos mensuales? \$				5. ¿A qué se dedica?			
6. ¿En cuál colonia vive?				7. ¿Cuántos personas normalmente viven en su casa?			
				Adultos masculinos:		Adultas:	
				Niños masculinos:		Niñas:	
8. ¿Hasta qué nivel de estudio llegó?	Pri	Sec	Pre	Lic	Mae	Ava	9. ¿Hace cuanto que lo diagnosticaron?
10. ¿Tiene usted bien controlada su diabetes?		S	N	11. ¿Sabe usted su nivel promedio o normal de glucosa en la sangre cuando esta en ayuno?			

Estas oraciones se basan en lo que la gente aquí en Guadalajara dijo acerca del tratamiento de la diabetes tipo II. Yo voy a leerle las oraciones y si cree que la gente estaría de acuerdo responda 'sí', pero si cree que la gente no estaría de acuerdo responda 'no'. Entonces, yo le preguntare si la gente estaría de acuerdo o desacuerdo mucho o poco.

1. Lo más importante que puede hacer una persona para controlar su diabetes es buena alimentación incluyendo frutas y verduras enteras y frescas.	1	2	3	4
2. Fumar cigarros es bueno para los diabéticos.	1	2	3	4
3. Un diabético debería de checar la azúcar en la sangre por lo menos una vez al día, no importando que tan bien o mal este controlada su condición.	1	2	3	4
4. Amigos cercanos y la familia no pueden ayudar al paciente diabético con su dieta.	1	2	3	4
5. Si una persona con diabetes come frutas y verduras que contengan mucha azúcar, por ejemplo los plátanos y el betabel, no importa.	1	2	3	4
6. Cuando uno tiene la azúcar muy alta, tomar medicamentos es la mejor manera de control la diabetes.	1	2	3	4
7. Para un diabético esta fuera de sus manos controlar su tratamiento de la diabetes.	1	2	3	4
8. Hacer oraciones y asistir a la iglesia no puede ayudar a controlar la diabetes.	1	2	3	4
9. La familia es lo más importante porque da apoyo físico e emocional.	1	2	3	4
10. Los nopales ayudan a disminuir y estabilizar los niveles de azúcar en la sangre.	1	2	3	4

11. Visitar a su médico regularmente es importante aunque tenga su diabetes controlada.	1	2	3	4
12. La tristeza y la depresión no afectan a la diabetes.	1	2	3	4
13. Tener buena comunicación con su médico es importante para que la persona tenga conocimiento de su condición y de las opciones médicas.	1	2	3	4
14. El peso de una persona tiene poca relación con el control de la diabetes.	1	2	3	4
15. Para un diabético es difícil controlar la diabetes porque no hay suficiente tiempo en el día para seguir todas las indicaciones del tratamiento.	1	2	3	4
16. Las emociones fuertes, como los corajes, hacen que suba el azúcar en la sangre y uno debería de tratar de evitarlos a toda costa.	1	2	3	4
17. En cada chequeo, uno debería de visitar al mismo médico para desarrollar una relación duradera y de confianza.	1	2	3	4
18. Uno de los obstáculos más grandes de superar para un diabético es la tentación de la comida y antojos.	1	2	3	4
19. Jugar deportes como el futbol y nadar son buenos ejercicios para los diabéticos, pero caminar es más importante.	1	2	3	4
20. Si uno tiene una familia que es de gran apoyo es más fácil para uno controlar la diabetes.	1	2	3	4
21. Tomar bebidas alcohólicas no hace que suban los niveles de azúcar en la sangre.	1	2	3	4
22. Lo único de lo cual se tiene que preocupar un diabético es de comer bien, hacer ejercicio y tomar sus medicamentos.	1	2	3	4
23. Las emociones fuertes, como los sustos, hacen que sea difícil controlar la diabetes pero a veces no se pueden evitar.	1	2	3	4
24. Para limpiar su sistema y evitar las complicaciones de la diabetes uno necesita tomar bastante agua.	1	2	3	4
25. Si el destino te ha dado diabetes, no importa cuánto trates de controlar la enfermedad, solo va a empeorar.	1	2	3	4
26. Evitar comidas dulces, como pasteles y galletas, es lo más importante para un diabético.	1	2	3	4
27. Los refrescos dulces causan un gran efecto en los niveles de azúcar en la sangre.	1	2	3	4
28. Si uno no tiene suficiente dinero es difícil controlar la diabetes.	1	2	3	4
29. Es muy importante para los diabéticos obtener suficiente fibra y una de las mejores fuentes de la fibra son los cereales, especialmente la avena.	1	2	3	4
30. Si uno tiene una buena relación con su médico es más fácil controlar su diabetes.	1	2	3	4
31. Es importante para los diabéticos mantenerse ocupados con quehaceres y pasatiempos.	1	2	3	4
32. Una persona diabética debería comer más pescado y pollo, muy poca res y nada de puerco.	1	2	3	4
33. Si uno vive una vida tranquila, evita comportamientos extremos y actitudes negativas es más fácil controlar la diabetes.	1	2	3	4
34. Si uno tiene fe en Dios la diabetes es más fácil de controlar.	1	2	3	4

35. El dormir suficiente y descansar bien no tienen ningún efecto en la diabetes.	1	2	3	4
36. Si uno tiene amigos con quien platicar y hacer cosas juntos es más fácil controlar la diabetes.	1	2	3	4

Notes:

APPENDIX B: CULTURAL CONSONANCE SURVEY INSTRUMENT

1. ¿Cuántos años tiene usted?	2. Sexo:	M	F	3. ¿Cuál es su estado civil?			
4. ¿Aproximadamente de cuanto son sus ingresos mensuales? \$			5. ¿A qué se dedica?				
6. ¿En cuál colonia vive?				7. ¿Cuántas personas normalmente viven en su casa?			
				Adultos masculinos:		Adultas:	
				Niños masculinos:		Niñas:	
8. ¿Hasta qué nivel de estudio llegó?	Pri	Sec	Pre	Lic	Mae	Ava	9. ¿Hace cuanto que lo diagnosticaron?
10. ¿Tiene usted buen control sobre su diabetes?		S	N	11. ¿Sabe usted su nivel promedio o normal de glucosa en la sangre cuando esta en ayuno?			
12. ¿Cuales medicamentos toma usted para la diabetes?				13. ¿Cuántas mg?		14. ¿Total por día?	
15. ¿Cuáles otras condiciones de salud tiene?							
16. ¿Cuales medicamentos toma usted para sus otras condiciones?							

Estas oraciones se basan en lo que la gente aquí en Guadalajara dijo acerca del tratamiento de la diabetes tipo II. Yo voy a leerle las oraciones y por favor responda si aplica o no aplica a su propia vida personal. Entonces, en el caso que no aplica yo le preguntare si no aplica para nada o un poco. O en el caso que si aplica, si aplica algo, o mucho.

37. Yo tengo buena alimentación que incluye frutas y verduras enteras y frescas.	1	2	3	4
38. Yo fumo.	1	2	3	4
39. Yo me checo la azúcar en la sangre, no importando que tan bien o mal este controlada mi condición. ¿Con que frecuencia se lo checa? _____	1	2	3	4
40. Tengo amigos cercanos y familia para ayudarme con mi dieta.	1	2	3	4
41. A veces yo como frutas y verduras que contengan mucha azúcar.	1	2	3	4
42. Cuando tengo la azúcar muy alta, tomo medicamentos para controlarlo.	1	2	3	4
43. Creo que mi tratamiento esta fuera de mis manos.	1	2	3	4

44. Yo hago oraciones y asisto a la iglesia.	1	2	3	4
45. Mi familia me da apoyo físico e emocional.	1	2	3	4
46. Yo como nopales.	1	2	3	4
47. Visito a un médico regularmente. ¿Con que frecuencia consulta a un profesional de la salud?	1	2	3	4
48. Algunas veces sufro de tristeza o depresión.	1	2	3	4
49. Regularmente tengo buena comunicación con mi médico.	1	2	3	4
50. Estoy satisfecho con mi peso.	1	2	3	4
51. Hay suficiente tiempo en el día para seguir todas las indicaciones del tratamiento de la diabetes.	1	2	3	4
52. A veces hago corajes, aunque intento evitarlos.	1	2	3	4
53. Tengo una relación duradera y de confianza con mi médico.	1	2	3	4
54. Para mí, uno de los obstáculos más grandes de superar es la tentación de la comida y antojos.	1	2	3	4
55. Yo camino.	1	2	3	4
56. Tengo una familia que es de gran apoyo.	1	2	3	4
57. Tomo bebidas alcohólicas. ¿De cuáles? _____ Qty _____	1	2	3	4
58. Mi tratamiento incluye únicamente buena alimentación, ejercicio, y tomar mis medicamentos.	1	2	3	4
59. A veces, experimento emociones fuertes, como los sustos.	1	2	3	4
60. Yo tomo bastante agua. ¿Cuántos litros de agua natural diariamente? _____	1	2	3	4
61. No importa cuánto trato de controlar mi enfermedad, solo va a empeorar.	1	2	3	4
62. Evito comidas dulces, como pasteles y galletas.	1	2	3	4
63. Tomo refrescos. ¿Cuántos normales por día? _____ ¿Cuántos light por día? _____	1	2	3	4
64. Tengo suficiente dinero para tratar mi diabetes.	1	2	3	4
65. Yo obtengo suficiente fibra de mi dieta.	1	2	3	4
66. Tengo una buena relación con mi médico.	1	2	3	4
67. Me mantengo ocupado con quehaceres y pasatiempos.	1	2	3	4
68. Yo como mucho pescado y pollo, muy poca res y nada de puerco.	1	2	3	4
69. Yo vivo una vida tranquila, evito comportamientos extremos y actitudes negativas.	1	2	3	4
70. Mi fe en Dios me ayuda con mi diabetes.	1	2	3	4

71. Yo duermo suficiente y descanso bien. ¿Cuántas horas duerme? _____	1	2	3	4
72. Tengo amigos con quien platicar y hacer cosas juntas.	1	2	3	4

Por favor conteste las siguientes preguntas acerca de sus actividades físicas. Es importante que nos responda correctamente, así que escuche con cuidado y piense bien en todas las veces que lleva acabo las diferentes actividades.

5. ¿Cuántas veces al día dedica usted a actividades físicas en general, como ir de compras, lavar ropa, trabajar en el jardín o casa, etc. Por lo menos 15 minutos sin parar?	Uni/día		
6. ¿Cuántas veces al día dedica usted a caminar por lo menos 15 minutos sin parar, excluye actividades generales.	Uni/día		
7. ¿Cuántas veces al día dedica usted a haciendo ejercicios, como el yoga, ir al gimnasio, o aerobics cardiovasculares por lo menos 15 minutos sin parar.	Uni/día		
8. ¿Cuántas veces por semana practica deportes o el baile? En cada ocasión cuantos minutos le dedica a jugar deportes o a bailar?	# semana	# min.	Uni/día

Por favor conteste las siguientes preguntas sobre las comidas que usted come. Es importante que nos responda correctamente, así que escuche con cuidado y piense bien en todas las comidas que usted come.

Por favor dígame acerca de las comidas que come usted con frecuencia en los : **Desayunos:**

						Frecuencia					
						<	1	2	3	4	>
						Carbo	Verduras	Verduras dulce	Frutas	Frutas dulces	Lácteos
						Frecuencia					
						<	1	2	3	4	>
						Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos
						Frecuencia					
						<	1	2	3	4	>
						Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos

Por favor dígame acerca de las comidas que come usted con frecuencia para sus: **Comidas:**

						Frecuencia	
						<	1
Carbo	Verduras	Verduras dulce	Frutas	Fruta dulce	Lácteos	Carnes	Dulces
						Frecuencia	
						<	1
Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos	Carnes	Dulces
						Frecuencia	
						<	1
Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos	Carnes	Dulces

Por favor dígame acerca de las comidas que come usted con frecuencia para sus: **Cenas:**

						Frecuencia	
						<	1
Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos	Carnes	Dulces
						Frecuencia	
						<	1
Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos	Carnes	Dulces
						Frecuencia	
						<	1
Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos	Carnes	Dulces

Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos	Carnes	Dulces			

Por favor dígame acerca de las comidas que come usted con frecuencia de: **Botanas/Antojitos:**

<u>Antes</u>		<u>Entre 1</u>		<u>Entre 2</u>		<u>Después</u>							
								Frecuencia					
								<	1	2	3	4	>
Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos	Carnes	Dulces						
<u>Antes</u>		<u>Entre 1</u>		<u>Entre 2</u>		<u>Después</u>							
								Frecuencia					
								<	1	2	3	4	>
Carbo	Verduras	Verduras dulces	Frutas	Frutas dulces	Lácteos	Carnes	Dulces						

Por favor conteste las siguientes preguntas. Queremos saber cuántas porciones de las siguientes comidas usted come en una semana típica.

	Porción
1. ¿Cuántas porciones de avena come usted en una semana normal?	
2. ¿Cuántas porciones de nopales come usted en una semana normal?	
3. ¿Cuántas manzanas come usted en una semana normal?	
4. ¿Cuántos plátanos come usted en una semana normal?	
5. ¿Cuántos porciones de pescado o pollo come usted en una semana normal?	
6. ¿Cuántas porciones de res come usted en una semana normal?	
7. ¿Cuántos porciones de puerco come usted en una semana normal?	
8. ¿Cuántos dulces come usted en una semana normal? Incluyendo pan dulce, pasteles, galletas, mermeladas, chocolates u otro azúcar o dulce?	
9. ¿Cuántos porciones de sustitutos de azúcar toma usted en una semana normal?	

Por favor conteste las siguientes preguntas acerca de tomar medicamentos con sí o no.

Adherence: Morisky et al 1986

1. ¿Se le olvida a veces tomar sus medicamentos?	N	S
2. ¿A veces es descuidado cuando se trata de tomar sus medicamentos?	N	S
3. ¿Cuando usted se siente mejor a veces deja de tomar sus medicamentos?	N	S
4. ¿Si usted se siente peor cuando toma los medicamentos, a veces los deja de tomar?	N	S

Por favor conteste las siguientes preguntas. Yo voy a leerle las oraciones y por favor responda que tan frecuente ocurre esto, si poco o mucho. Entonces, si responde que poco frecuente yo le preguntare si es para nada o casi nunca. O, si es frecuente si es a veces o casi siempre.

Bradley 1992: Bienestar en general

23. Siento que soy útil y necesario.	1	2	3	4
24. Tengo crisis de llanto o siento que las voy a tener.	1	2	3	4
25. Puedo pensar muy claramente.	1	2	3	4
26. Mi vida es bastante completa.	1	2	3	4
27. Me siento descorazonado y triste.	1	2	3	4
28. Disfruto las cosas que hago.	1	2	3	4
29. Me siento nervioso y ansioso.	1	2	3	4
30. Me siento asustado sin tener ninguna razón.	1	2	3	4
31. Me molesto fácilmente o siento pánico.	1	2	3	4
32. Siento que me estoy derrumbando y que me voy a romper en pedazos.	1	2	3	4
33. Me siento tranquilo y puedo permanecer sentado tranquilamente	1	2	3	4
34. Me duermo fácilmente y logro descansar bien por las noches.	1	2	3	4
35. Me siento lleno de energía, activo o vigoroso.	1	2	3	4
36. Me siento atarantado o perezoso.	1	2	3	4
37. Me siento cansado, agotado, consumido, o exhausto.	1	2	3	4
38. Me he estado despertando sintiéndome fresco y restaurado.	1	2	3	4
39. He estado feliz, satisfecho, o complacido con mi vida personal.	1	2	3	4
40. Me he sentido bien adaptado a la circunstancia de mi vida.	1	2	3	4
41. He vivido la clase de vida que quise tener.	1	2	3	4
42. Me he sentido deseoso de realizar mis tareas diarias, o tomar nuevas decisiones.	1	2	3	4
43. He sentido que puedo fácilmente hacer frente a cualquier problema grave o cambio importante en mi vida.	1	2	3	4
44. Mi vida cotidiana ha estado llena de cosas que me parecieron interesantes.	1	2	3	4

Por favor conteste las siguientes preguntas. Yo voy a leerle las oraciones y si estaría de acuerdo responda 'sí', pero si no estaría de acuerdo responda 'no', o si no puede contestar "no se". Entonces, yo le preguntare si la gente estaría de acuerdo o desacuerdo mucho o poco.

ATT: 19 (Welch, Dunn, y Beeney 1994)

20. Si no tuviera diabetes pienso que sería una persona muy diferente.	1	2	3	4	5
21. No me gusta que me llamen "DIABÉTICO"	1	2	3	4	5
22. La diabetes es lo peor que me ha sucedido.	1	2	3	4	5
23. A la mayoría de la gente se le haría difícil adaptarse a tener diabetes.	1	2	3	4	5
24. A menudo me da pena tener diabetes.	1	2	3	4	5
25. Parece que no hay mucho que pueda hacer para controlar mi diabetes.	1	2	3	4	5
26. Hay poca esperanza de llevar una vida normal cuando se tiene diabetes.	1	2	3	4	5
27. El control apropiado de la diabetes implica mucho sacrificio e inconvenientes.	1	2	3	4	5
28. Intento no dejar que la gente se entere sobre mi diabetes.	1	2	3	4	5
29. El que se digan que tienes diabetes es como sentenciarte a una vida llena de enfermedad.	1	2	3	4	5
30. Mi dieta diabética realmente no estropea mi vida social.	1	2	3	4	5
31. En general, los doctores deben ser mucho más comprensivos al tratar a la gente que tiene diabetes.	1	2	3	4	5
32. Después de un largo periodo de tener diabetes la personalidad cambia.	1	2	3	4	5
33. A menudo me es difícil decidir si me siento enfermo o bien.	1	2	3	4	5
34. La diabetes no es realmente un problema porque puede ser controlada.	1	2	3	4	5
35. No hay realmente nada que usted puede hacer si tiene diabetes.	1	2	3	4	5
36. En realidad no hay nadie con quien sienta que puedo hablar abiertamente sobre mi diabetes.	1	2	3	4	5
37. Creo que me he adaptado bien a tener diabetes.	1	2	3	4	5
38. A menudo pienso que es injusto que yo tenga diabetes cuando otras personas son tan sanas.	1	2	3	4	5

Por favor conteste las siguientes preguntas. Yo voy a leerle las oraciones y por favor de contestar en una escala de entre uno y siete. Con cada oración decida cuál es la escala. Por ejemplo, el "uno" significa casi nunca o nunca y el "siete" significa con mucha frecuencia.

Life Orientation: Antonovsky 1987

1. ¿Siente usted que no le importa lo que esté pasando a su alrededor?								
Casi nunca o nunca	1	2	3	4	5	6	7	Con mucha frecuencia
2. ¿Anteriormente le ha pasado que se sorprendió por el comportamiento de la gente que usted pensaba conocer bien?								

Nunca Pasa	1	2	3	4	5	6	7	Siempre pasa
3. ¿Le ha pasado que la gente en quien usted contaba lo defrauden o decepcionen?								
Nunca Pasa	1	2	3	4	5	6	7	Siempre pasa
4. Hasta ahora la vida ha tenido:								
Nada de objetivos claros o propósito	1	2	3	4	5	6	7	Objetivos muy claros y propósito
5. ¿Siente usted que está siendo tratado injustamente?								
Con mucho frecuencia	1	2	3	4	5	6	7	Casi nunca o nunca
6. ¿Siente usted que está en una situación desconocida y no sabe qué hacer?								
Con mucho frecuencia	1	2	3	4	5	6	7	Casi nunca o nunca
7. Para hacer las cosas que hace diario es:								
Fuente de un placer profundo y de satisfacción	1	2	3	4	5	6	7	Fuente de dolor y aburrimiento
8. ¿Tiene usted sentimientos e ideas muy confusas?								
Con mucha frecuencia	1	2	3	4	5	6	7	Casi nunca o nunca
9. ¿Le ha pasado que tiene sentimientos dentro de usted que prefiere no sentir?								
Con mucho frecuencia	1	2	3	4	5	6	7	Casi nunca o nunca
10. Mucha gente, incluyendo los que tienen un carácter fuerte, a veces se sienten como perdedores en ciertas situaciones. ¿Con que frecuencia se ha sentido usted así en el pasado?								
Casi nunca o nunca	1	2	3	4	5	6	7	Con mucha frecuencia
11. Cuando algo ocurre, en general usted encuentra que:								
Usted sobreestimo o subestimo la importancia	1	2	3	4	5	6	7	vio las cosas en proporción balanceada
12. ¿Con que frecuencia siente usted que las cosas que hace en su vida diaria tienen poco sentido?								
Con mucha frecuencia	1	2	3	4	5	6	7	Casi nunca o nunca
13. ¿Con que frecuencia tiene usted sentimientos de los cuales no está seguro poder controlar?								
Con mucha frecuencia	1	2	3	4	5	6	7	Casi nunca o nunca

Notes:

APPENDIX C: IRB DOCUMENTATION

December 8, 2009

Office for Research
Institutional Review Board for the
Protection of Human Subjects

THE UNIVERSITY OF
ALABAMA
R E S E A R C H

Richard A. Brown II
Department of Anthropology
College of Arts & Sciences
The University of Alabama

Re: IRB # 09-OR-347-ME "Biocultural Investigation of the Role of
Meaningfulness in Clinical Outcomes for Type 2 Diabetes Patients in a
Mexican Community"

Dear Mr. Brown:

The University of Alabama Institutional Review Board has granted
approval for your proposed research

Your application has been given expedited approval according to 45 CFR
part 46. Approval has been given under expedited review category 7 as
outlined below:

*(7) Research on individual or group characteristics or behavior
(including, but not limited to, research on perception, cognition,
motivation, identity, language, communication, cultural beliefs or
practices, and social behavior) or research employing survey, interview,
oral history, focus group, program evaluation, human factors evaluation,
or quality assurance methodologies.*

Your application will expire on December 8, 2010. If your research will
continue beyond this date, complete the relevant portions of Continuing
Review and Closure Form. If you wish to modify the application,
complete the Modification of an Approved Protocol Form. When the
study closes, complete the appropriate portions of FORM: Continuing
Review and Closure.

Please use reproductions of the IRB approved informed consent form to
obtain consent from your participants.

Should you need to submit any further correspondence regarding this
proposal, please include the above application number.

Good luck with your research.

Sincerely,



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Carpatato T. Myles, MSM, CIM
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama