

GENDER, CULTURE CHANGE, AND FERTILITY DECLINE IN HONDURAS: AN  
INVESTIGATION IN ANTHROPOLOGICAL DEMOGRAPHY

By

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by

David P. Kennedy

This work is dedicated to my wife and my parents. I could not have completed this project without their many sacrifices and years of unconditional support.

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By

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In this study, I investigate the context and causes of global human fertility decline. The global total fertility rate—the average number of children born to women over their lifetimes—has fallen for the past two hundred years. This process, which began in Europe and continues today in the developing world, has been described but not sufficiently explained by demographers. This study is directed towards understanding the root causes and context of the trend in falling birth rates for populations around the world. I present an analysis of this phenomenon with an investigation of Honduras as a case study in fertility decline.

I present a critique of social science theories of fertility decline. I argue for a theory that crosses disciplinary boundaries in the social sciences, addresses gender, and includes a component that acknowledges the role of evolutionary forces on human reproductive motivation. I also argue for recognition of the role of culture in human

behavior and an understanding of culture as an end product of human evolution. I stress the need for empirical studies to operationalize and measure cultural variables.

I discuss my choice to adapt Warren Miller's Childbearing Questionnaire as a means of operationalizing and measuring what I call natality culture. I describe my data collection technique for adapting and administering this scale using a variety of sampling procedures on 400 people living in and around the city of Catacamas, Olancho, Honduras.

I present an analysis of these data and data collected nationally on reproductive attitudes. My analysis demonstrates that there is considerable evidence for cultural agreement about positive and negative motivations for childbearing. However, there is also evidence for important intra-cultural diversity. This diversity is primarily associated with sex and urban or rural location. I argue that changing evaluations of the appropriate quality and quantity of childbearing drives this cultural diversity of natality culture. I also argue that these changing evaluations are related to shifting notions of appropriate masculine and feminine roles. Changing economic opportunities that affect parents' evaluations of their contributions towards their children's futures cause this shifting of gender roles.

## CHAPTER 1 INTRODUCTION

Total fertility rates around the world—the average number of children born to women over their lifetimes (TFR) (Yaukey 1985, p. 148)—have been dropping for the past century and a half. It once was common for populations to average seven or eight births per woman. Today the overall world average is under three, with some regions having fertility rates edging toward one birth per woman (Potts 2000). The process that began in the industrialized nations of Europe in the 18th century has now spread to parts of the developing world. Explaining this phenomenon, called the modern demographic transition, was once the sole domain of the demographers who developed demographic transition theory (DTT). They postulated that the same economic changes that began in Europe, called modernization, would eventually spread around the world, first causing mortality rates to drop from very high to very low levels, leading to population growth and then population pressure, causing a rationally inspired increase in the use of contraceptives (Notestein 1945).

As demographers gathered evidence in an attempt to support and refine the theory, contradictions to its postulates began to emerge. In order to resolve these contradictions, DTT has been repeatedly modified in ways that have violated the scientific goal of parsimony. The list of variables that have been theorized as causing the drop in fertility rates continues to grow. This situation has prompted voices from both inside and outside of demography to question the validity of DTT. In the past thirty years, many attempts to replace the theory have emerged from researchers across the social sciences.

The question of why the reproductive behavior of populations around the world would undergo this drastic and sometimes sudden shift is such an important and basic question to all of social science that it rightly stands outside of disciplinary boundaries. There is a wide array of interacting influences on human reproduction, including social, psychological, cultural, economic, and biological influences. This pushes the explanation of reproductive behavioral outcomes outside of the expertise of any one discipline. Researchers in disciplines such as psychology, sociology, anthropology, evolutionary biology, economics, and history are working to enhance the work done by demographers to resolve the conflicts and fill in the gaps of DTT.

Unfortunately, this multi-disciplinary activity has not necessarily led to the development of an interdisciplinary theory of fertility decline. Fertility decline researchers have often developed new theories that concentrate on the aspect of fertility decline that is pertinent to their disciplinary expertise. This concentration often comes at the expense of theory that might be relevant in other disciplines. In order for an interdisciplinary theory of fertility decline to develop, there has to be simultaneous attention given to certain fundamental aspects of human reproduction.

### **The Essential Elements to an Interdisciplinary Theory of Fertility Decline**

#### **Human Reproductive Biology**

First, a truly interdisciplinary theory of fertility decline must take into account how the human species reproduces biologically. The understanding of this reproductive system must be consistent with the evolutionary history that has shaped human biology. The species *Homo sapiens* evolved under specific environmental conditions in the recent past (relative to evolutionary time). A theory of human reproduction that does not take this recent evolutionary past into account is incomplete. An understanding of the

evolutionary roots of human reproductive behavior should include not only an understanding of the physiological needs and limitations of human reproduction—such as coitus or gestation—but it also should include an understanding of the evolved structure of the human central nervous system. This is important in order to understand how human beings process the environmental information necessary to make choices among behavioral options.

### **Culture and Human Reproduction**

An understanding of the human central nervous system should include an understanding of how human beings process cultural information and the connection between culture and reproductive behavior. Human beings' capacity for culture should be understood as the end product of a unique evolutionary history. The degree to which human beings rely on cultural learning to influence their behavior is unmatched by any other species. Human genotypes allow for (but do not determine) a variety of human behaviors that vary within and across populations. This behavioral trait is referred to as plasticity, which implies that there is limited flexibility on a range of possible behaviors. The limitation in behavior is in part due to a limitation on what and how human beings are able to learn (Tooby and Cosmides 1992). Although there are limits, this range is much wider than any other species (Knight et al. 1999).

A complete understanding of culture includes the culturally specific ways in which populations access resources, the institutions that develop to influence continuity in attitudes and behavior, and the shared meanings that groups of people give to the events and things in the world around them (Harris 2001a). Also, there should be a recognition that certain reproductive behaviors are culturally variable while other behaviors are

human universals. In addition, an account of culture must include not only the function of culture but also the determinants and process of culture change.

### **Gender and Human Reproduction**

Attention to the development of gender roles, including how they are maintained and how they change, must be central to any theory of fertility decline. This is because, by definition, fertility decline represents changing gender roles. In all societies, the two human sexes display varying patterns of behaviors, especially with regard to reproductive behaviors (i.e., mating effort, childcare effort, etc.). However, these patterns differ among populations and over time. This spatial and temporal variety in patterns of sex-typed behavior is what is meant by gender. Fertility decline represents a shifting pattern of gendered behavior over time with regard to reproductive effort. Research on fertility decline must have a place for defining gender institutions, the historical circumstances under which they developed, and the forces that cause them to change.

A complete understanding of gender institutions acknowledges that they are not created in a vacuum and are often shaped by the ways in which human populations access resources from the environment. Although reproduction is an important human behavior, human beings need to secure resources in order to reproduce. Depending on the material constraints of particular environments, human beings develop a variety of ways of structuring how they access environmental resources. Gender systems influence reproductive behavior, but they also influence resource-seeking behavior. An important human universal is the division of labor by sex. This division of labor is gendered because it varies across populations. The shifting definition of the sexual division of labor has an important impact on gendered reproductive behavior. With changes in the cultural conception of what types of work are “masculine” or “feminine” there is an

effect on the reproductive choices made by individuals. An approach to fertility decline that does not consider the impact that environmental resources have on gendered behavior is incomplete.

### **Falsification of Fertility Decline Theories**

Any successful theory of fertility decline must encompass a means of testing ideas about the change process. This includes ways to operationalize all of the above factors, including culture, and the ability to collect data in order to test the theory in multiple populations worldwide. Any theory of a complex process cannot be tested directly. Instead, various hypotheses result from theories, stating what should be found according to the theory. If what is expected is not found, the theory must be modified to account for the new evidence. Without a process of data gathering and analysis that allows for falsification and comparison of competing theories, the acceptance or rejection of a theory relies more on persuasion and politics than scientific merit (Johnson 1998).

### **Anthropology and Theories of Fertility Decline**

As researchers in a variety of disciplines have challenged the assumptions of DTT, new theories of fertility decline have emerged. These theories have been largely unsuccessful in crossing disciplinary boundaries because they do not address reproductive biology, culture, gender, access to resources, or they are not testable. The work I present in this manuscript is guided by an attention to all of the above elements. The empirical contribution this work makes to the effort to understand human fertility decline is primarily in defining and measuring the cultural aspects of fertility. Among the above criteria, culture is probably the most neglected aspect in theories of fertility decline. Although many theorists have discussed culture's role in fertility decline, culture is generally neither defined nor directly measured. Words such as "pronatal" and

“antinatal” have been used to describe culture’s positive or negative effect on fertility rates, but culture’s effect on fertility is typically assumed or asserted without empirical support. The primary contribution of this work is the definition and measurement of natality culture, which I use to test hypotheses about culture change and fertility decline. In order to develop this definition, I relied on theory and methods developed in cognitive anthropology.

Although global fertility decline is a subject that deserves the attention of multiple disciplines, anthropologists should have a particular interest in resolving questions about causes of fertility decline. Anthropology’s traditional four field approach, which draws on long term evolutionary trends as well as particular historical, ecological, economic, social and cultural environments for explanations of change and continuity in human behaviors, makes it particularly well suited to address the myriad of factors that influence changes in human reproductive behavior (Hill and Kaplan 1999, p. 145). In addition, many of the debates about the causes of global fertility decline represent the same debates that have been ongoing in anthropological theory for over a century. As I will demonstrate in Chapter 2, the explanations of fertility decline involve aspects of idealism vs. materialism, biological vs. cultural determinism, and historical particularism vs. the comparative method. These are issues that anthropologists have debated for over one-hundred years (Harris 2001b). The study of fertility decline as a case study in human behavior and culture change may help to better define the arguments in these historical debates.

### **Organization of the Manuscript**

This manuscript is divided into eight parts. In Chapter 1, I introduce the theoretical issues involved in developing a theory of fertility decline that is accessible across

disciplinary lines. In Chapter 2, I review existing theories of fertility decline. The main goal of this chapter is to assess various theories of fertility in light of the interdisciplinary criteria established above, and in light of their attention to changing gender roles. The subsequent chapters build off of the theoretical evaluations I make in Chapter 2. Chapter 3 is an elaboration of the place that evolutionary theorizing has in social scientific evaluation of human behavior. I discuss the debates within social science regarding the possible evolutionary roots of human behavior. I discuss these debates in conjunction with a discussion of evolutionary roots of human fertility decline. In Chapter 4, I give an expanded definition of culture, including its place in evolutionary theory and theories of human reproduction. I also discuss how culture may be operationalized and measured in order to test its force on the culture change process. In Chapter 5, I introduce Honduras as an area of the world that offers an opportunity to test theories of fertility decline, culture change, and changing gender roles. I use Honduras as an example of the difficulties inherent with traditional demographic attempts to explain fertility decline. In Chapter 6, I introduce the Childbearing Questionnaire and I discuss its potential use in measuring natality culture and testing theories of fertility decline. I describe the process of adapting this instrument in a field site located in central Honduras. In Chapter 7, I discuss my findings from the administration of the Childbearing Questionnaire on two samples of 200 people living in and around Catacamas, Olancho, Honduras. In Chapter 8, I discuss directions for future studies that can build on this research.

## CHAPTER 2 DEMOGRAPHIC TRANSITION THEORY AND ITS AFTERMATH

### **Introduction**

In this chapter, I look at various theories that have developed to explain global fertility decline. The theories include demographic transition theory, John Caldwell's wealth flows theory, W. Penn Handwerker's resource access theory, Gregory McMichael and Susan Greenhalgh's theories of institutional determinants, and Hillard Kaplan's theory of embodied capital. These theories are not an exhaustive list of fertility decline theories. Rather they represent chronological changes in fertility theories during the past three decades. Also, they represent theories that give varying attention to economic, structural, ideational and biological explanations of fertility decline. I review each theory and assess how well it addresses changing gender roles and how well it contributes to an interdisciplinary theory of fertility decline. I argue that a combination of Kaplan's embodied capital theory and Handwerker's resource access theory is the most profitable approach to understanding human fertility. I conclude by stating my working hypothesis for the remaining sections of this manuscript: changes in resource production create a novel dynamic for women in their evaluation of the cost-benefits to spending energy on reproduction vs. spending energy on pursuing resource acquisition opportunities. This drives a culture change process that has subsequent motive force for men.

## **Demographic Transition Theory**

Demographic transition theory (DTT) was formulated in the early part of this century by demographers who were trying to understand the process of third world population change (Davis 1963; Notestein 1945; Thompson 1929). The developers of this theory used the Western European fertility decline that occurred during the industrial revolution as a model for how the process would work around the world. Early formulators of DTT divided up the Western European demographic transition into a three-phase process. The first phase started with a balance between high levels of fertility and mortality. As European countries underwent industrialization, their mortality levels dropped. This created much higher population growth rates than had previously been experienced by European populations. Next, once mortality levels decreased, fertility rates were out of line with mortality, causing populations to grow at unprecedented rates. Demographers theorized that population pressure influenced individual households to reduce fertility in order to reduce economic strain. They assumed that people rationally began to use contraceptives to lower their number of children, causing a move away from so-called natural fertility. As this happened throughout the population fertility dropped and returned to its previous balance with mortality.

Demographic transition theory postulated that this same process would be repeated around the world. Once developing nations had enough industrialization and improvements in health care and nutrition, they would experience a drop in mortality that would eventually lead to a drop in fertility. However, demographers noticed that at times populations in developing nations were not conforming to these theoretical assumptions. Often, populations in the developing world did not reduce fertility even though it seemed

as though they were experiencing what seemed to be severe overpopulation.

Demographers attributed this to the existence of traditional cultures that valued a high number of births and resisted contraceptives. Demographers supported family planning programs that educated people about contraceptives and attempted to replace traditional beliefs about family size with economic rationality.

DTT remained the unchallenged explanation of fertility decline during the decades after WWII even though many of its theoretical assumptions had not been tested. In the atmosphere of post-WWII, demographic theorizing about the causes of fertility decline were linked to policies that sought to westernize third world populations living in the battlegrounds of the cold war (Greenhalgh 1996). Thus, those fighting against communism had an interest in the veracity of DTT.

### **Criticism of Demographic Transition Theory**

DTT was challenged in the 1970s and 1980s when the Princeton European fertility project and other studies examined historical data on the fertility decline in Europe (Coale and Watkins 1986; Greenhalgh 1995a). The goal was to test the hypotheses of DTT on historical data from Europe. It was clear from these studies that industrialization was the primary cause of fertility decline and that socioeconomic conditions were linked to specific fertility declines. This association, however, was found to be weakly predictive. The onset and pace of each case of fertility decline varied greatly (Bongaarts and Watkins 1996). Regions that had low levels of development tended to have higher fertility than did regions with higher levels of development. However, regions with intermediate levels had sometimes high and sometimes low fertility rates. One finding indicated that rural regions adjacent to urban areas that had experienced recent declines in

fertility often experienced their own declines without accompanying economic development (Bongaarts and Watkins 1996; Watkins 1986).

DTT began to receive criticism after these studies. Critics pointed out that DTT was not a theory because it accommodated every causal variable (Hirshman 1994). The main problem with DTT is that demographers have approached the explanation of fertility decline as an exercise in determining the elements of a regression equation, with fertility rates acting as the dependent variable. Their goal is to determine the independent variables from a collection of aggregate socio-economic variables. Because there are no obviously strong associations with a few variables and because the operationalization of indicators of modernization can be tweaked and re-tweaked *ad infinitum*, demographic explanations of fertility decline have mostly amounted to descriptions of associations between fertility and aggregate economic indicators.

Although this strategy has not yielded much progress in the parsimonious determination of underlying causal mechanisms, it seems to be alive and well in current demographic analyses of fertility decline. In a recent synthesis of the state of the art in demographic explanations of fertility decline, Bulatao lists eight so-called explanations of fertility decline: 1. mortality reduction, 2. reduced economic contributions from children, 3. opportunity costs of childbearing, 4. family transformations, 5. vanishing cultural props for childbearing, 6. improved access to effective fertility regulation, 7. marriage delay, and 8. diffusion (Bulatao 2001, p. 2-3). Bulatao describes these eight forces as reasons for fertility decline and comments that they show up in one demographic theory after another. He admits that these forces can be seen as either separate, independent forces, or effects of another higher order force, such as changing education.

This approach does little to advance an overall theory of fertility decline. Although each cause is associated empirically with fertility decline in one case or another, there is no theorizing about what caused each association in the first place, or why all the conditions may be advancing simultaneously today. Without a theory of fertility decline that has a deeper connection with a theory of human behavior in general, any aspect of modernization that can be operationalized into a variable and can be demonstrated as having even a weak connection with a change in fertility rates can qualify as another so-called explanation of fertility decline.

Certainly demographic transition theory does not meet many of the criteria that I set out in the previous chapter for a successful interdisciplinary theory. DTT did correctly identify the primary economic change (industrialization) that set in motion the European fertility decline. This same primary cause continues to affect the developing world today (Bongaarts and Watkins 1996). However, there are major problems with DTT as a theory. Greenhalgh (1996) has discussed the historical roots of the underdevelopment of demographic theory of fertility. She argues that government interest in stemming the tide of world population growth and the subsequent strong support to family planning programs enabled demographers to legitimate demography as an individual, scientific discipline. She argues that because DTT played such a big part in legitimizing the nascent discipline of demography, there was a disincentive to incorporate theoretical developments from other fields into demography's primary theoretical product.

This disciplinary isolation resulted in the unsophisticated use or outright neglect of many possible influences of the timing of fertility change. Such influences include

culture, biology and gender. The concept of culture that is generally used by demographers is one that assumes equivalence between social categories (such as speakers of a language, members of an ethnic group or residents of a region or nation) and shared beliefs and behaviors. As Gene Hammel wrote in 1990, “the use of ‘culture’ in demography seems mired in structural-functional concepts that are about 40 years old, hardening rapidly, and showing every sign of fossilization” (Hammel 1990). Biology is incorporated into demographic transition models in the form of changing rates of proximate determinants of fertility (rates of marriage, abortion, contraceptive use, and duration of postpartum infecundability) (Bongaarts 1978). There is generally no framework of evolutionary influence on human reproductive behavior in most demographic fertility models. Gender is almost completely ignored within the DTT framework. Men and women are treated as the same rational actor with the same incentives for birth limitation and couples are assumed to be in agreement about their reproductive goals.

Ironically, one positive aspect of demographers’ use of transition theory, which should be imitated by the developers of any new theory of fertility decline, was their dedication towards operationalizing variables and testing hypotheses. Even though the results of these tests gave critics of DTT the ammunition needed to challenge its status as *the* explanation of fertility decline, the fact that some of its claims were refuted shows that it had the quality of being falsifiable. If transition theory was based on persuasion and unoperationalizable concepts, it would have been much more difficult for social scientists to develop new ways of approaching fertility decline. The political influence enjoyed by demographers would have carried DTT much further and would have

minimized theoretical competition. Once demographers began to show that some assumptions of demographic transition theory did not stand up under the weight of empirical evidence, other theories that addressed aspects of fertility once neglected by demographers began to emerge.

### **Responses to the Failure of Demographic Transition Theory**

#### **Wealth Flows Theory: Caldwell**

John Caldwell's wealth flows theory was a response to the limitations of classic demographic transition theory, especially the characterization of high birth rates as irrational and non-economically reasonable. His theory argued that the model of large numbers of children being nothing but an economic hardship was not relevant to parts of the world that relied on agricultural production (Caldwell 1982). Wealth flows theory stated that, for those populations in a high plateau of fertility, there were economic benefits to having many children. In these settings, wealth, defined as "all the money, goods, services and guarantees that one person provides to another" (Caldwell 1982, p. 333) flowed up from children to their parents. The more children parents had the wealthier they were. This was because children worked on family land. Also, they were a source of insurance once the parents were old and could not work for themselves.

Caldwell postulated that the direction of these wealth flows changed with the importation of Westernization—especially Western style education. Once these different ideas entered a population's consciousness, people no longer thought of children as wealth but rather as pure expense. Caldwell states that the fertility transition brings with it "ultimately an emphasis on what parents owe children rather than what children owe parents" (Caldwell 1982, p. 97). This ideational change in how parents viewed the economic relationship with their children causes fertility decline.

### **Modification of Wealth Flows Theory: Handwerker**

The anthropologist W. Penn Handwerker modified wealth flows theory into what he calls “resource access theory” (Handwerker 1986c; Handwerker 1989). Handwerker’s theory is a restatement of Caldwell’s wealth flows theory with an emphasis on economic changes and gender roles. Handwerker accepts Caldwell’s hypothesis of changing wealth flows as the main force behind fertility decline but he disagrees with Caldwell on the source of the change in wealth flows. Rather than pinpointing education as the root cause of change, Handwerker cites changing competition for resources.

Handwerker’s interpretation of the change in wealth flows is that it is a culture change process. He credits economic changes, in particular changes to the means of accessing resources from the environment, as the primary force behind culture change. In structuring his argument, Handwerker starts with the basic necessities of life. He describes life as “an open energy system controlled by nucleic acids” (Handwerker 1989, p. 20). This requires all life forms, including human beings, to receive regular inputs of energy in order to survive as life forms. He uses the term resources broadly to refer to all energy inputs and the means of accessing them. Channels, or gatekeepers (Handwerker 1989, p. 32), are terms he uses to describe a particular means of accessing a resource. The ratio of gatekeepers to people seeking the resource is an indication of the power individual gatekeepers will have. As this ratio changes from place to place or time to time, there are significant effects on the social structure as a result.

The primary systems of resource production in human history have been hunting and gathering, intensive agriculture, and industrialization. As populations shift from one of these forms to another, there are important consequences for fertility. A shift from hunting and gathering to intensive agricultural production raises the amount of reliable

resources that can be harvested from the environment, in the form of land and livestock, but it lowers the overall channels to access these resources (Handwerker 1989, p. 38). As a result, there are fewer gatekeepers who have more power relative to those who seek economic resources through them. This results in a cultural system that promotes the exploitation of personal relationships for economic gain. In these cultural systems, in which this exploitation is considered morally correct, the “moral economy” of parent-child relationships is altered through an emphasis on what children owe their parents rather than what parents owe children (Handwerker 1989, p. 17).

One type of relationship that typically develops under these circumstances is the economic exploitation of women by men. Anthropologists have often characterized relationships between men and women in hunting and gathering societies as (relatively, not perfectly) sexually egalitarian (Fisher 1992; Harris 1989, p. 280; Leacock 1981; Margolis 2000, p. 2). Certainly women in hunting and gathering societies have more access to resources compared with agricultural societies. Also, women in hunting and gathering societies often are more productive and reliable caloric producers than men (Bird 1999). However, in intensive agricultural societies with sedentary lifestyles, there is a distinct shift to subordination of women by men. Anthropologists have hypothesized that this subordination results from the physiological difference of greater male strength and size, on average, than women. This difference in size and strength is most evident in warfare (Harris 1989, pp. 88-93) and plow agriculture (Fisher 1992, p. 279). Culture systems highlighting the physiological differences between the sexes in these two important areas caused the subordination of women by men forming systems of sexual

stratification. This resulted in the ability of men to control the means of resource production, land and livestock, and exploit women economically.

Handwerker argues that, in this environment, women rely on their children as resource gatekeepers to reduce the economic power men hold over them. This strategy increases the ratio of resource access channels to people accessing them (Handwerker 1989, p. 49). Since children are also economically valuable to men for their role in agricultural labor, women use their position as gatekeepers to the resource of children to increase their power relative to men. As a result, in this environment, children are culturally defined as wealth because of their position as resource gatekeepers. This has a result in increasing fertility rates for intensive agricultural producers in comparison with hunting and gathering populations, which is a well-documented phenomenon (Gillian et al. 1993).

In the shift from intensive agricultural resource production to industrial production, there is an opposite effect on both fertility and the ratio of resource channels to resource seekers. The shift from intensive agriculture to industrialization, like the shift from hunting and gathering to agriculture, represents a major improvement in the ability of human populations to harvest and store energy supplies from the environment. However, unlike the shift from hunting and gathering to intensive agriculture, industrialization *increases* these channels in the form of competitive labor markets. Thus, the power of individual gatekeepers is diminished. This creates a disincentive to rely on other people as resource channels. Women's power relative to men increases because industrial economies minimize the importance of physical size and strength. This opens up opportunities for women to access resources independently of men.

As a result, there is a diminished incentive for high fertility. As opportunities arise for women to pursue income opportunities in which they are able to act as their own gatekeepers they tend towards lower fertility. This is because children now represent expense rather than wealth. Handwerker dismisses education as an independent cause of the conceptualization of children as expense rather than wealth because education merely acts as the means for women to gain access to resources (Handwerker 1989, p. 22).

Handwerker argues that the above scenario leads to a culture change process in the economic evaluation of children. The reversal of wealth flows between children and their parents is really a shift in the cultural construction of wealth. Wealth is a “conceptual model of material reality” (Handwerker 1989, p. 29). It is the cultural representation of resources and the means of accessing them. As people rely less on other people and more on themselves to access resources, the moral economy of child-parent relationships shift to emphasize what parents owe their children (Handwerker 1989, p. 17).

### **Evaluation of Wealth Flows Theories**

These wealth flow theories of fertility decline are an improvement over the theories developed in the name of DTT. Both theories involve changing household economics as a factor influencing the decline, but wealth-flow theories move beyond the ethnocentric notion that social changes that happen in Western nations are the most desirable and beneficial and will eventually be copied by the rest of the world. Wealth flow models are able to account for rationales of high plateau levels of fertility as well as the causes of their decline. They do this without relying on the assumption of irrationality caused by traditional cultural beliefs.

Handwerker’s emphasis on the influence of changing resources as the principal driving force for fertility decline makes his a much more successful version of wealth

flows theory. Caldwell relies on an idealist-driven model of the cause of change, which does little to account for the ultimate causes of change in attitudes about family size. His theory of importation of Western-style attitudes never addresses the question of how these attitudes developed in the first place. Handwerker's theory successfully integrates the underlying resource base with the systems that develop to acquire these resources and the meanings given to this process by a population. His theory also accounts for changes in systems and meanings by highlighting the changing availability of resources.

Handwerker also accounts for the differing motivations of women and men within changing gender role systems. His theory accounts for the shifts in the sexual division of labor, which lead to varying access to resources for men and women. Fertility decline is cast as an indirect result of the changing sexual division of labor brought about by shifting resource availability.

Resource access theory is also successful because its concepts are can be operationalized and falsified. Besides Handwerker's own tests of hypotheses generated by resource access theory (Handwerker 1998a; Handwerker 1989; Handwerker 1991; Handwerker 1992; Handwerker 1993; Handwerker 2001), there also have been independent tests of resource access theory. Bradley (1997) tested the theory in Kenya. She tested the hypothesis that contraceptive use would begin among Kenyan women once education was combined with access to power. Independently, education was not predictive, but when combined with power it predicted contraceptive use. Bradley has characterized resource access theory as the best available theory to understand fertility decline (in the fieldsite of Igunga sublocation) because it lays out the mechanism of wealth flows (p. 247). Moore (1998) tested resource access theory on data from China.

He found that as women increased their education relative to men, there was an inverse relationship with fertility. This relative increase was a change from previously disproportionate amounts of men receiving higher education. As women narrowed this gap, the total fertility rate went down. Moore considered this a tentative test of the resource access corollary to wealth flows theory, but agrees that a more complete test would determine if these educational gains by women were translating to a corresponding increased level of power in the workplace.

### **Empirical Problems with Wealth Flows Theories**

Although there have been successful tests of aspects of resource access theory, one major drawback of the wealth-flow line of fertility decline research is its inability to produce convincing empirical evidence that there is a net flow of resources from children to parents in high fertility regimes. There is evidence that in situations where people must rely on other people to access resources, fertility rates are high. As people are able to rely more on themselves for income, fertility rates drop (Handwerker 1986a).

However, there is no evidence that children are actually net producers in any situation. Studies that have measured the actual time and resources spent on children, children's actual production, and the continued production of adults into old age indicate that children are unable to exceed what they have been given by their parents with their reciprocal production (Kaplan 1994; Turke 1989; Turke 1991).

These studies indicate that children's economic participation is often assumed to be greater than it actually is and the economic participation of older adults is often underestimated. These studies cast some doubt on the wealth-flows models and raise the possibility that an association between lower fertility rates and a reversal of the moral economy of childbearing may be spurious. Some have argued that Caldwell never stated

that direct economic benefits given by children to their parents are their only source of wealth. Rather, Caldwell argued that children's wealth includes things such as guarantees (Caldwell, 1982: 333), safety (p. 334), pleasures (p. 334), and promised economic benefits. In a criticism of Turke's (1989) assessment of Wealth-Flows Theory, Fricke (1990) notes that insurance companies provide a form of wealth in security to their customers yet they certainly do not have a negative balance in payments (p. 112). However, this line of reasoning actually supports criticisms of wealth-flows theories because it implies a more inclusive account of the services provided by parents to children. If children provide the service of security and safety to their parents in old age, parents provide these same services to their children for a longer period of time and at a much higher intensity. No study has quantified the amount of safety, pleasures, and promised benefits that pass from parents to their children, but I would guess that few would predict that there exists a society where parents receive more of these items than they give.

The above arguments may refute the idea that children can ever be a source of net wealth to parents, but it is clear that there is a fundamental difference between the economic relationship that parents have with their children in pre- and post-transition societies. The aspect of resource access theory that needs to be emphasized is the need for people to access resources through other people (not just children) in pre-transition societies and the ability of people to access resources on their own in post-transition societies (Handwerker 1986b, p. 15). Later in this chapter, I will argue that the missing ingredient in resource access theory is a greater recognition of the part that biology plays in influencing reproductive motivation.

### **Institutional Determinants of Fertility Decline**

A different response to the inadequacies of DTT comes from those advocating an institutional approach to fertility decline. The Institutional approach, championed most notably by the demographer Gregory McNicoll and the anthropologist Susan Greenhalgh, advocate greater attention to the historical forces that have shaped institutions such as family systems, gender systems, political systems, as well as economic systems (Greenhalgh 1988; Greenhalgh 1990; Greenhalgh 1995a; McNicoll 1980; McNicoll 1994). This approach was a response to the rational economic decision making models inherent in DTT. The institutional approach argues that individual decisions can never be made outside of the confines of the prevailing institutional setting. Institutions, as McNicoll sees them, are, “clusters of behavioral rules governing...human actions and relationships in recurrent situations” (McNicoll 1994, p.201). These institutions are developed over time to “address recurrent problems about material realities (resources, technologies, environmental conditions, human biology) and as manifestations of ideational systems that give some degree of coherence in the cultural domain of symbol and belief” (McNicoll 1994, p. 202). Human beings still exercise free will in areas such as fertility behavior but only within limits imposed by this institutional structure.

The institutional approach is also a response to the unilineal approach to demographic change often included within DTT. The predictions of multi-stage mimicry of the European fertility transition revealed the ethnocentric bias of the early developers of DTT. When these predictions (and post-dictions as it turned out in the European Fertility Project) did not come true, advocates of the institutional approach argued that greater attention needs to be paid to the particular circumstances of societies undergoing (or not undergoing) fertility decline. They argue that a greater knowledge of the social

framework of decisions and of the historical processes that produce this framework is necessary to fully understand the process of fertility decline. Greenhalgh suggests, “there are many demographic transitions, each driven by a combination of forces that are, to some extent, institutionally, culturally, and temporally specific” (Greenhalgh 1990, p. 88). Also, “because the transition from high to low fertility works itself out over time, the explanation of fertility decline must be essentially a historical one” (Greenhalgh 1990). In the institutional approach, understanding the specific historical process of the formation of systems that regulate behavior is the best way to account for the failure of fertility declines to match the model established by DTT.

### **Evaluation of the Institutional Approach to Fertility Decline**

The institutional approach is certainly an improvement over the mostly ahistorical demographic theories of the global fertility transition. Because fertility decline represents culture change and one of the essential elements of this change is shifting gender roles, it is important to understand the context of gender relations before the decline began. Gender roles represent the modal and expected behaviors of men and women for a particular group of people in a particular time and place. Declining fertility represents a change in reproductive behaviors for men and women. It also represents a change in the behavioral expectations for men and women as spouses and parents. Understanding the trajectory of these changes in gendered behaviors in response to industrialism requires an understanding of the starting points.

Elements of social structure, such as gender roles, do not re-invent themselves from scratch when culture changing forces exert pressure on them. Rather, they shift from some starting point to accommodate new material realities. Because there are a variety of gender roles throughout the world, there should be a variety of responses to the forces

behind global fertility decline even if the forces causing change are consistent.

Traditional demographic theorizing has often neglected the potential that diversity in historical and cultural situations can potentially play in creating diverse demographic responses to similar forces (Mason 1997; Mason 2001).

### **Critique of the Institutional Approach**

The institutional approach offers an important, often neglected, view of how human behavior is limited and regulated by a social structure that is the result of historical processes. However, it has some major deficiencies in its ability to offer a new theory of fertility. In fact, the institutional approach is more of an anti-theory in that its advocates' main goal is to highlight the difficulty of generalizing about fertility decline. Greenhalgh criticizes attempts to extract reproductive behavior from its historical context in order to establish views of behavioral regularities that all people may share in common (Greenhalgh 1995a, p. 20). McNicoll argues that the coherence and seeming logic of institutional settings that influence human behavior is neither coherent nor logical and for the most part the result of arbitrary historical forces (McNicoll 1994, p. 204).

Greenhalgh takes the argument further by implying that all theories that share DTT's attempt to develop a unifying theory of fertility decline are in essence repetitions of 19<sup>th</sup> century evolutionary theory. These theorists assumed that all societies were irreversibly headed towards the same, progressively better, more civilized society (Greenhalgh 1995a, pp. 5-6, 15-16). The assumptions made by the 19<sup>th</sup> century evolutionists, and the first demographers who formulated DTT, were certainly Eurocentric for assuming an inevitable, progressive nature to human social change, with Europeans in the lead. However, Greenhalgh's analogy breaks down because the work of these evolutionists was not flawed because of their attempt to explain the consistencies in

social change. Instead, their work was unsuccessful because of racist assumptions that were not based on empirical data (Harris 2001b).

A focus on institutions and their effect on fertility decline can be consistent with a hypothesis that there is some consistent force that can account for much of the variance in the “many kinds of fertility patterns” (Greenhalgh 1995a, p. 17) around the world. McNicoll characterizes the function of institutions as “ways for people to deal with recurrent problems about material realities” (McNicoll 1994, p. 202). Because of our specific evolved physiology and our varied but limited types of technology, there is a limited number of ways in which human beings can harvest energy from an environment for survival. There is also a varied yet limited number of environmental types. Therefore, historically evolved institutions have had a limited number of material realities to address. If institutions are a means of dealing with a limited supply of material problems, it is reasonable to assume that there should be some consistency with how these institutions have developed. To what extent and under what conditions this consistency exists is an empirical question that needs to be explored. *An a priori* denial of any consistency with which populations have undergone fertility change is harmful to the pursuit of greater understanding of human reproductive behavior.

An analogy between theories of fertility decline and theories of the origins and spread of agriculture is helpful at this point. It is one thing to explain the use of agriculture as evidence of higher civilization and higher order on the cultural evolutionary scale (Morgan 1985). It is another to explain it in terms of a result of population pressure (Cohen 1977). The first theory is racist, ethnocentric, and assumes inevitable progress. The other characterizes agriculture as the end result of a struggle for

survival. Both theorists tried to explain the same phenomena, which was that at some point agriculture was invented and it subsequently spread throughout the world. Fertility decline is a similar phenomenon because it began at one point in time and has spread to populations in every region of the world. Greenhalgh herself admits that, “In every region of the world, couples have been having fewer children, shrinking the basic unit of social life” (Greenhalgh 1995a, p. 3).

Have each of these regions undergone a unique historical process that coincidentally parallels the unique historical processes of all other regions around the world producing the same result? Obviously this is a stretch of the imagination and does not even conform to the stated goal of the institutional determinists. Greenhalgh allows for some generalization of reproductive processes. She states that, “Once enough cases are collected and understood, they might serve as the building blocks of more general understandings of reproductive dynamics” (Greenhalgh 1995a, p. 17). This view echoes the research agenda of Franz Boas and his students in the early part of the 20<sup>th</sup> century. This placement of the particular ahead of the general has been a common theme in the history of anthropological research (Harris 2001b). The idea that detailed information about particular societies will eventually allow us to come to some general conclusions about regularities in human behavior continues to be a strategy of over-correction against those who generate theories devoid of historical context. However, this strategy taken to the extreme is destructive to the scientific enterprise. As Marvin Harris stated about the Boasian program: “The proposal to substitute concrete historical data for speculative deductions about history needs no defense. On the other hand, to deprive science of speculation altogether is to deprive it of its very life blood” (Harris 2001b, p. 286).

The approach of the institutional determinists is a purely inductive approach to understanding reproductive behavior. However, the cycle of scientific investigation must include both deduction as well as induction (Kuznar 1997). General theories of fertility decline can be developed through an inductive process, but at some point testable, empirical hypotheses must be deduced so that the general theories can either be falsified or accepted. The type of data collected is directed by these hypotheses. Without deduction, there is danger that the type of data collected will not be capable of being used to test general theories. Therefore, whatever general theories that may develop from multiple “whole demographics” (Bachrach 1999, p. 23; Greenhalgh 1995b, p. 112) that have not been collected with testable hypotheses in mind are in danger of not being capable of falsification, which is perhaps the most important stage of the scientific process (Kuznar 1997, p. 42).

As a general approach to scientific understanding, the institutional-centric approach is flawed. As an approach to explaining and predicting fertility decline (or the absence of decline) with a multidisciplinary theory, it is almost useless. McNicoll admits that, “Persuasive post hoc reasoning is essentially the present state of the art” (McNicoll 1980). In Greenhalgh’s analysis of fertility decline in China, she also acknowledges the reliance of persuasion in her arguments instead of empirically falsifiable ideas (Greenhalgh 1988, p. 632). Institutional approaches to fertility decline exhibit the same problem as idealistic approaches, such as Caldwell’s Wealth-Flows Theory, and other theories that treat diffusion of ideas as the cause of fertility decline.

Ideas influence behavior, but behavior also influences ideas. Explaining changes in behavior through changes in ideas does not explain anything. One is left wondering why

anything changed in the first place (D'Andrade 1999). Much is the same with institutional approaches because institutions affect behavior, but those acting within the institutions are constantly renewing, changing, or disregarding aspects of institutions (McNicoll 1994, p. 201). Because behavior affects institutions, we cannot be satisfied with institutions as the explanation for the cause of behavior.

When a theory depends on persuasion, there is little prospect for acceptance across disciplinary lines. Effectiveness of persuasion is often tied to political influence, which rarely is transferable from one discipline to another (Johnson 1998, p. 133). The ability to show that one theory explains a phenomenon better than competing theories is necessary to avoid the persuasiveness alternative. Operationalization of key variables is necessary to be clear about what is meant by theoretical constructs such as gender, family, culture, marriage, etc. This allows for measurement, which allows for statistical assessment of competing hypotheses generated by these competing theories. McNicoll recognized the necessity for measurement of fertility related institutions (McNicoll 1980, p. 459) and Greenhalgh has encouraged increased quantification for those more qualitatively inclined (Greenhalgh 1990, p. 101). However, Greenhalgh has also criticized demography's insistence on quantifiability and its ignorance of unoperationalized anthropological concepts as its "greatest weakness" (Greenhalgh 1996, p. 49).

My argument is not that quantification should be the only pursuit for research into fertility decline or that institutions are not an important part of fertility decline theory. On the contrary, I think that the inclusion of institutional processes is a necessary (but not sufficient) component of any theory of fertility behavior (or any human behavior for that

matter). I believe the most successful research strategy is the one set out by Marvin Harris' Cultural Materialism which considers social structure as an integral component of culture and acts as a means of satisfying the material needs of a population (Harris 2001a). I agree with McNicoll when he describes the ideal research instrument as a blend of traditional survey and anthropological methodology (McNicoll 1980, p. 457). But quantification is an essential component of the process of theory acceptance and refusal, especially when the scientific audience is interdisciplinary, because only with statistical methods can hypotheses generated by competing theories be judged against one another. After all, the quantification that was part of the European Fertility Project's test of DTT was the main evidence that was used to refute its claims and assumptions and cleared the way for many new theoretical approaches to explain fertility decline.

### **Evolutionary Models of Fertility Decline**

Among the above theories of fertility decline, Handwerker's theory of Resource Access meets most of my criteria for a successful theory. Unlike classic demographic transition theory, the idealistically centered version of wealth flows theory and the institutional theories, resource access theory explains the reasons for both high and low fertility as well as the reasons for the change from one to another. However, it is clear that resource access theory is not complete because it does not meet the challenge of falsifiability when it comes to backing up the claim of reversals of wealth flows with empirical evidence. There is no empirical evidence that supports the claim that children represent a source of economic investment in high fertility societies. Another important problem with resource access theory and other economically centered theories of fertility decline is the difficulty they have in explaining why people continue to have children in situations where they are very expensive. If low fertility societies have low fertility

because children are expensive then why do people in these societies continue to have any children at all?

A solution to this problem is to augment economic theories of fertility decline with biological variables in a “biosocial” or “biocultural” theory of fertility decline (Bock 1999; Foster 2000; Kaplan and Lancaster 1999; Udry 1996). In this section, I argue that an understanding of human beings’ evolutionary history and an incorporation of genetic factors into existing theories of fertility decline (in particular resource access theory) is a way to overcome the above-mentioned problems. Rather than argue for the replacement of a flawed theory, I argue that a consideration of biology can be incorporated into existing economic models. The inclusion of biology explains another level of analysis that is not fully taken into consideration in traditional theories of fertility decline. The strength of models that include human biology is that they can identify causes of high fertility, low fertility, and fertility change. Also, they can explain the mechanism through which environmental forces cause fertility change. Thus, biological models of fertility decline become more than the descriptive theorizing, which is state of the art among many demographers.

The assertion that genes play a part in fertility decline may seem ironic in light of Vining’s suggestion that falling fertility rates in industrialized nations offers the best evidence *against* an evolutionary approach to the origins of human behavior (Vining 1986). An evolutionary approach to animal behavior stresses reproductive fitness as the only force on long-term changes in the frequency of genes. Fitness is the differential reproductive success of individuals, some of whom are better able to assure representation of their genes in future generations than their “competitors” (Dawkins

1976; Williams 1966). The genetic qualities that enable individuals to reproduce successfully and rear offspring (who are also able to reproduce successfully) in specific environments are termed adaptations. These adaptations are the result of non-random forces in the environment, which influence phenotypic development, survival, and mate selection in addition to reproduction. It follows that those genetic and phenotypic qualities that are directly related to successful reproductive behavior should be among the most highly selected of any human trait. So how can it be that among current human populations and among individuals within these populations there is a strong *inverse* relationship between wealth, health, and general well being and fertility rates (Pérusse 1993, p. 269-270; Vining 1986)? Given the above description of an evolutionary perspective of behavior, shouldn't those who are in the best position to support excessive children be the ones who are maximizing their fitness? Wouldn't an inverse relationship between health, intelligence, and wealth and fertility *prove* that there is not a genetic influence on current human reproductive behavior?

The problem with this argument against genes having a role in human reproductive behavior is that it is based on the misconception that if genes influence fertility, there must be a *gene for* fertility (Haaga 2001, p. 54). Although there certainly are erroneous uses of evolutionary theory in both the scientific literature and the popular press, there is a fundamental dependence on environmental factors for the evolution of genes as well as the expression of genes in behavior. In order to understand the effect of genes on contemporary human reproductive behavior, one must first consider the characteristics of the environment under which human beings evolved, called the environment of evolutionary adaptiveness (EEA) (Bock 1999, p. 197). Next, one must then evaluate the

contemporary environments within which these genes are functioning in order to understand their effect on behavior. Capitalism and industrialism have only existed for a few hundred years, cities have existed for less than ten thousand years, and agriculture has existed for less than fifteen thousand years. A million years before that, humans lived in small groups as foragers. It is in this environment that evolutionary arguments will have to place adapted traits (Bock 1999; Ridley 1993, p. 188-189).

Because environmental pressures on humans living in industrial societies vary significantly from this hunting and gathering Pleistocene existence, current human biological traits may not be particularly adaptive to current environments. Evolutionary “progress” can only be described in terms of the past. As soon as a gene is selected because of its adaptive quality, it is likely that the environment will have changed. According to evolutionary theory, novel environments pose novel selective pressures on genes. Depending on the congruence between the new and old environments, genes may or may not be successful at producing phenotypes that lead to successful reproduction and successful representation in future generations. Genes that are not successful eventually will cease to exist (Ridley 1993).

But if successful reproduction is fundamentally important to the successful representation of genes in future generations, how can there be a connection between evolution and behaviors that limit (and sometimes eliminate altogether) reproduction? The answer lies in the biological concept of life history theory that has been adapted by evolutionary anthropologists to understand differential rates of human reproduction (Bock 1999; Hill and Kaplan 1999; Kaplan 1996; Pérusse 1993). Life history theory includes many of the same assumptions about life that are included in resource access

theory. However, while Handwerker acknowledges that a genetically influenced biological drive for reproduction plays a part in cultural evolution (Handwerker 1998b), the implications for this drive on fertility decline remain, for the most part, unexplored in his development of resource access theory. Life history theory adds to resource access theory's definition of life as "an open energy system controlled by nucleic acids" (Handwerker 1989, p. 20) requiring regular inputs of energy with the qualification that these life forms, as part of their nature, seek to convert this energy into replicates (Hill and Kaplan 1999, p. 399).

Like resource access theory, life history theory centers on competition to harvest energy from the environment. This competition causes living things to devise many strategies to improve on the efficient transfer of harvested energy into offspring. An individual organism can only use harvested energy for one purpose at a time. A choice that is always necessary is whether to use energy on reproduction in the present or to spend energy on somatic effort (tissue building or maintenance, growth) that will allow for greater potential reproduction in the future.

The evolutionary anthropologist Hillard Kaplan has augmented the Life History theory approach to human fertility with the concept of "embodied capital" (Hill and Kaplan 1999; Kaplan et al. 1995; Kaplan 1996). Embodied capital is an extension of somatic effort and it includes, "strength, immune function, coordination, skill, and knowledge" which allow for more efficient allocation of energy and time towards "resource acquisition, defense from predators and parasites, mating competition, parenting, and social dominance" (Hill and Kaplan 1999, p. 402). Investing in embodied capital in the present can extend the lifespan, increase reproductive potential, and allow

for future energy payoff to be greater than the energy originally invested. Thus, would-be parents are challenged to decide between reproducing now leaving more time to reproduce in the future, or reproducing later and having more resources to assure greater offspring developmental success. In other words, they must decide between offspring quality versus offspring quantity.

How does the quality versus quantity calculation differ between the EEA and modern, industrial societies? How does this difference lead to fertility decline? In the environment of our ancestral hunter-gatherers, a long period of training was necessary to acquire enough skills to see payoff in terms of resource acquisition, much the same as the present industrialized societies (Bock 1999, p. 211; Hill and Kaplan 1999, p. 402). The difference in industrialized societies is the existence of extra-somatic forms of wealth. This includes technological advances that have allowed immense ability to extract energy from the environment (Hill and Kaplan 1999, p. 423). Other technological advances include modern medicine, which lowers infant mortality rates and increases the probability that individual children will live to adulthood, and contraceptive methods, which allow parents to delay desired childbearing. These changes in technology have added many unique factors into the quality versus quantity calculation for prospective parents.

Wealth, which during the Pleistocene was strictly limited to somatic wealth (tissue growth, tissue maintenance, learning, etc.), is now potentially distributed in seemingly infinite proportions outside of human bodies. In addition, the economic system of capitalism that developed along with the Industrial Revolution allowed for wealth to be converted into more wealth with minimal human energy expenditure. Parents and

prospective parents in industrial societies are not only faced with a choice between quantity and quality of children but they are also faced with a choice between expending energy on embodied capital development (for themselves and/or their offspring) and (further) reproduction. Given the unique possibilities for wealth accumulation, it should not be surprising that the conflict between income seeking effort and reproductive effort caused a drop in reproduction. Pleistocene foragers, never faced with the wealth producing possibilities of current industrial economies, could not have evolved any form of behavioral check that would have motivated them to eschew income investment when it interfered with reproductive fitness.

An evolutionary view of fertility decline is also congruent with resource access theory in that it assumes that there can be conflict between men and women with regard to resource access and reproductive goals. The change that occurs in resource access channels during a shift between intensive agricultural and industrial infrastructures, and the effect this change has on gender roles and fertility, is understandable in evolutionary terms. According to evolutionary theory, all individuals are in competition with each other to pass on their genes to future generations. Men and women are no exception to this rule, although they also have to cooperate with each other in order to pass on these genes in the first place. When there is a shift from an intensive agricultural infrastructure to an industrial infrastructure, men and women are influenced to invest more of their time in income generation energy expenditure and less on reproductive energy expenditure. However, the minimal effort men have to expend in order to successfully raise an offspring is very small when compared with women, so they do not have as much conflict over the choice between reproductive and income seeking energy expenditure.

Industrialized wealth production has a large effect on fertility decline because it gives women increasing power to act as their own gatekeepers to resources. In order to take advantage of industrially produced resource access channels, they consequently must limit their reproductive energy expenditure.

It is my hypothesis that this conflict not only causes fertility decline as individual women are prompted to limit their fertility, but it begins a culture change process that effects men as well. As women become their own resource access gatekeepers, they are able to select mates who express similar views on family size (i.e. similar views on the distribution of energy between reproductive and income seeking behavior). Women's selection of men for mates based on their congruent attitudes has the effect of selecting for men's attitudes about family size and reproductive behaviors. I hypothesize that this selection process leads to the acceptance of smaller families as morally correct, causing a change from pro-natal culture to culture that can be characterized as anti-natal. As this aspect of culture "hardens", it becomes institutionalized, takes on inertial force and contributes towards individual motivation (D'Andrade 1999, pp. 95-96; Strauss and Quinn 1997, pp. 101-110). I will elaborate on this hypothesis further in the subsequent chapters.

## CHAPTER 3 EVOLUTIONARY THEORY, FERTILITY, AND HUMAN BEHAVIOR

### **Introduction**

The incorporation of biological variables into studies of human behavior is often a source of contention among social scientists. In this chapter, I will discuss the ramifications of a theory of fertility decline rooted in evolutionary biology. I will address some of the common themes of criticisms and rebuttals used by the opposing sides of what is often erroneously called the “nature/nurture” debate. I will present an argument that obviates the need to draw a line in the sand between those explaining human behavior in genetic terms with those explaining human behavior in environmental terms. I conclude by arguing that this debate should ultimately hinge on the acceptance of theories that better explain empirical data. I argue that anthropologists have an important role the developing and testing these theories.

### **Two Models of Gene/Culture Interaction**

Before I discuss the use of evolutionary biology to explain human reproductive behavior in particular, I want to make clear the model I am using to understand the simultaneous influence of culture and genes on human behavior. In this section, I discuss two general models of culture-gene-behavior interaction that are used by social scientists. I am struck by the misunderstandings that develop when social scientists debate theories that incorporate evolutionary forces on human behavior. Several recent debates make it clear that social scientists are not always speaking the same language when they discuss the potential evolutionary roots of human behavior (Barash 2002; Kennelly et al. 2001;

Miller and Costello 2001; Risman 2001; Udry 2000; Udry 2001; Weidman 2002). These debates are often unproductive because, instead of discussing the advantages or disadvantages of one theoretical model's ability to explain empirical evidence, opponents actually discuss two different models of the gene-culture-behavior interaction. This difference goes unstated during the course of the debates, making the finding of a middle ground impossible.

In this section, I will present two different models of gene/culture determination of human behavior. I illustrate these models with two diagrams. The first diagram is a simplification of a model used by many opponents of theories that emphasize genetic influences on human behavior. The second diagram shows a more detailed model used by theorists who promote attention to evolutionary influences on contemporary human behavior. I present these models to be clear in my explication in anticipation of potential misunderstandings. Many of the nature/nurture debates are unproductive because of *a priori* positions against the possible relevance of evolutionary theory for understanding human behavior. In my view, opponents of evolutionary explanations of human behavior often do not realize that evolutionary theorists do not use the same model of gene/culture interaction that they are criticizing. Defining these opposing theoretical positions clearly should result in a more informed dialogue about the role of the evolutionary past in understanding contemporary human behavior.

I am also presenting these models as a means of describing in detail some of the concepts I have been using and will continue to use throughout the manuscript. The concepts include culture, biology, genotype, phenotype, and environment. These concepts are another source of contention in debates on evolution and human behavior. I

believe that at least some of the source of friction between proponents of evolutionary theories of human behavior and those who oppose these theories is the inconsistency in the use of these terms. These terms are used in various contexts to mean various things. In anticipation of potential miscommunication, I will present these models as a vehicle for providing definitions of the terms I am using in this manuscript.

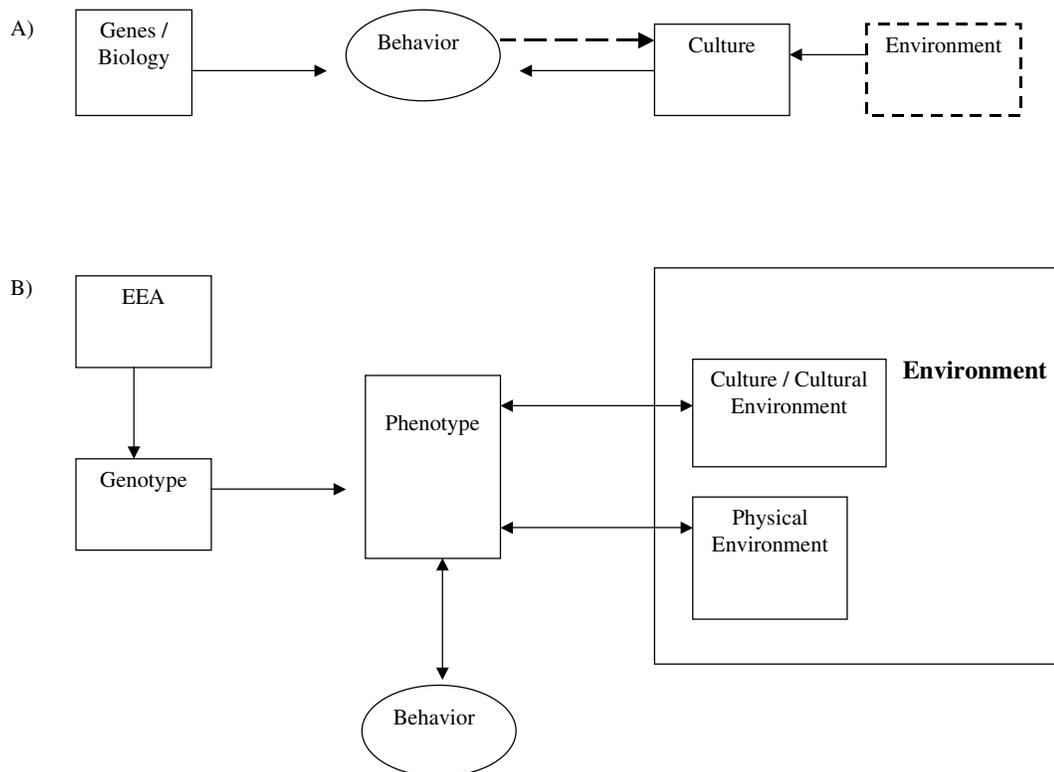


Figure 3-1 Two Models of the Effect of Gene/Culture Interaction. A) Common Social Science Model; B) Alternate Model

### Common Social Science Model

Figure 3-1 shows two models of gene/culture interaction on human behavior. The first diagram (diagram A) is the model that I argue is most commonly used by those who argue against genetic influences on human behavior. I've developed this diagram from

my reading of various debates on the nature/nurture question, my personal experience as a social scientist, and from the critiques offered by D'Andrade (1999) and Tooby and Cosmides (1992). Diagram A in Figure 3-1 shows the hypothetical relationship between individual behavior and the interaction of two opposing forces, culture and genes/biology. (The terms genes and biology are often used interchangeably for those invoking this model.) In order to represent the model used by ecologically or materialistically minded social scientists, I have included a box and an arrow to represent environmental and behavioral forces on culture. (In diagram A, these culture shaping forces are represented in dashed lines to indicate that not all social scientists agree with explanations of culture in materialistic or behavioral terms.) Because this model represents a variety of theoretical positions, it is intentionally simplistic and does not match any one theory exactly.

For many social scientists, the incorporation of genes or biology into this model is problematic because of human behavioral variability. Genes and culture are seen as alternate, competing explanations of human behavior. Because the genetic/biological evidence for the existence of races has been discredited (Montagu 1997), the genetic influence on human behavior is considered equal across populations. On the other hand, most human behaviors are known to vary across populations. The cultural influences on these behaviors also vary. If cultures vary and behaviors vary but genes stay the same, it makes sense—and is more parsimonious—for those who use this model to consider culture as the explanation of most human behaviors while ignoring the additional influence of genes.

Given this model, skepticism of genetic and evolutionary explanations of human behavior follows. I anticipate that social scientists who use this model would be skeptical of a theory of fertility decline that implied an evolutionary connection to this change in human behavior. Even among social scientists who fully accept the biological influence on childbearing motivation, the choice is clear:

While biologically determined sentimental satisfactions enter into the reproductive calculus, we can assume that all human groups share virtually the same set of relevant genes. We may therefore regard the potential sentimental rewards of reproduction as exercising a *constant pressure for birthing and rearing as many children as human physiology permits*. It is clear, however, that whatever the precise strength of this pressure, it can be modified by culture so completely as to accommodate extremely antinatal practices resulting in lifetime childlessness for a significant minority if not the majority of men and women...Moreover, in view of the constancy of species given impulses leading to parental and child-rearing behavior, the focus of our inquiry necessarily must turn to those variable costs and benefits which sometimes give full reign to human fecundity and sometimes totally suppress it (Harris and Ross 1987, p. 11). [Emphasis added]

In this passage, Harris and Ross assess the cause of fertility decline using the model depicted by diagram A in figure 3-1. They argue that even though genes influence human reproductive behavior, these genetic forces are constant and pro-natal. Genes cannot be invoked to understand fertility decline because of behavioral variability and anti-natal behavior. They argue that it makes more sense to focus exclusively on the costs and benefits that influence cultures to promote anti-natal behavior.

### **Alternate Model**

Diagram B in figure 3-1 presents an illustration of an alternate model of the relationship human behavior has with genes and culture. I've developed this model from a variety of sources that describe the connection between genes, culture and human behavior (e.g. (Barkow 1989; Barkow et al. 1992; Boyd and Richerson 1985; Cronk et al. 2000; Dawkins 1976; Dunbar et al. 1999; Durham 1991; Handwerker 1989; Low 2000)).

This model contains many of the same elements as diagram A in figure 3-1, with some modifications and additions. The most important additional element in this model is the box indicating phenotype. Instead of genes and culture directly influencing behavior, this model depicts both of these elements influencing behavior through the phenotype.

Phenotype is the entirety of tangible, observable properties of an individual organism (Dawkins 1976, p. 235; Durham 1991, p. 11-12; Tooby and Cosmides 1992, p. 45).

Thus, an organism's phenotype includes all somatic tissue as well as the central nervous system (including ideas, memories and emotions). Because somatic tissue is constantly being built throughout the organism's lifetime and because new experiences result in new ideas, memories and emotions, the phenotype of an organism is a constantly changing entity. The genotype, on the other hand, is an organism's immutable set of coded instructions inherited from its ancestors. It is the individual's link to its evolutionary past and the environment of evolutionary adaptiveness, represented on the figure as EEA.

A phenotype is typically described as the expression of an organism's genotype, but it also can be similarly described as an expression of an organism's environment. Genes produce phenotypes only after interaction with the environment. In diagram B of figure 3-1, the environment variable has been expanded and subdivided into the cultural environment and the physical environment. (In the next chapter, I will make a detailed argument for why I think that culture belongs as an element of environment.) The arrows between culture and phenotype, physical environment and phenotype, and between the phenotype and behavior have heads on both ends indicating dual interaction. Phenotypes develop as a result of the interaction among genotypes, the cultural environment, and the physical environment.

The relationship between phenotype and behavior is somewhat complex. A phenotype includes all observable expressions of a genotype, including behavior (Durham 1991, p. 11). In this sense, behavior is a phenotypic trait and is meant to indicate a category of patterned activity rather than a discrete behavioral event. These patterned behavioral activities are assumed to be included within the “phenotype” box. The element of diagram B of figure 3-1 labeled “behavior” is not the same as this phenotypic behavior. I use an oval rather than a rectangle to represent this behavior to distinguish it as a different type of analytical category. This behavior is meant to represent a discrete, observable and measurable behavioral event. It is an outcome variable rather than a theoretically constructed element of the genotype-phenotype-environment system represented by this diagram. My purpose in including this second meaning of behavior is to highlight that the exact state of the phenotype is the immediate cause of a behavioral event at the time of the behavior.

Although the cultural environment and the physical environment shape the phenotype, they are also shaped by phenotypes. Phenotypes exhibit patterns of behavior. These patterns, in conjunction with the patterned behaviors of other phenotypes in a population or social network, create culture. (I discuss this idea further in Chapter 4). The patterned phenotypic behavior also interacts with and changes the physical environment to some degree. These dual interactions—phenotypes both shaping and being shaped by environmental forces—are indicated by the arrows with heads on both ends.

### **Model Discussion**

Using this model instead of the model represented by diagram A, a choice between genes and culture as the primary cause of human behavior change is no longer necessary. Genes and environments are both essential components in the creation of phenotypes and

phenotypic behavior. Harris and Ross' conclusion that only cultural and environmental forces can cause behavioral change tells only part of the story. This model shows that the causes of behaviors cannot be partitioned into cultural or genetic. All phenotypes are created as an interaction between environmental and genetic elements. This implies that behaviors are always the joint result of genes and environmental forces.

As I discussed in the previous chapter in the context of life history theory, the relationship between genes and reproduction is not as simple as Harris and Ross assume. Genes are certainly selected for their contribution to reproductive success in past environments. Therefore, influencing the creation of phenotypes that are successful at reproduction is certainly a quality that genes should possess. However, this does not mean that genes are only able to influence successful reproduction through quantity of offspring alone. Quality of offspring is just as important to reproductive success. Offspring quality is directly tied to environmental conditions, which complicates the assumptions that can be made about genetic influence on reproductive motivation.

In the following sections of this chapter, I will discuss in more detail the evolutionary mechanism for human fertility decline. In particular, I will discuss how the EEA selected for human phenotypic plasticity, which resulted in greater reliance on culture as a determinant of human behavior. I will discuss how this "variability selection" affected human reproduction. Also, I will further discuss the ramifications of this model for social scientific debates about human behavior in general and for a theory of human fertility in particular.

## **The Evolutionary Mechanism of Fertility Decline**

### **The Black Box of Evolutionary Theories of Human Fertility Decline**

In the previous chapter, I argued that human beings evolved under environmental circumstances that were very different than the circumstances they live under today, in particular industrial settings. This is important because it explains how contemporary human genetic traits, which may have been selected for in past environments because of their positive effect on fitness, are now leading to deviations from fitness maximization (Kaplan and Lancaster 1999, p. 315). Therefore, genes that were selected for during the Pleistocene because they interacted with the environment to produce reproductively “successful” humans are now interacting with a new environment to create reproductively “unsuccessful” humans. (My use of successful and unsuccessful in this instance is in purely genetic terms—greater or lesser representation of genes in future generations—and implies no social or cultural construction of success.) However, this still does not explain the specific mechanism at work that produces different reproductive outcomes in response to various environmental stimuli. This is the “black box” of human reproduction that many fertility decline theories do not specifically explain.

Scientists often use black boxes to act as holding places for future definition while they proceed with the process of theory building. As Udry points out, the concept of a gene was itself such as black box until the discovery of DNA (2001, p. 616). This does not detract from the utility of these theories while new empirical data and greater theoretical sophistication are being generated. Theories that explicitly recognize yet-to-be-explored gaps in theoretical completeness are more complete than theories that ignore these gaps altogether. If reproductive behavior is a result of the interaction between genes and environment, it is better to have an unspecified mechanism to explain the

effect of this interaction than to pretend that it does not exist. In my opinion, the reason there are so many less-than-successful theories of fertility decline is because they tend to deal with environmental causes exclusively and ignore the effect of endogenous genetic characteristics. Our knowledge of behavioral genetics may not be to the point where we can specifically detail the interaction between genes and reproductive behavior with much sophistication. This makes it necessary to use theoretical placeholders instead of detailed causal sequences. However, this is better than assuming that genetic factors do not have any effect on reproductive behavior.

This being said, the “black box” of evolutionary models of fertility decline is not entirely black. Evolutionary anthropologists have theorized that many different physiological and psychological characteristics of modern humans are probably the result of natural selection in the EEA for genes that would lead to fitness-maximizing reproductive behaviors (Barkow et al. 1992; Cronk et al. 2000; Ellison 2001b; Hill and Hurtado 1996). Throughout this chapter, I will discuss examples of theoretical work that is shaping our understanding of the connection between the evolutionary past and contemporary fertility. In Chapter 6, I will discuss in detail empirical work that is illuminating the black box by improving our understanding of the connection between genes and childbearing motivation (Miller 1995; Miller et al. 1999).

As our knowledge about the connection between molecular genetics and behavior grows, hypotheses about specific mechanisms will become correspondingly sophisticated. The theoretical placeholder of a general genetic mechanism influencing fertility decline will eventually be replaced by theories of specific interactions between genetic and environmental qualities.

## **EEA Variability Selection and Human Plasticity**

One recent improvement in the theoretical understanding of the link between human behavior and our genetic heritage is the recognition that the human EEA was not a consistent selective environment. Potts (1998) has shown that the most notable characteristic of the Pleistocene environment of our hominid ancestors is its unpredictability and variability in selective pressures. Theories that hypothesize specific connections between genetic characteristics and environmental qualities have to demonstrate some type of consistency in selective pressure. The instability of EEA conditions makes many evolutionary theories of human behavior difficult to defend.

However, there is one EEA environmental characteristic that can be considered consistent enough to have selective force: inconsistency itself (Potts 1998, p. 94). The variable conditions of the EEA favored behavioral mechanisms that promoted flexibility in response to environmental variability (Bock 1999, p. 197). Mobility, genetic polymorphism, phenotypic plasticity, and complex behavioral systems designed to respond to novel environmental settings are all adaptive options to organisms living in highly variable habitats and together are termed “variability selection” (Potts 1998, p. 84-85). Based on Potts findings regarding the fluctuations in the human EEA, it is likely that variability selection was at least one of the main evolutionary forces affecting early human genetic composition. An important phenotypic characteristic of humans that likely resulted from this variable selective pressure is the reliance on cultural inputs to determine behavioral responses to environmental conditions. Thus, individual human beings did not have to rely on their own direct perceptions of environmental stimuli but could determine appropriate behavioral responses to fluctuating conditions based on a pool of knowledge created by other human beings.

### **EEA Selection for Reproductive Motivation**

Although EEA genetic selection likely contributed to plasticity in phenotypes and behaviors, there are certain adaptive issues that are consistent across environments. One of these is the necessity for organisms to reproduce. The specific conditions under which this reproduction should take place fall under the category of variability selection. These aspects of reproduction should be variable because fitness is not necessarily tied to specific numbers of offspring. Depending on the environment, fewer offspring with a higher level of parental nurturing effort per child may be the optimal strategy for maximizing genetic representation in future generations. In other environments, intensive parental investment in individual offspring may have little effect on their reproductive success. This makes increasing the number of offspring the optimal strategy for fitness maximization. The timing of reproduction is also subject to variability selection because, in terms of fitness, giving birth to offspring may be more profitable later or earlier in an organism's life.

Although the specifics of reproductive amount and timing are behaviors that are likely candidates for variability selection, the fact of reproduction—whether or not to have children at all—would not be conditional on the environment. There is no justification within evolutionary theory for supposing that a species' typical genotype could have resulted from natural selection without some sort of a reproductive drive. Sexual reproduction assures variation among individual organisms in the strength of this drive. Also, there may be competing drives, resulting from the forces of natural selection, which might lower or suppress altogether the basic drive to reproduce. This would likely happen only under extreme environmental circumstances. However, to presume that there could be a species with a characteristic genotype that did not influence some form

of phenotypic reproductive motivation is antithetical to the most basic assumptions of evolutionary biology.

### **Pan-Human Reproductive Drives, the EEA and Culture**

This suggests that there should exist some genetically influenced, general reproductive drive that operates independent of environmental conditions. Drives associated with the quantity and timing of children should be dependent on evaluation of environmental information via cultural channels. Among the pan-human motivating systems that have been hypothesized as being subject to evolutionary selection are general bonding drives that promote the formation of sexual unions and nurturing (Foster 2000; Miller 1995; Miller et al. 1999). These general drives would have been sufficient in the EEA to motivate humans to become parents. While much of this theorizing is in its early stages, there is some empirical evidence to support these theories. As I will discuss in detail in Chapter 6, Miller et al. (1999) have demonstrated a genetic influence on motivation to become a parent. This genetic influence acts on parental motivation through its influence on the development of neurotransmitters associated with nurturing behavior. Although environmental variability would preclude a specific mechanism dictating human parity or childbearing timing, a drive to have sex and a drive to nurture the resulting offspring would have guaranteed a consistent level of reproduction for EEA hominids. This is primarily because they did not have access to reliable methods of contraception (Potts 1997).

This does not mean that these drives would act independently of cultural or other environmental factors. These drives trigger neurotransmitters and the release of hormones with the exposure to environmental stimuli (Miller et al. 1999, p. 58). As shown in diagram B of Figure 3-1, a significant amount of human environmental stimuli

is cultural. Pan-human reproductive and sexual drives lead to the universal existence of sexual and parental roles throughout all human populations (Brown 1991). Although genes create these drives and they ultimately make the creation of these roles necessary, they do not control the specific qualities of these roles (Handwerker 1989).

Culturally defined sexual and parental roles develop as a consequence not only of reproductive and sexual drives, but also other drives. Other generalized drives to meet the panhuman needs for survival and access to resources are also important, and may be more important (at least in short run) in the definition of sexual and parental roles. Depending on environmental conditions, including things such as the availability of resources, demographic factors, health risks, etc., sexual and parental roles are modified in response to external realities. For example, sexual roles may change when faced with the fact of widespread sexually transmitted disease. Also, parental roles and expectations for parental nurturing behaviors may shift under conditions of high infant mortality (Scheper-Hughes 1992). Environmental costs and benefits may even lead to the cultural construction of roles and behavioral expectations that lead to the direct regulation of fertility. Examples of this include sexual taboos, including regulation of celibacy and incest, and systems of kinship (Harris and Ross 1987, p. 11). In the extreme, fertility can be regulated by the cultural acceptance of infanticide, especially in populations under excessive environmental stress without access to effective and reliable contraception (Harris and Ross 1987, p. 169; Scrimshaw 1983).

Although the existence of anti-natal cultural systems may seem to give evidence against the conjecture that there is a pan-human, pro-natal drive to nurture, it does not. Anti-natal cultural systems only demonstrate that genetically influenced nurturing drives

do not directly determine behavior outcomes independent of environmental conditions. Variability selection in hominid evolution may have allowed for behavioral and phenotypic plasticity, but it did not eliminate genetic factors altogether.

### **The Analysis of Variance in Reproductive Behavior Caused by Genes and Environment**

In general, it is best to describe the relationship among genes, environment, and reproductive behavior as statistical, in which certain genetic and/or environmental conditions should result in higher probability of certain types of behaviors. If the variance of the reproductive behavior of all of the individual humans in the world was partitioned, the variance would be determined by 1) individual genetic differences, 2) economic and other social systems, 3) ideology, 4) the interaction among 1,2 and 3. The remaining variation would be effectively randomly distributed or will be described by some as of yet unknown factor (for example, the level of certain types of toxins in the water supply). Genetically influenced motivation for parenting and sexuality are phenotypic traits that result from the interaction of all of the above factors.

The non-genetic factors vary for a variety of reasons. Economic and social systems vary based on how much economic and social value children are worth in a society at a particular time. Also, they vary based on the degree that people are able to access resources individually as opposed to through other people (as I discussed in Chapter 2). As children have more economic and social value and as connections to social networks increase in importance for income pursuits, motivation to become a parent will tend to be greater. The economic value of children increases with their ability to produce income for a family with minimum parental expense. The income that children produce compared with parental expenses may never be a net positive for parents (see the

discussion of wealth flows theories in Chapter 2), but it certainly can be less expensive in some situations than others.

Non-genetic and non-economic factors also influence parental motivation. Social value is the degree that status is conferred upon people for having children. As social value of children increases, parents will be motivated to have them, regardless of the expenses associated in their upbringing (Schoen et al. 1997). Ideology, such as religious convictions, can influence people's reproductive behavior positively (such as thinking contraceptives are wrong because you must accept all the children God sends) or negatively (in the case of clergy or people who believe in doing their part to fight overpopulation). In the long term, ideology may be more of a reflection of economic cost-benefits rather than an independent force (Iverson 1992). However, in the short term, ideology can be thought of as having an independent effect on parental motivation.

Genes interact with each of these factors in ways that make having children more or less likely given a set of economic, social, or ideological factors. All of these factors that interact with genes are not themselves uncorrelated. They are all ultimately shaped by the means of harvesting energy from the environment. However, in the short run, a change in one or more of these factors may lead to changes in reproductive motivation without corresponding changes in the other factors. For example, a change in the economic cost-benefits of childbearing might lead to lower parental motivation while the ideology of childbearing might continue to be highly pro-natal.

### **Social Science Resistance to Evolutionary Explanations for Human Behavior**

Many social scientists resist explanations for human behaviors involving biological variables (Tooby and Cosmides 1992; Udry 1996). Among social scientists, cultural anthropologists are possibly the most resistant to any linkage between genes and human

behavior (Irons and Cronk 2000, p. 6-12). Some of the resistance to the incorporation of biological variables into human behavioral analyses comes from the desire to deny that there is such a thing as human nature. This desire is often expressed in the emphasis on behavioral or cultural variation among human groups and the de-emphasis of any characteristic that can be thought of as a human universal (Brown 1991; Tooby and Cosmides 1992). Geertz illustrates this disdain for generalization about human beings with the statement, “Any sentence that begins, ‘All societies have...’ is either baseless or banal” (Quoted in Udry 2001, p. 612). The state of the art in anthropology for disproving the genetic connection to a human behavior is to find an example of a society that demonstrates variability in the behavior (Tooby and Cosmides 1992, p. 43).

With the de-emphasis of human universal behaviors, many cultural anthropologists, as well as other social scientists, conclude that any evolutionary explanations of human behavior must imply that there are genetic differences among groups of people. This is anathema to social scientists who see this as indicating racism. Because they value their ability to fight against the social evil of racism with scientific data, they also fight against evolutionary explanations of human behavior (Irons and Cronk 2000, p. 12). This tendency is particularly strong in cultural anthropology possibly because of its history of producing racist theories of cultural evolution in the 19<sup>th</sup> century. The fight against generalizing about human behavior, biologically driven or otherwise, is part of a corrective anti-generalizing tendency that has dominated cultural anthropology since the time of Franz Boas (Harris 2001b). However, the necessary connection between genetic influences on behavior and genetic differences among groups is a misconception (Haaga 2001, p. 54). Theorists of evolutionary causes of human behavior are more often looking

to explain universal human genetic characteristics that vary by individuals. They seek to explain how these pan-human characteristics express themselves as patterns in behavioral variation due to the interaction between genes and ecological variables (Ellison 2001a, p. 1).

Although, for the most part, evolutionary theorists are attempting to explain contemporary human behavior through the interaction between genes and environment, there are certainly examples of the misapplication of evolutionary theory. Some evolutionary theorists make claims about behavioral differences among populations in genetic terms. Two recent papers, one by MacDonald (1999) and the other by Coney and Mackey (1998), exemplify theoretical approaches that imply that differences in fertility are to some extent independent of environment. These two papers make the argument that fertility rates are to some degree heritable, either genetically (MacDonald) or through some form of bio-cultural ancestry (Coney and Mackey). They both depict a future scenario in which low fertility societies (primarily European or populations with European ancestry) will be replaced by high-fertility (immigrant, non-European) populations from other areas of the world. They assume that future descendants of these high and low fertility populations will inherit their ancestors' childbearing strategies and, hence, their fertility rates. Therefore, their arguments claim, populations with high fertility rates will eventually replace populations with low fertility rates.

These arguments differ from the majority of evolutionary theorists of human fertility and subsequently have theoretical deficiencies that other theories do not have. The major problem with these arguments is that they falsely assume ethnicities and/or nationalities are biological entities rather than social entities. If these groups are

considered as social creations, there is no justification for assuming that the genetic factors that are influencing fertility on an individual level will be consistent throughout an ethnic or national population. Assuming that a population's fertility rate has a simple correspondence with either its genetic composition or some inherited cultural tendencies, there is no room for explaining how low fertility populations could have come to exist in the first place. It is a historical fact that, at one point, the ancestors of these soon-to-be-replaced European populations had higher fertility rates. Any argument that assumes that contemporary populations with high fertility rates will replace low fertility rate populations cannot explain why low fertility rate populations evidently replaced high fertility populations in Europe during the 20<sup>th</sup> Century.

Although many social scientists are in opposition to evolutionary explanations of human behavior on the grounds that there is no human nature, other theorists of human behavior are more favorable towards generalizability. However, many of these social scientists still resist the use of biological variables in the analysis of human behavior. One of the reasons for this is because there are theorists who produce work similar to the above-mentioned studies, which assume meaningful genetic differences among human social groups. Other reasons include the over-enthusiastic use of evolutionary hypotheses without evidence that the EEA conditions could have selected for the particular trait (Potts 1998, p. 94). Along with this criticism is the objection that evolutionary theorists tend to exaggerate the universality of behavioral traits throughout human populations (Harris 2001a, p. 126). Besides objecting to the excess zeal displayed by evolutionary theorists in their attempts to explain human behavior in evolutionary terms, critical social scientists also point out that these hypotheses are often non-falsifiable (Sahlins 1976).

Also, sociobiologists and evolutionary psychologists are criticized for reducing the evolutionary process to the gene, assuming a one-to-one correspondence between genes and phenotypes, ignoring the effect of unique histories on the development and behavior of individual organisms, and using culturally biased metaphors in their analyses (such as genetic success, competition etc.) (Rose 1998; Rose 1999).

The majority of evolutionary theorists of human behavior remain unconvinced by the above criticisms primarily because these objections are often exaggerations. Also, many objections to evolutionary theorizing about human behavior are directed at intermediate steps in the process of scientific study, such as the development of hypotheses. Evolutionary theorists often complain that the critics of sociobiology and evolutionary psychology are really criticizing caricatures of these disciplines (Alcock 1999; Daly and Wilson 1986). They also object to the notion that debunking certain excessive claims of fringe theories done in the name of sociobiology or evolutionary theory can be used to falsify the entire core of evolutionary theorizing regarding human behavior (Canton 1986).

The primary argument of those who defend evolutionary theorizing is that the critics are not critiquing particular hypotheses. Rather, they are objecting to the scientific study of human behavior itself. The scientific process depends on the falsification of hypotheses generated from a theoretical perspective. Despite claims of non-falsifiable theories, evolutionary scientists have a long history of testing hypotheses generated from sociobiological and evolutionary psychology perspectives with empirical data (Holcomb III 1998; Irons and Cronk 2000). Individual hypotheses, no matter how overly ambitious their claims, are useful only if they are tested. This is not only in regards to evolutionary

theories but to the counter theories developed by the critics of evolutionary perspectives on human behavior. Evolutionary theorists are justifiably annoyed when those who object to so called biological reductionism dismiss their theories for imperfect operationalizations and a neglect of the full range of mitigating factors and complexity in human behavior. Rarely do these critics offer competing theories that can meet these same standards (Irons and Cronk 2000, p. 9).

Critics of biological reductionism who claim that evolutionary hypotheses are too simplistic and are not accounting for the full range of factors that determine human behavior are only stating the obvious. Simplification of all the information in the universe into a set of theories that we can understand is the objective of scientific research. The theories that best fit the evidence we have are the preferred theories for the moment. Simplicity is the objective of scientific theories because it facilitates testing and understanding. Simplicity is only objectionable if it fails to explain and predict empirical observations (Charlton 1999). The public nature of science allows theories that better explain empirical observations to be entered into the scientific discourse and replace theories that are too simplistic (Kuznar 1997). Therefore, arguments against evolutionary theories of human behavior because they are reductionistic are being critical of science in general, because all science is reduction in one form or another. However, this reduction is necessary for us to better understand the world we live in.

Many social scientists are critical of evolutionary theories of human behavior because they have a philosophical commitment against any use of biological variables in the study of human behavior. They are concerned with the use of evolutionary theory in human behavior because of political and policy implications. This explains why their

approach is to criticize the intermediate steps that evolutionary theorists take in the process of theory building without continuing the process with their own testable hypotheses. This also explains why researchers who test theories of genetic and evolutionary influences on human behavior while explicitly citing the corresponding influence of the environment are often attacked as “genetic determinists” who are looking for the “immutable biological roots” of human behavior (see (Barash 2002; Kennelly et al. 2001; Miller and Costello 2001; Risman 2001; Udry 2000; Udry 2001; Weidman 2002). The number of theorists who believe in simplistic genetic determinism is often greatly exaggerated (Udry 1999). Even the most famous sociobiologist, E.O. Wilson, takes great pains to refute the possibility that genes can cause behavior independent of environment (Wilson 1998, p. 136-139). However, for many opponents of evolutionary theorizing, any incorporation of biological variables into theoretical models of human behavior is akin to genetic determinism and racism and should be avoided at all costs.

I do not intend to downplay the impact that biological theories of human behavior have had and could still have on racist thinking and racists policies. However, I do not think the solution is to combat scientific findings on philosophical grounds alone. If the scientific study of the biological basis of human behavior is left in the hands of racists alone, we will be left with only racist theories. True genetic determinism has earned its negative reputation on the basis of its historical role in fueling genocide and justifications of the perpetuation of structural inequalities. However, when genes are completely eliminated as potential causes of human behavior we are left with environmental determinism. There is no evidence that environmental determinism is any more immune to being used to justify social inequality or horrible maltreatment of defenseless victims

than genetic determinism (see Colapinto (2000) for an example of consequences of environmental determinism taken to the extreme).

### **The Use and Misuse of the Word Biology**

I think that much of the problem with communicating findings about the genetic influence on human behavior comes from an inconsistent use of the word “biology.” At times it is used to signify genes, other times it is used to signify phenotype, and sometimes it is used ambiguously as one or the other. I think that this inconsistency is a major stumbling block to the conveyance of ideas about evolution and behavior and the possibility of meaningful dialogue between theorists on both sides of the debate.

Genes are only one (although very important) aspect of biology. Genes provide the code that is used to develop a phenotype, but the interpretation of the code is dependent on environmental conditions. Every aspect of gene function, whether it is building tissue or building complex central nervous systems that determine behavior, operates through environmental conditions. Environment cannot be thought of as a static snap shot of particular conditions at one point in time but must include the entire historical conditions that have affected gene expression (Rose 1999; Wilson 1998, p. 139). Therefore, since genes play a limited part in the development of an organism, it is better to use the term biology to refer to a phenotype, which includes not only genes but also the historical events that lead to gene expression in a certain way. As I have discussed earlier in this chapter in relation to diagram B of figure 3-1 (and will continue to discuss in detail in the next chapter), one of the environmental factors that leads to gene expression is the cultural environment. With this extended definition of biology, which includes historical and cultural environmental forces, the use of the phrase “biological determinism” loses

much of its divisive force. In this sense, biological determinism includes both genetic and environmental determinism.

### **Conclusion**

Ultimately, I believe that ideas about the genetic influences on specific human behaviors and the evolutionary theories that explain these influences will be accepted only if they explain empirical evidence. The amount of knowledge we have about the genetic influence on animal behavior will soon dwarf our current knowledge. Social scientists will be challenged to either explain how this new evidence fits into existing social theory or to develop new theories that take account of the new data (Udry 1996, p. 326).

In the coming years, emerging data on the connection between genes and behavior should position human reproduction as a major hotbed of empirical and theoretical activity in both biological and social sciences. This is not only because of the centrality of reproduction to theories of evolution, but because of the behavioral plasticity in human reproductive behavior. Fertility decline in particular is an issue that draws on a combination of behavior genetics, genetic foundations of motivational states, economic cost benefits of behavior, the influence of culture on behavior, etc. Tests of theories of fertility decline offer a unique opportunity to develop an understanding of the biosocial/biocultural basis of human behavior. However, in order for this to happen, traditional demographic approaches to fertility decline, will need to be augmented with more studies of the influences on individual childbearing motivations. Because evolutionary theory focuses on the interaction between genotypes and environment at the individual level, aggregate statistics are not sufficient to test evolutionary theories (Bock 1999, p. 200). Tests of evolutionary theories of human fertility require careful

measurement of genetic, behavioral, environmental, psychological as well as cultural variables. The use of evolutionary theory in conjunction with careful, systematic measurement of cultural variables on the individual level is the area of fertility theory that would benefit most from an increased anthropological presence. In the following chapters, I will detail my attempt to integrate anthropological and demographic perspectives to shed light on the process of global fertility decline.

## CHAPTER 4 CULTURE AND REPRODUCTIVE BEHAVIOR

### **Introduction**

In this chapter, I will present an extended definition of culture that can be used in tests of theories of fertility decline. Before presenting this definition, I will discuss the emerging sub-discipline of anthropological demography and discuss the potential for integrating cultural approaches to the study of human demographic behavior. A consistent theme of the anthropological demography literature is the critique of demographers by anthropologists for their lack of sophistication in the use of culture. However, I argue that anthropologists as well as demographers need to present a clearer definition of what they mean by culture in order to test competing theories. Without alternatives to outdated definitions of culture, the gulf between demography and anthropology will not be bridged.

Next, I will present an extended definition of culture that includes a discussion of the part that culture plays in human evolution as well as a discussion of the properties of culture that contribute to human beings' unique behavioral plasticity. I argue that human culture amounts to a type of virtual environment with which individual human beings must interact to meet their basic needs. In order to understand individual motivation, this virtual environment must be accounted for and measured. I discuss how this view of culture can be used to resolve the debate among fertility decline theorists who emphasize either culture or economics as the primary force on reproductive behavior.

In the final section, I present a description of a method for measuring culture. I present this method while arguing against drawing a distinction between qualitative and quantitative methods because the measurement of culture requires both qualitative and quantitative components. I discuss the development of the operationalization and measurement of culture as consensus by cognitive anthropologists. This operationalization leads to improvement in construct validity and improved ability to measure inter- and intra- cultural diversity. I argue that this explicit operationalization and measurement is necessary to test existing theories of fertility decline. I conclude this chapter by arguing for a greater use of quantification by anthropologists who are interested in studying population processes.

### **Validity and Reliability in Demography and Anthropology**

#### **Disciplinary Differences between Anthropology and Demography**

A fruitful collaboration between anthropology and demography has been characterized as improbable because of extreme differences in methodology and epistemology (Greenhalgh 1997; Hill 1997; Scheper-Hughes 1997). Using methodological tools such as participant observation, unstructured interviewing, and extended fieldwork, anthropologists report what they have seen with their own eyes. By contrast, demographers depend on surveys and quantitative modeling, and report findings about general trends in populations. The principle difference between anthropology and demography is therefore in the amount of emphasis they tend to place on validity and reliability. An examination of these disciplinary cultures (Greenhalgh 1997) with regard to validity and reliability is the key to recognizing the possibility of a successful partnership between anthropology and demography.

Most anthropological researchers tend to devote themselves to the pursuit of the collection of highly valid data. Validity in scientific research is defined as the extent to which what is intended to be measured is actually measured. In social research where what is measured is typically theory driven, validity refers to the ability of the measurement to represent the concept being studied. (Carmines 1979, p. 11-13).

Anthropologists who want to measure the attitudes and behaviors of their subjects of study believe the best way to do this is to conduct in-depth interviews with key informants and to engage in participant-observation by living with their informants for an extended period of time. The instruments of data collection in most anthropological research are the researchers themselves, and they spend years calibrating themselves to be (as much as possible) objective, culturally un-biased observers and recorders of human thought and behavior. Anthropologists are critical of methods such as survey research, which use a limited number of variables, because they do not capture the full experience of peoples' lives and can miss important information. Anthropologists point out that variables used in demographic questionnaires, such as birth, marriage, parenthood, and household, are socially constructed and can change between settings and populations. The conceptualization of these variables for the researcher may be different from the lived reality of the people who are the subjects of study (Townsend 1997). Thus, anthropologists are critical of survey research because it has potential limitations in data validity.

Demographers, on the other hand, tend to use data that are highly reliable. The reason for this stems from their primary research goal, which is to come to conclusions about the characteristics of large populations. It is often impossible to ask questions of

everyone in a population. Instead, demographers elicit information from samples of people making up a small percentage of the population and use statistics to come to probabilistic conclusions about the entire population. In order to make statements about a population on the basis of evidence from a sample, the sample must be drawn using reliable research methods. Reliability in scientific research is the ability to produce the same result using the same instrument on the same object of measurement more than once (Carmines 1979, p. 11-13). With the use of reliable methods such as random sampling with standardized questionnaires, a sample will be representative of the population from which it was drawn. This allows for generalizations because reliability implies that the results from one sample will be the same as those from another sample drawn from the same population. Standardized questionnaires are reliable because they use operationalized definitions of variables and are structured to limit the variability in how questions are asked of each informant. Random samples minimize whatever systematic bias might exist in the selection of each informant by assuring that each member of a studied population had equal chance of being selected. Standard questionnaire design and random samples together minimize the amount of non-random error in the resulting data, which allows for analysis using statistical techniques based on assumptions regarding random sources of error. Demographers are therefore critical of the key informant and participant observation approaches because they have potential for bias and the introduction of non-random error, thus yielding data of doubtful reliability and generalizability.

### **Disciplinary Congruence Between Anthropology and Demography**

Although this description of disciplinary cultures has been described similarly elsewhere (Basu 1998; Greenhalgh 1996; Greenhalgh 1997; Hammel and Friou 1997;

Hill 1997) and should be easily recognizable by members of both disciplines, the dichotomy is an illustrative caricature that obscures disciplinary heterogeneity and self-criticism evident within both anthropology and demography. There have been many calls for a more reliable anthropology among anthropologists and, from demographers, a more valid demography. These internal criticisms deny the need for a choice between validity and reliability and attempt to maximize both of the two elements to form a more complete research agenda.

The movement within anthropology towards more reliable data collection centers on the call for the discovery of basic laws that describe and predict human thought and behavior (Bernard 1979, p. 33; Murphy and Margolis 1995, p. 1). Discovery of these laws requires research that produces generalizable and testable findings (Harris 2001a, p. 16-17; Kuznar 1997, p. 22-24). Studies that are generalizable attempt to link information gleaned from the study of a single group with what is known about human beings in general. Moreover, a study is testable (i.e. falsifiable) if it can be repeated with the possibility of discovering that its hypotheses are not true. Anthropologists who are proponents of the discovery of these laws have been critical of other anthropologists who ignore the potential for generalization from social research and pay too much attention to the particularistic, “story-telling” aspect of ethnographic research (D’Andrade 1995b, p. 405; Harris 2001b). Many anthropologists have specifically called for greater use of survey methods and quantification as a way of informing ethnographic research (Greenhalgh 1990, 101; Hammel and Friou 1997, p. 181; Lewis 1950). The anthropologists who call for quantification, survey methods, or studies based on uncovering basic laws of human behavior are proposing that the research findings

produced by anthropologists would become stronger and more relevant if they paid attention to not only validity, but also reliability.

Conversely, some demographers have levied criticisms against their colleagues for a lack of attention to questions concerning validity. These criticisms focus mainly on the acknowledgement of culture as a force behind demographic behavior and change, and the need to incorporate ethnographic fieldwork and focus groups into the methodological toolkit of demography. In the Princeton European Fertility study, demographers realized that their standard instruments lacked adequate validity due to the inattention given to cultural context as a force behind demographic change, (Bongaarts and Watkins 1996; Kertzer 1995, p. 31-33; Pollak and Watkins 1993; Watkins 1986). Many called for demography to expand its standard set of variables to include cultural differences. In addition, John Caldwell (e.g. 1982) and other demographers have recognized the need to engage anthropological methods of field research as a complement to their knowledge of population processes based on surveys. Many demographers now use ethnographic and other qualitative field methods that produce more valid data as a means of complementing reliable survey research.

These internal movements away from the extremes of sacrificing validity for reliability or vice versa suggest the possibility of a convergence of the strengths of the two disciplines towards an anthropological demography. The main similarity between these disciplinary self-criticisms is the recognition that there need not be a choice between validity and reliability in scientific research. This recognition is an indication that there can be mutually profitable collaboration between anthropologists and demographers to produce original findings that are both valid and reliable.

## **The Uses of Culture in Demography and Anthropology**

### **Anthropological Critiques of Demographic Uses of Culture**

Although there is now a greater acceptance of the effect of culture on demographic processes, demographers have tended to use culture in a way that is not satisfactory to most anthropologists. Several anthropologists, along with demographers, economists and historians, have criticized the use of culture by demographers in several recent publications (Basu and Aaby 1998; Fricke 1997a; Greenhalgh 1995b; Hammel 1990; Handwerker 1986a; Kertzer and Fricke 1997; Pollak and Watkins 1993). The overall criticism of the use of culture in demographic studies is that demographers are not actually using a theory of culture.

Demographers who worked on the European fertility project found weak and inconsistent results while searching for the economic variables that would predict fertility decline. Many of them concluded that culture explained much more than economic forces (Cleland 1987; Dyson 1983). The variables demographers used to identify culture consisted of social organizational groupings such as common location, language, ethnicity, religion, etc. Their models of fertility decline generally improved once they controlled for culture and they noticed that underdeveloped areas adjacent to urban areas which supposedly shared the same culture often experienced fertility decline without experiencing the same economic changes (Watkins 1986). The assumption was that people who spoke the same language, lived in the same area, had the same religion or ethnicity had homogenous views about things such as contraception and would hold these similar views regardless of their economic status. Taking this approach, demographers argued that future research on fertility decline would need to take into account the diffusion of ideas as the main force behind fertility decline and supplement their survey

research methods with the more qualitative methodologies of anthropology (Greenhalgh 1995a, p. 9).

The problem with this approach is that demographers generally failed to offer any explanation of what they meant by culture. Anthropologists and others in the social sciences have criticized this use of culture because it is being used as an a-theoretical “black box” in which the variance in fertility that is not explained by economic forces is explained by “everything else” (Handwerker 1986b, p. 10). There are many problems from the perspective of anthropology with this use of culture. First, there is no connection between the variables that are labeled as cultural to a theoretical conception of culture in general (Kertzer 1995). Also, the assumption that static social groupings necessarily imply homogeneity of ideas is a view of culture that is outdated (Hammel 1990). Demographers’ use of culture in this way reveals their ignorance of more recent anthropological developments in culture theory (Greenhalgh 1995a, p. 9). A main target of these debates is the criticism of the ethnocentric assumption that societies undergoing fertility decline are moving from traditional (i.e. irrational) to modern (i.e. rational) cultures (Greenhalgh 1995a, p. 16-17). This assumption, especially evident in family planning programs, often denies human agency in fertility decisions for so-called traditional people and implies passive acceptance of cultural norms (Greenhalgh 1995a, p. 25).

Another problem with this use of culture is the assumption that culture is something that stands outside of other domains of social life and is not itself subject to economic forces (Kertzer 1995). Anthropologists have argued that culture is more than ideas that are transferred by social interaction. Rather, economic, political, and other social factors

are a part of culture, not distinct from it (Handwerker 1986b, p. 11). Demographers who view culture as an individually owned independent variable that affects fertility behavior or limit their analytic domain to couples, kin groups or networks are ignoring the context of macro-level processes of culture shaped by unique histories (Greenhalgh 1995a, p. 9).

The use of qualitative or so-called anthropological methods in demographic research is also a source of criticism because of the lack of connection between these methods and a theory of culture. Used in this way, critics argue that qualitative methods end up being quick technical fixes for the inadequacies of surveys in measuring cultural variables (Fricke 1997b, p. 826). Also, they argue that the assumption that qualitative methods such as focus groups and open-ended questions can be used to inform quantitative models ignores the epistemological differences between anthropology and demography (Greenhalgh 1997; Hill 1997; Scheper-Hughes 1997). The piecemeal incorporation of methods used by anthropologists for completely different epistemological purposes shows that there has not been an adequate accounting of culture (Greenhalgh 1997). This epistemological difference is revealed in the lack of acceptance by demographers of other anthropological methods such as community studies and narrative modes of explanation (Fricke 1997b, p. 827; Greenhalgh 1995a, p. 12). Differences in epistemology have influenced some critics to distinguish between anthropological and qualitative methods (Greenhalgh 1997; Knodel 1997). The implication in this distinction is that demographers are not any closer to incorporating a sophisticated view of culture by simply using qualitative methods. Instead, they are using different tools for the same purposes.

## **Anthropological Conceptualizations of Culture**

An anthropological critique of demography's use of culture notwithstanding, there continues to be internal debates within anthropology regarding the meaning of culture. The main thrust of the arguments in these debates is at the most basic level: what is culture and is it of any use? (See the debates in the recent special supplement of *Current Anthropology* entitled, "Culture—A Second Chance?" (Aunger 1999; Brumann 1999; Romney 1999) and in the recent edited volume *Assessing Cultural Anthropology* (Borofsky 1994)). The forcefulness of these debates and the seemingly insurmountable epistemological gulfs between the participants raises the question of how demography would be able to incorporate an anthropologically informed definition of culture if anthropologists themselves cannot even agree on a definition.

In this section, I will argue that a conception of culture that is rooted in cognitive psychology and explicitly describes the interaction between ideas and behavior is the best direction for a demographically useful definition of culture. This conception of culture should include an understanding of the neurobiology of human brains and the evolutionary forces that shaped this neurobiology. This approach to culture allows for specific operationalizations of culture, and the possibility of direct measurement. Operationalization of culture is essential to a better understanding of its effect on reproductive behavior. Without operationalization, reference to culture as an entity that can have independent effect on the world is meaningless. Without an explicit definition of how culture affects human behavior, theorists often resort to circular reasoning by assuming that "culture is everything" and can explain behavior without itself needing to be explained (D'Andrade 1999). Differences and similarities in patterns of thought and behavior that are explained by reference to different cultures is a covert tautology

(Handwerker 1986b, p. 11-12). This line of explanation offers nothing more informative than the assertion that differences exist because people are different.

Another problem is that researchers who use an unoperationalized definition of culture will never know if they are discussing the same thing. This eliminates the possibility for constructive debate and falsification. Use of unoperationalized concepts in research allows for theoretical inconsistency, in particular when theoretical concepts are used across disciplines. Measurement of culture allows for testing and comparison of competing theories that attempt to explain the influence of cultural processes on demographic behavior. This is an essential element in the development of an interdisciplinary theory of fertility decline.

### **Cognitive Theory of Culture**

Although there is disagreement among theorists about many aspects of culture, there is agreement that culture refers to something learned rather than inherited (Brumann 1999). The concept of culture is usually invoked to understand the behavior and thought patterns of groups. However, only individuals can learn and they are the only source of cultural data (Handwerker 2001, p. 10). Therefore, any definition of culture must begin with knowledge that human beings possess and how individual human beings learn and processes information. Since culture is learned primarily through other people, it is also the result of social interaction and is shared. This results in culture being something that is both socially and individually constructed.

The way individuals construct cultures begins with the formation of cognitive models of reality. Cognitive psychologists discovered a limit to humans' ability to remember discrete bits of information through experimental research (Miller 1956). However, humans have an almost unlimited ability to "chunk" together bits of

information into schematized models of particular domains of information (D'Andrade 1995a). Cognitive science has found that there is not a one-to-one correspondence between a particular model and a particular domain. Rather, multiple models are at work in concert at any given time. Some models are more likely than others to be invoked at a given moment because of a weighting process that develops over time after repeated experiences with a domain (Strauss and Quinn 1997). This weighting process is mediated by emotions that are evoked during these experiences. Models invoked during experiences that are associated with positive emotional feedback are more likely to be used in the future. The opposite can be said for negative emotional feedback (Strauss and Quinn 1997). Cognitive anthropologists define the complete set of an individual's cognitive models, including the models' associated emotional weights and behaviors, as the raw material of culture (Handwerker 2001).

One common assumption about culture (now proved incorrect) is that culture is a unitary, internally consistent "seamless web" that contains unambiguous rules for behavior (DiMaggio 1997, p. 267). Instead, cognitive researchers see culture as fragmented and inconsistent. At any point in time, individuals may have internalized cognitive models that are contradictory. These models, while guides for behavior, can never have a one-to-one correspondence with behavior outputs because of their heterogeneity. Rather than acting as a blueprint for behavior, culture acts like a "toolkit" of strategies which individuals use to choose among behavioral options depending on momentary external circumstances (DiMaggio 1997).

The cognitive models that individuals have at their disposal at any point in time develop as a result of past experiences and are constantly being modified with new

experiences. Cognitive models influence the behavioral choices that individuals are forced to make in the context of external circumstance. These behavioral choices then provide individuals with additional experiential information from which ideas and emotions are subsequently generated and modified. Because no two individuals have exactly the same experiences, no two individuals have the same set of cognitive models. And no one person has the same set of cognitive models from one moment to the next because individuals are constantly behaving and processing additional experiential information (Handwerker 2001, p. 8).

Although individuals are the only source of cultural data and the raw materials of culture pertain to individuals, culture is created through social interaction. *Cultural models* refer to models that are to some extent shared by members of a population (Dressler and Bindon 2000, p. 246). However, since cognitive models are the result of a creative process within individual brains, culture is not a “thing” that can be transferred from one person to another (Handwerker 1989). Because an individual’s set of cognitive models is the end product of life experience and because members of populations often have similar, if not identical, experiences, this produces patterning of cognitive, emotional and behavioral traits. Also, as individuals interact with members of their social networks, they experience the world vicariously through other network members. This enables individuals to hold ideas and emotions about experiences and behaviors without actually experiencing them directly. Therefore, although the raw materials of culture can be accurately characterized as residing within individual human beings, the cognitive models and emotions of each individual human being depend in some part on the cognitive models, emotions and behaviors of other members of their social networks.

Individual human beings do not passively accept models from their social network. Rather, they accept the models that work, modify those that do not, and “share” these modifications back into their social network in a dynamic, continually evolving creative process. When models developed through previous experience are unable to account adequately for new stimuli, individuals switch from “automatic” to “deliberative” cognition which they use to actively and innovatively restructure their own models to better account for new stimuli (DiMaggio 1997).

Subsequent interaction with a social network leads to the spread of the innovation throughout the network if the innovation is successful at resolving similar inadequacies in the models held by other network members (Tomasello 1999). The “spread” of innovations throughout a network is actually individual brains making similar cognitive adjustments after interactions with members of their social networks. Thus, culture can be shared, but only metaphorically and imperfectly (Handwerker 1989).

### **Culture as Evolutionary Adaptation**

The ability of human beings to pool their cognitive resources represents an evolutionary adaptation that helps individual human beings better meet their biological and psychological needs (Tomasello 1999). Culture gives human beings the ability to address practical problems they face on a daily basis in their efforts to survive, feed themselves, and reproduce. Compared with other species that interact socially, human beings are uniquely adapted to pool their cognitive resources not only over populations but also through historical time (Tomasello 1999). This creates what is called “distributed cognition” which acts as a cognitive division of labor among the members of a social network (DiMaggio 1997). What’s more, human beings are uniquely able to pool these resources among a socially cooperating group of strangers or partial strangers,

unlike other socially interacting species which almost exclusively interact with kin (Chase 1999). Although there is sufficient evidence that non-human animals also use culture for survival, the uniqueness of human culture lies in the degree to which it pervades all aspects of human life (de Wall 2001, p. 29; Harris 2001a, p. 125)

In order to understand this unique evolution of culture in the human species, we need to consider the environment under which human beings evolved and developed this trait. We have limited information about the conditions of the environment of evolutionary adaptation (EEA) that served as the backdrop for human evolution during the Pleistocene (Bock 1999, p. 197). The evidence we have points to an incredibly unstable environment which would not have had consistent enough selective pressure for specific behavioral traits to evolve (Potts 1998). Instead of the evolution of specific behavioral responses to specific environmental conditions, the EEA selected for plasticity in behavioral responses to changing environmental conditions. Human capacity for culture developed under these conditions and has been such a successful behavioral strategy that human beings now inhabit almost every ecological niche on earth.

Culture creates a buffer between people and their physical world. It is a type of virtual environment with which people interact. Behavioral responses that are directly tied to physical environmental cues and not through culture need to be developed over long periods of time under conditions of systematic selection of genetic variations. The variations that end up being widespread are those that allow individuals a greater probability of success at securing resources from the environment, which leads to greater probability of success at survival and reproduction. For human beings, culture fulfills a similar role as genetic evolution. Through simplified models of reality that filter out

information and constrain behavior within a limited set of options, culture provides individuals with strategies for how to live their lives in a way that assures consistent access to resources in order to survive and reproduce within a given environmental circumstance.

In contrast with genetic evolution, cultural evolution is much more dynamic and can lead to more rapid behavioral change. If cultural strategies for the fulfillment of biological and psychological needs are not successful for individuals, or if individuals develop innovations that improve on previous strategies, these strategies will spread throughout social networks. Cultural innovations that allow for greater and more reliable access to resources are more likely to be selected over existing cultural models (Handwerker 1989). An evaluative feedback loop enables the culturally shared models to be constantly reevaluated and modified or replaced if necessary. Unlike genetic evolution, cultural evolution happens without the need for new generations to be born. Although many cultural traditions continue seemingly unmodified, generation after generation, significant cultural evolution can occur within one generation.

Because human beings are a species that depends on culture to access resources from the environment, culture becomes an important environmental element with which humans must interact in order to survive and reproduce. As cultural beings, humans must interact with other members of their species in order to access the resources that allow them to meet their biological and psychological needs. Human beings have both a cooperative and competitive relationship with other members of their species. In order to survive, humans must be able to understand and predict the behaviors of other human

beings and must learn how they themselves must behave in order to access resources within a particular cultural milieu.

Learning about appropriate behavior within a cultural setting is not limited to simple observation and imitation. Rather, humans must be able to develop an understanding of the intentionality behind human behavior, which means that they must understand the cultural environment within which others are operating (Tomasello 1999). Therefore, in order to access resources which may allow an individual human being to survive and reproduce, human beings must not only successfully interact with their physical environment but they must interact with the cultural environment being used by other human beings in their social networks.

### **Economic and Cultural Explanations of Reproductive Behavior**

This extended definition of culture helps to clarify the roles of culture and economic forces on fertility decline. Much of the current debate about the influences on fertility behavior centers on the competition between cultural factors and economic factors (e.g. (Hammel 1995; Kertzer 1995; Pollak and Watkins 1993)). The inclusion of both behavioral and ideological components into a definition of culture helps to resolve some of these debates by considering economies as part of culture. Perhaps the most extensive operationalization of culture as ideas and behaviors comes from Marvin Harris' cultural materialism research strategy (Harris 2001a). In a three-tiered conceptualization, cultural materialism divides culture into mode of production and reproduction (infrastructure), social and political organization (structure), and idealistic systems of meaning (superstructure). All three components have the ability to influence the others but the infrastructure is said to have probabilistic influence on structure and superstructure. Likewise, structure has probabilistic influence on superstructure. This

inclusive division of culture into both mental and behavioral aspects with each influencing each other avoids the tautology of which D'Andrade (1999) and Handwerker (1986b) warn.

Considering the conceptualization of culture as inclusive of both ideas and behaviors, the debates about the primacy of cultural or economic factors having the most influence on fertility decline are rendered meaningless through their false distinction between culture and economics. This is especially true for arguments that put social interaction at the center of the process of fertility decline and over-emphasize the causal force of networks and diffusion in the fertility decline process. For example, one sociological line of reasoning attempts to explain the incidence of fertility decline in under-developed areas that are adjacent to developed areas as a result of the diffusion of information about novel contraceptive behavior (Bongaarts and Watkins 1996; Pollak and Watkins 1993). This model accounts for the spread of fertility limiting behavior through the interaction between individuals and "opinion leaders" or "trendsetters" (Pollak and Watkins 1993, p. 479). What is assumed is that the behavior starts with one person who innovates and then interacts with others who begin to adopt the innovation. Thus, networks are important in understanding fertility decline because they are the means with which new information is spread which leads to behavior change.

What is left open in this analysis is an explanation of why the innovative behavior was adopted in the first place and why some adopt the behavior and others either lag behind or never adopt the behavior. It also ignores the possibility of extensive simultaneous invention of novel behaviors by individuals who have never interacted with each other. Thus, it is more of a description of the process than an explanation.

The biggest problem with the social interaction explanation of fertility decline is the neglect of the interdependence of economic processes and social interaction, causing a problem with teasing out one's influence from the other. This is especially true for information about novel economic opportunities. This type of information has been found to be more likely to spread through network connections among those network alters who are loosely tied to one another (Granovetter 1973). Given the equation of culture with systems of ideas and behaviors that exist in the intersection of individual network members, how can economic forces and social networks be distinguished? When novel economic opportunities, or even the perception of novel economic opportunities, depend on social networks for their spread, how can changing economic forces be separate from social interaction? The functional limitation of networks as a conduit for attitudes about novel contraceptive information is the weakest point of the social interaction model of fertility decline. The broadening of the conception of culture to include behavior (including economic behavior) and structures of social interaction is the solution to this weakness.

### **A Method of Culture for Demography and Anthropology**

#### **The Measurement of Culture: Consensus Analysis**

The theory of culture presented above is in terms of conceptual variables (Bernard 1994b, p. 25-32). Culture used as a conceptual variable is a theory, which cannot be tested directly. Although theories cannot be tested directly, they imply hypotheses, which are predictions of what a researcher expects to find given the veracity of the underlying, conceptual theory. Hypotheses, unlike theories, can be tested but only when the conceptual variables from the theory have been given operational definitions. Operational definitions of culture, along with hypotheses generated from the conceptual

definition of culture, can provide the basis for empirically evaluating culture's influence on fertility decline.

If cognitive models are shared among members of a group implying a cultural pattern of thought and behavior, this sharing needs to be empirically demonstrated in order to be used in a test of a hypothesis. Members of social groups often have similar cognitive models because of similar life experience and tend to agree with one another about the meaning of certain domains of knowledge and behavior. However, within social groups there are sub-groups of members who have slightly or not so slightly different life experiences, which causes disagreement. Age, gender, and socio-economic status are examples of characteristics that can influence members of the same language group, religion or geographic area to have varying cultural models of particular domains.

Sometimes this varying life experience results in intra-cultural variation in which there is variation within an overall level of agreement. Sometimes it may result in inter-cultural variation in which there are groups within the population that have high internal levels of agreement but do not agree significantly with other groups within the same social group. And sometimes there may be very low levels of agreement among all members of the population (Handwerker 2001, p. 21). Thus, in order to validate claims of agreement on cognitive models enough to classify them as cultural, levels of agreement must be measured and cultures must be demonstrated empirically. Since the mid-1980's, cognitive anthropologists have developed ethnographic techniques to collect field data which can be analyzed statistically to demonstrate this agreement empirically and can be used to test the internal validity of theoretical claims about culture.

The methodology of consensus analysis began as an effort to limit the effect of an ethnographer's personal biases on the final product of ethnography and to determine an objective measure of informants' cultural knowledge (Romney et al. 1986, p. 314). Noting well known controversies over the conclusions of famous ethnographies as well as the tendency of informants to disagree with each other, Romney, Weller and Batchelder developed a formal method that would determine which informants were more culturally knowledgeable than others. Experiments showed that informants who knew the correct responses to questions tended to agree with each other more than informants who didn't know the answers (Boster 1985). Noting that, mathematically, the reverse of this—that those who agreed with each other would be more likely to have knowledge about some unspecified truth—would also be true, Romney, Weller and Batchelder's formal model provides a means of determining who knows more than whom as well as the answers to the questions themselves.

Consensus analysis uses the multivariate technique of factor analysis to develop these measures. Instead of using factor analysis in the way that it is usually intended— to reduce the numbers of variables for a group of informants by analyzing the variance in values of these variables (Neter 1996)—consensus analysis reverses the data matrix. This allows for the analysis of variance in an informant by informant agreement matrix to determine the variance in agreement among informants [Romney, 1986 #133, p. 322; Weller, 1988 #142, p. 75]. Cultural consensus analysis can be used when certain assumptions are met, including the assumption that there is a specific correct answer for each question asked of an informant, each set of answers given by an informant is independent of other informants answers, and the questions are drawn from one domain

of knowledge which assumes one culture (Handwerker 1998, p. 570; Romney 1999, p. S107).

Handwerker has developed a modification of the consensus analysis model in order to measure cultural differences when the above assumptions are not met. His modification is to use principal components analysis instead of factor analysis when analyzing the intersection of agreement among informants (Handwerker 2002, p. 112; 2001, p. 185). Principal components analysis and factor analysis are very similar procedures. They both linearly transform the original variables into a smaller set of uncorrelated variables called factors. Principal components analysis differs from factor analysis in that it uses the maximum variance rather than the common variance (Bartholomew et al. 2002, p. 167-168; Dunteman 1989: 7-9). Using the maximum variance is more important in cases where an investigator wishes to examine the total variance of the agreement among informants in order to determine if there exists one, multiple, or no cultures of agreement on a particular domain. The factor analysis method used by consensus analysis is more appropriate when the goal is to determine cultural competence on a single pre-defined culture. Instead of looking for the correct answers, Handwerker's method looks for the possibility of sub-cultural agreement on different sets of "correct" answers.

In order to determine sub-groupings of agreement, Handwerker proposes using the factor loadings on the first two unrotated factors of a principal components analysis in a cluster analysis (Dunteman 1989, p. 78-79; Handwerker 2002, p. 115; Handwerker 2001, p. 88). A cluster analysis can be performed on the loadings of the first two factors if they account for a substantial amount of the total variance. If there is one culture whereby

each informant is linked to one another through a shared agreement on a domain, the first factor will represent at least 50% of the variance, the difference between the eigenvalues of the two factors will be large (the first factor is 3 times the second) and there will be negligible negative loading on the first factor (Handwerker 2001, p. 186). If there is not one culture, plotting the factor loadings for the informants on the two factors against each other will show patterns of agreement. These patterns can be used as clues for finding multiple sub-cultures as well as multiple cultures within a social group.

This method provides a means of empirically justifying the claim that a group of people belongs to a particular culture. In other words, it provides an empirical means of assessing construct validity (Handwerker 2002; Handwerker 2001, pp. 183-217). If a group of informants is selected based on their ethnicity or national origin and there is a particular domain of knowledge, attitude, or behavior that is the focus of study, this method provides a means of determining empirically if in fact there is one culture for this group on this domain. If there is not a big difference between the first two factors, this method will help determine what kinds of culturally relevant groups there are. Future groupings of informants may reveal that other life experiences (such as age or gender) are more important factors in determining cultural groups for the theoretical domain in question. Thus, once an operational definition is given to a culturally based construct variable, empirical evidence can determine how well this construct holds together. This method can be used to evaluate the consistency of findings with future research that uses the same operational definitions of theoretical concepts.

Factor analytic techniques are important substitutes for classical statistical methods because of several properties of cultural data. First, cultural data is by nature

multidimensional (Handwerker 2001, p. 190). The cognitive models that form the basis for cultural models contain a multitude of elements, their relationship with each other, and how all the elements function for a particular domain (D'Andrade 1995a). In order to understand the whole of a cultural model, measurement must be made on the individual elements that make up the model. This requires analysis of answers given to structured questions from survey questionnaires, which form the basis for comparison of agreement among informants (Weller 1998). The responses to the questions, or the “verbal production”, are not the cultural model. Rather, consistency in answering the questions gives evidence that the informants are all drawing from the same shared cultural model in order to produce their responses (Dressler and Bindon 2000: 247).

### **Qualitative Methods, Traditional Statistics, and Multivariate Statistical Methods**

Qualitative methods should be used to develop a theory of the cultural model and the questions that will be used to measure aspects of this model. Qualitative research strategies such as participant observation, case studies, or repeated unstructured interviewing aimed at eliciting cognitive domains fulfill a central role in the ethnographic process. But in order to determine the amount informants differ from each other on complex variables with subtle differences, ethnographers often need more precision than qualitative methods alone can provide. Developing quantitative measurements of concepts developed qualitatively allows for precise comparisons of variables and testing of theories using multivariate statistical techniques. Qualitative interpretation of data (either quantitative or qualitative) implies quantitative comparisons. Operationalization of conceptual variables and analysis using multivariate statistical techniques makes these comparisons explicit (Handwerker 2001, pp. 11-21)

Multivariate statistical methods are also more powerful than traditional statistical modeling techniques, such as multiple regression, because the nature of cultural data implies that responses given by one informant are by definition spatially and temporally autocorrelated with the answers given by other informants (Handwerker and Wozniak 1997). Although this is considered a problem needing to be corrected in regression analysis, the goal of statistical analyses of cultural data is to understand, define and measure this correlation [Handwerker, 2001 #185, p. 19]. Because multivariate statistical techniques can be used to analyze variance in informants rather than variables, they provide the means to measure this autocorrelation.

The socially constructed nature of cultural data also causes another problem with classical statistical methods due to sample size requirements. In order to determine subtle cultural differences that may lead to cultural boundaries, the qualitative techniques that allow researchers to uncover cultural meanings are often too taxing and labor intensive to undertake on large sample sizes. Multivariate techniques such as factor analysis and principal components analysis can determine if data sets have structure or random distribution using much smaller sample sizes than traditional demographic or psychometric statistical techniques.

In order to determine external validity (the ability to generalize from the analysis of results on one sample) using structured interview questions allows for greater comparability than traditional qualitative ethnographic techniques used in isolation. Instruments developed for a community study can be exported and used in other communities in order to test hypotheses. Structured interviewing also allows for incorporation of standard large-scale demographic instrument questions making local

data comparable with national data as well as development of national surveys from proven instruments produced at the community level. Conversely, standardized questions developed in local settings can be used in subsequent national or regional large-sample surveys to test the prevalence of local findings in multiple settings.

This method has important ramifications for the development of an anthropological demography. Once an operational definition is given to a culturally based construct variable, empirical evidence can determine how well this construct holds together. First, this method can be used to justify the claim that a theoretical construct has construct validity for one population. This method can then be used to evaluate the consistency of findings with future research that uses the same operational definitions of theoretical concepts for other populations. Thus, this method can be the key to linking traditional anthropological local studies with traditional demographic studies of large national or regional populations.

### **Debates of Qualitative and Quantitative Methods in Anthropology and Demography**

How does this method fit in with the debate on uses of qualitative methodology to answer questions about demographic processes? At a recent meeting of the Population Association of America, several presenters debated the merits of using qualitative methods on population issues (Fricke 1997b; Greenhalgh 1997; Kertzer 1997a; Knodel 1997; Obermeyer 1997; Rao 1997). Two of the participants, Susan Greenhalgh and John Knodel, argued that using so-called anthropological qualitative methods was incompatible with demographic research. Knodel argued that qualitative methods were useful in demographic research in a variety of capacities but so-called anthropological methods were not. His characterization of anthropological methods included ethnography and full contextualization of variables (Knodel 1997, pp. 848-849). He

advocated limiting the use of qualitative methods to non-anthropological qualitative methods, such as focus groups and focused, in-depth interviews because there is no way that demographers can be expected to turn themselves into anthropologists. Greenhalgh argued that when demographers use qualitative methods that originate in anthropology, they are altered significantly so that they are no longer “anthropological.” She states that this is mostly because of the difference in disciplinary cultures in the objectives of research. Greenhalgh characterizes demographers as supporting the status quo of institutions and normal scientific practice while anthropologists are more concerned with the reflexivity of their methods and the problems with representation of the “other” (Greenhalgh 1997, p. 820-821). Thus, when a qualitative method is used by demographers to augment their quantitative models, they are using the method differently than originally intended. This renders it non-anthropological.

These arguments are not convincing in showing that there needs to be a disciplinary division of various methods because they ignore distinctions in the three different meanings of the word method: epistemological, strategic approach, and technique (Bernard 1994a). The above arguments by Knodel and Greenhalgh are only in terms of epistemological differences in methodologies. Epistemological difference is the only reason for characterizing one method as either anthropological or non-anthropological. The implication is that demographers will accept quantitative models as evidence while anthropologists will not and anthropologists will accept narratives of participant observation experience as evidence while demographers will not. However, as I argued in the beginning of this chapter, there are certainly epistemological differences within anthropology, so there should not be a characterization of a method as anthropological

based on epistemology alone. Many anthropologists share the dedication to science that Greenhalgh characterizes as demographic.

Method as strategic approach or technique need not belong to a particular discipline and need not even belong to a particular epistemological approach (Bernard 1994a, p. 176). There is no need to argue that a particular methodological approach belongs to one discipline or another. As long as they are useful in answering questions that are asked by researchers, methods should be used regardless of their traditional placement in one discipline or another. I think that the questions being asked by anthropologists and demographers about demographic processes, such as fertility decline, are often the same questions. This makes it imperative that they work together, using whatever methodological strategies and techniques are available, to come to agreement on the answers to these questions.

The biggest obstacle to a greater understanding of the potential for anthropological demography may be the neglect of the compartmentalization of qualitative and quantitative methods into data and analysis components (Bernard 1996). A research method can have either qualitative or quantitative data and either qualitative or quantitative analysis. There can be a combination of quantitative data and quantitative analysis, qualitative data and quantitative analysis, etc. When anthropologists and demographers have debated the inclusion of qualitative methods in demographic research, the specification of qualitative data or qualitative analysis is generally ignored. This is probably because it is assumed that qualitative data cannot be analyzed with anything other than qualitative methods, which is not true.

Any form of qualitative data, if collected systematically, can be analyzed with quantitative methods. Content analysis can be performed on all qualitative data, such as open-ended answers to survey questions, transcribed interviews, television programs, historical policy documents, family histories, newspaper articles, photographs, etc. (Bernard and Ryan 1998; Krippendorff 1980). Many methods in the cognitive anthropological tradition involve systematic collection of qualitative data that can be analyzed quantitatively (D'Andrade 1995a; Weller and Romney 1988). Systematic collection of qualitative data allows the use of whatever statistical approach is appropriate to answer theoretical questions about populations. The method using principal components analysis discussed earlier is especially well suited to be used with qualitative data once texts are given codes that are chosen to measure an operational definition of culture. Quantitative methods of analysis are simply precise ways to systematically analyze complicated data by looking for associations and patterns among variables or informants, which may be difficult to see using strictly qualitative analysis. Used in conjunction with qualitative analysis, quantitative analysis of qualitative data is a powerful tool in the study of populations. Both anthropologist and demographers should welcome the results of these types of analyses.

### **The Use of Quantification in Anthropological Demography**

How realistic is it to expect that anthropologists will incorporate more quantitative analyses into their research agendas? Judging by the tenor of some of the recent debates on anthropological demography, it remains to be seen if the acceptance of quantitative analyses of qualitative data (let alone quantitative analyses of quantitative data) will ever rise above a small minority in anthropology. While there are some calls for a blending of survey data with qualitative research methods as a quintessential anthropological research

strategy (Hammel and Friou 1997, p. 181; McNicoll 1980, p. 457), arguments for an anthropological demography generally call for a greater use of qualitative methods in demography but say nothing about greater use of quantitative methods in anthropology. Quantification is characterized as a handicap (Greenhalgh 1996; Hill 1997; Scheper-Hughes 1997) and a “thickening” of demographic analyses and conceptualization of variables is encouraged (Fricke 1997a; Townsend 1997). When the discussion turns to anthropological use of quantitative methods, the tone is of resignation to the reality that anthropologists “distrust” (Kertzer 1997b, p. 19) and are “hostile” towards quantification (Hammel and Friou 1997, p. 178), that they have an “anti-quantification bias” (Greenhalgh 1990, p. 100), or that “they celebrate their innumeracy” (Hammel and Friou 1997, p. 177).

Some of this resistance of quantification may be due to epistemological concerns, but a proportion might well be due to the disciplinary culture of anthropology that typically does not require its graduate students to have any training in quantitative methodology (Bernard 1994a, p. 171). Clues that the anthropological resistance of quantification may be based more on unfamiliarity rather than informed rejection is often revealed in the joking asides of the participants of debates on anthropological demography. While arguing for a “demography without numbers”, Scheper-Hughes jokes that the extent of her ability to learn quantitative methods was limited to putting page numbers on her research reports (Scheper-Hughes 1997, p. 202). When advising demographers on the possibility of collaboration with ethnographers, Gene Hammel characterizes this as a practical solution to the problem of integrating of qualitative and

quantitative methods, “if the ethnographer can be taught to count” (Hammel 1990, p. 472).

The unfamiliarity with quantitative methods has far more fundamental effects than simply the reluctance of anthropologists to analyze their data quantitatively or the difficulty anthropologists may have in understanding the quantitative work of demographers. The most important effect is the reluctance of anthropologists to operationalize their variables, especially culture. Quantification provides the ultimate incentive for researchers to turn theoretical concepts into operational variables. Without quantification, there is little incentive to reduce complex theoretical conceptualizations into more limited operational definitions. However, empirical measurement of operational definitions is at the heart of testing for the construct validity of theoretical variables. Without empirical measurement there is no way to assure the construct validity of the theoretical construction. Also, operational definitions allow researchers to talk to each other in the same language and allow for testing and falsification of theoretical concepts (Bernard 1994b, p. 32). Without this dedication to quantification, anthropological theoretical concepts lack this common operational language. This can lead to inconsistent uses of these concepts among researchers. Without operationalization, no two researchers can be certain that they are talking about the same thing when they debate theoretical concepts.

Anthropologists sometimes appear to be unaware that the possibility of operationalization and quantification of culture exists. In a recent issue of *Current Anthropology* dedicated to debating the usefulness of the concept of culture (Vol. 40, Supplement, February 1999), Christoph Brumann argues for the continued usefulness of

culture and offers a strategy for operationalization that has similarities with the methods and theories used by cognitive anthropologists (Brumann 1999). Brumann advocates the development of matrices of traits for informants to help in detecting the patterns that indicate cultures. In response to his article, Lila Abu-Lughod, a leading voice in the effort to jettison the concept of culture, agrees that there are certainly patterns of thinking and behaving which would be called culture but discounts the effort to operationalize culture because she has doubts “that anyone today would be willing to undertake the formidable task of drawing up matrices of shared and nonshared features” (Abu-Lughod 1999, p. S14). This argument by Abu-Lughod is not actually an argument against the method proposed by Bruman. Rather it is a testimonial to ignorance of and disinterest in methods of cognitive anthropology as well as multivariate statistical methods in general.

Often this ignorance of operational definitions of culture allows for the dismissal of the possibility of the quantification of anthropological concepts out of hand. Greenhalgh characterizes anthropological theoretical constructs as “inherently difficult to operationalize, measure and analyze as variables”, she argues that they “simply do not lend themselves well to being treated” as quantifiable (Greenhalgh 1996, p. 48-49), and states that arguments that are based on culture “are not empirically falsifiable” (Greenhalgh 1988, p. 632). My argument is that the anthropological culture of non-quantifiability has allowed anthropologists to create theoretical concepts without regard to operationalization, which leads to lingering doubts about their connection with reality. This lack of an operational definition of culture is likely to be the main stumbling block to a greater sophistication in the use of culture in demography.

## **Conclusion**

Although the majority of anthropologists may never fully embrace the methodological advances being made in cognitive anthropology using multivariate statistics, this has little bearing on work that can be done in the name of anthropological demography. In the remainder of this manuscript, I will detail my attempt to put these theoretical and methodological principles to the task of greater understanding of the role of culture in the global fertility decline process. I have chosen Honduras as a suitable location to conduct a study of culture, changing gender roles and fertility decline. In the next chapter, I discuss Honduras as a case study of the process of fertility decline. In subsequent chapters, I discuss my operationalization of the domain of natality culture and the data collection process I underwent to test the theory of fertility decline I discussed in chapter 2.

## CHAPTER 5 REPRODUCTIVE ATTITUDES AND BEHAVIOR IN HONDURAS

### **Introduction**

In this chapter, I introduce Honduras as an interesting case study of the ideas I developed in the preceding chapters. In the first section, I present the Honduran fertility decline as a way of illustrating important theoretical and methodological issues in the study of fertility decline. I present the history of fertility decline in the 20<sup>th</sup> Century and I present the prevailing demographic interpretation of the fertility trends in Honduras and Central America. In the next section, I critique traditional demographic analysis of fertility data which is exemplified by the Honduran case. I argue that demographers typically take an inductive approach to developing theory to explain fertility decline. I discuss how this induction-heavy approach has consequences for measurement and theory building.

In the final section of this chapter, I present an analysis of a data set from two recent surveys completed in Honduras: the “Encuesta Nacional De Epidemiologia Y Salud Familiar, 1996”(Monteith et al. 1997a) and the “Encuesta Nacional De Salud Masculina, 1996” (Monteith et al. 1998). These surveys provide answers to reproductive attitude and behavior questions for independent samples of Honduran men and women. I present this analysis to illustrate a critique of the traditional demographic analyses of fertility data. I conclude that greater attention to theory in all phases of fertility research would help improve demographic findings in fertility research.

### **Honduras as a Case Study in Theories of Fertility Decline**

Honduras presents a useful case in the examination of theoretical issues in fertility research because its aggregate fertility rate has lagged behind most of its neighbors in Central America. The entire region is theoretically interesting because it has been characterized as a region with no single pattern of fertility decline (Guzman 1996, p. xxiii). In this section I will summarize Honduras' history of fertility decline in the context of Latin American fertility decline. This analysis will serve as an example in my critique of traditional demographic theorizing about fertility decline.

#### **History of Fertility Decline in Honduras and Central America**

Figure 5-1 shows that in Latin America during the last half of the 20<sup>th</sup> Century, fertility declined in every country yet the pace of this decline has varied for individual cases (Chackiel 1996, p. 4). Some countries began and ended the period with low rates of fertility, but most countries began the period with high rates and then shifted to medium level fertility rates. Some began the period with high rates and continued to have high rates throughout the century. Honduras falls into this latter category, having one of the slowest rates of fertility decline in all of Latin America.

These data contradict generally accepted predictions (Chackiel 1996, p. 6-9). Demographers have been unable to detect an overarching pattern in these nationally aggregated rates except for the weak link between development and fertility decline (Bongaarts and Watkins 1996; Guzman 1996, p. xxiii). There appear, instead, to be two patterns: 1) Costa Rica and Panama, which have experienced a decline in fertility and mortality, and 2) Honduras, Nicaragua, Guatemala and El Salvador, which have continued to have high rates of fertility and mortality (Latin American Demographic Centre 1997, p. 4).

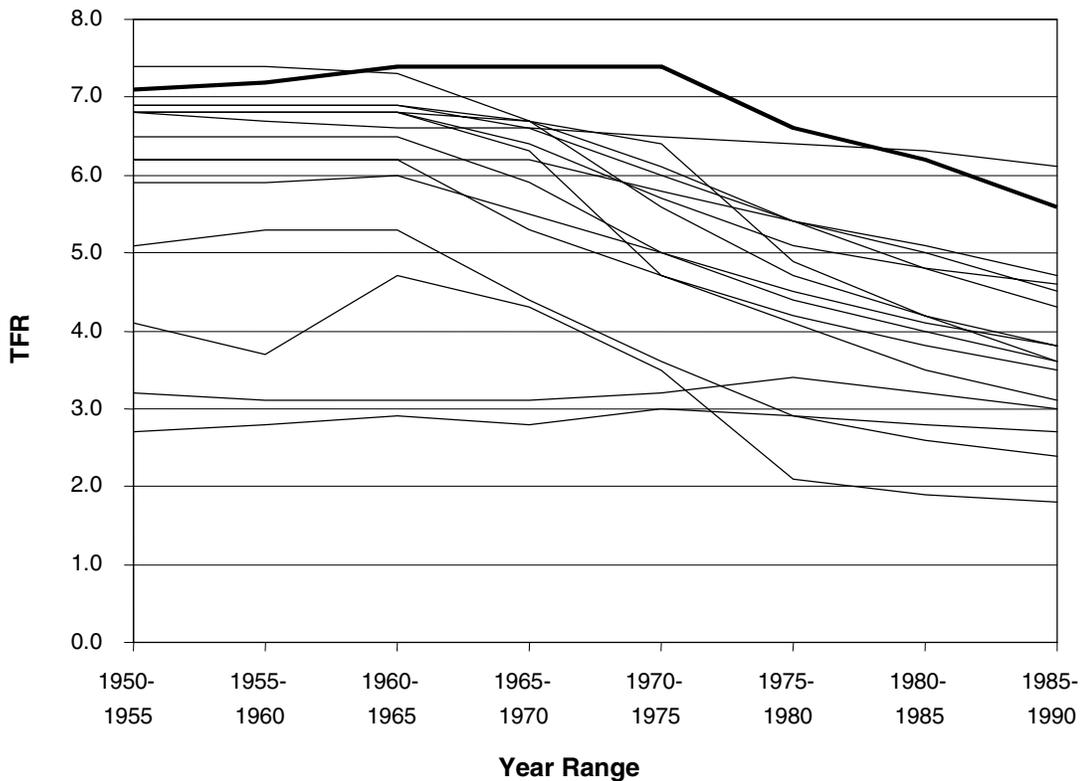


Figure 5-1 Latin American TFR by country 1950-55 to 1985-90. (Source: Chackiel 1996, p. 5. Note: Bold indicates Honduras. Dashed lines indicate other Central American Countries.)

### **Causes of Fertility Rate Variation in Central America**

Many factors have been hypothesized to cause variation in fertility decline in Central America. Levels of urbanization have been changing in the region with some countries experiencing more change than others. Figure 2 shows the changes in percentage of population living in urban areas for each country during the past fifty years. Figure 3 shows the pace at which urban sectors have been growing in these countries. Honduras has far and away the fastest current urban growth rate when compared with its overall growth rate. A consistent finding across nations is that urban fertility rates are much lower than rural fertility rates and this is especially true in Honduras (Latin

American Demographic Centre 1997, p. 16; Guzman 1997, p. 48). In the large urban areas of Honduras, the total fertility rate (the average number of children being born to each woman throughout her lifetime) is 3.14 while in the rural areas it is 6.34 (Monteith et al. 1997a, p. 56).

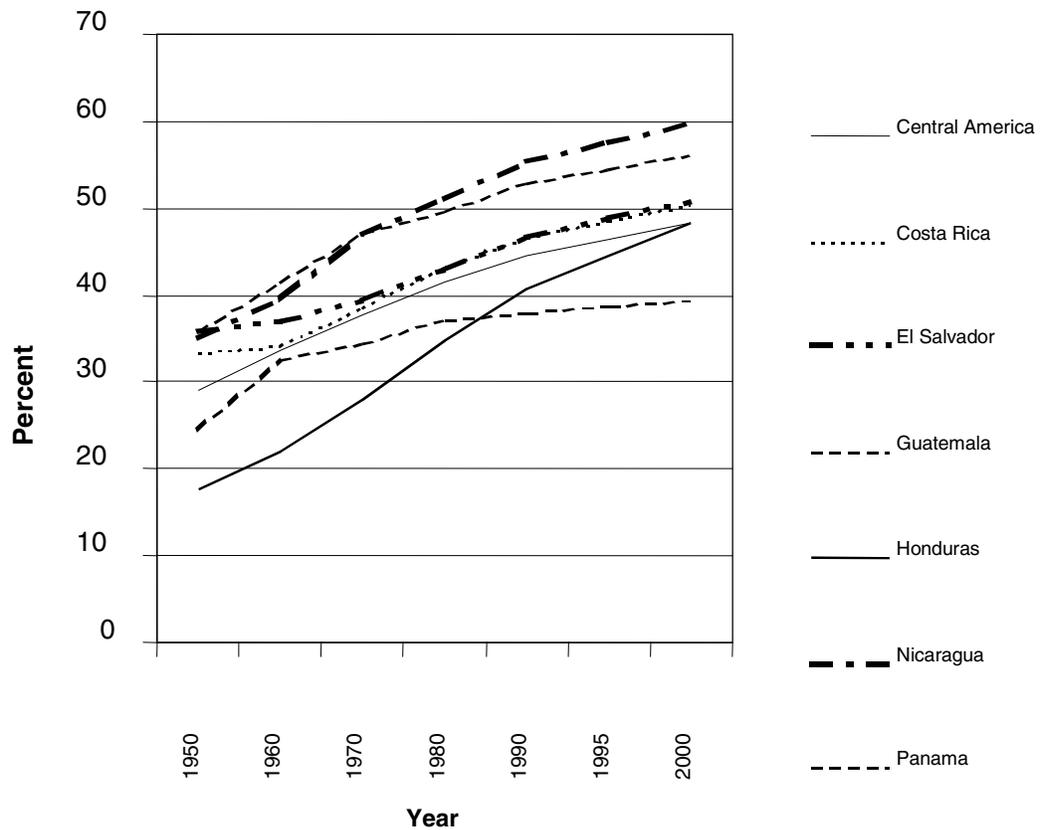


Figure 5-2 Degree of Urbanization expressed in percentage of total population residing in urban areas. (Source: Latin American Demographic Centre 1997, p. 38).

Another general trend related to urbanization is that the difference between urban and rural fertility rates is large at the onset of fertility decline, but decreases as the transition progresses. However, in Honduras, the level of rural fertility actually increased while the urban fertility rates declined (Chackiel 1996, p. 16-17). The difference between urban and rural fertility in Honduras remains one of the biggest such differences in Latin America (Chackiel 1996, p. 16). Thus, urbanization, while certainly linked to declining

levels of fertility, exhibits some unexpected properties as evidenced by the Honduras case.

In addition to increasing urbanization, demographers have theorized that this and other structural changes in social life in Central America have caused changes to normative fertility attitudes, resulting in lower fertility (Guzman 1996, p. xii; Guzman 1997, p. 42-43). These structural changes include changes in marriage patterns, more educational opportunities, higher living standards, more social mobility, and more women entering the workforce (Latin American Demographic Centre 1997, p. 5). The stress of these new social pressures causes changes in these value systems resulting in greater social aspirations for goods and services such as education (Guzman 1996, p. xxiv; Guzman 1997, p. 47).

### **Unmet Need for Family Planning**

An important concept that is often invoked in demographic studies of fertility decline is the unmet need for family planning. This concept is particularly important in cases where the actual fertility levels of a particular country, such as Honduras, are higher than would be predicted by demographers. This conceptual variable, “the level of unmet need in a particular population”, is evaluated by some combination of measurements, including desire for future child bearing, use of contraceptives during last pregnancy, and ideal family size. These elements are then compared with actual behavior regarding childbearing and reported behavior about the use of contraceptives. It is a common finding that, in developing countries, many people express a desire either to terminate or delay childbearing, yet they do nothing to satisfy this desire. This finding is generally interpreted by demographers that there is a lack of family planning services (Potts 2000).

This follows from the stated goal of family planning programs: to provide services for couples to have as many children as they want to have, when they want to have them (Hubacher 1997, p. 534).

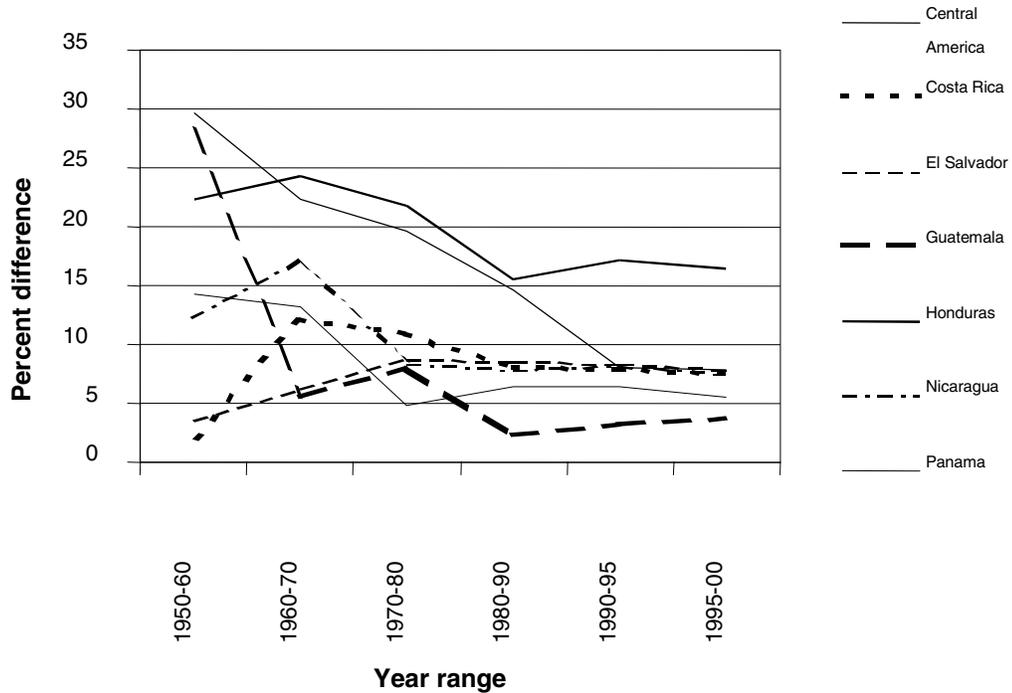


Figure 5-3 Tempo of urbanization expressed in difference between urban population growth rate and the population growth rate of whole population. (Source: (Latin American Demographic Centre 1997, p. 38)).

Several researchers have remarked on the high levels of unmet need for family planning in Honduras and have implicated this in its continued high rates of fertility (Latin American Demographic Centre 1997, p. 21; Monteith et al. 1997b, p. 16-17). In these studies, researchers have noted that the ideal number of children as reported by women is lower than the reported number of children actually born. Also, these studies have found a percentage of women who indicate that they do not desire to have any more

children, either at all or in the near future, yet they are not currently using contraceptives (Magnani et al. 1998, p. 305,316-317). These researchers have speculated that the causes of unmet need for family planning include a low level of social interaction whereby women do not have information about contraceptives, have not had their normative attitudes about desired large families challenged, do not know how to use or obtain contraceptives, or do not have social expectations to pursue educational opportunities. I will discuss the argument for social interaction as a major force in causing fertility decline in the next section.

### **Social Interaction as a Cause of Fertility Decline**

An influential paper by Bongaarts and Watkins (1996) makes the case for social interaction as a major force in causing fertility decline. Bongaarts and Watkins offer an extensive examination of theories of fertility decline with a special emphasis on the comparison between theories that focus on economic forces and theories that emphasize social interaction. The debate between economic changes versus social interaction is among the liveliest contemporary theoretical debates about fertility decline.

Bongaarts and Watkins show that economic changes are the most important overall cause of fertility decline. The  $R^2$  between fertility and a multivariate measure of development among 69 developing nations for the period of 1960-65 to 1985-90 is -.60 (Bongaarts and Watkins 1996, p. 642-643). However, as with the European data, this strong negative correlation between fertility rates and economic variables fails to predict either the onset of fertility decline or its pace for particular countries. In some cases, variables that are associated with development, such as literacy or urbanization, are associated with a particular country or region's drop in fertility rates, while in others they are not (Watkins 1986). The discovery of this pattern—underdeveloped regions often

experienced fertility declines shortly after the declines of adjacent, highly industrialized regions—was the impetus for the social interaction hypotheses (Bongaarts and Watkins 1996, p. 640).

The theory behind this hypothesis is that channels of communication and interaction are necessary for the transferal of information. Information exchange and social influence are the “oils of the machine” of fertility decline (Bongaarts and Watkins 1996, p. 656). The pace and onset of fertility decline for a particular country is a function of the strength and effectiveness of its channels of communication. A high level of unmet need for family planning is a direct result of the lack of channels of communication because it leads to a lack of information about effective contraceptives, the persistence of cultural norms that place a negative stigma on contraceptive use, and the exorbitant costs of contraceptives. With more channels of information and influence exchange, people are more connected to ideas about fertility limitation through their personal networks and the pace of fertility decline proceeds faster.

### **Critique of Demographic Analyses of Fertility Decline**

The demographic analyses above illustrate the strategy of demographers for understanding Honduran fertility (as well as fertility decline in general): see which aggregate socio-economic variables correlate with overall fertility rates. When this strategy can only explain differing fertility rates to a limited degree, the concept of unmet need for family planning is evoked to fill in the empirical gaps. In these analyses, a theory explaining descriptive findings is somewhat of an afterthought. Theory is incorporated into the analysis only after the standard data analytic procedures to describe the population are complete and found wanting. The goal of the theoretical analysis is to explain the changes in national level statistics, not individual behavior. With this

approach, there is virtually no consideration of why people in Central America are less likely to be motivated to have children than previous generations were and why this motivation varies based on national residence.

The fundamental problem with this type of analysis is that it depends on induction as the only source of theorizing. As I discussed in Chapter 2, the cycle of science depends on deductive as well as inductive theorizing so that hypotheses can be falsified, leading to adjustments in theory (Kuznar 1997). When demographers develop theories about reproductive behavior through the analysis of aggregate national statistics, it is an important and necessary but incomplete element in the scientific process of understanding human reproductive behavior. Theories that explain empirical findings should lead to testable hypotheses that drive the collection of additional data that may falsify these hypotheses.

Demographers typically analyze data that were collected for purposes other than falsifying hypotheses. The primary use of most demographic data is to describe large populations. Data collected for descriptive purposes can be used to test theories and falsify hypotheses if the variables collected and the units of analysis used are amenable to this type of analysis. However, this is not always the case.

I suspect that the underdevelopment of demographic theory of fertility decline is at least in part due to the common practice of explaining findings from existing data without collecting data that can be used in deductive tests. Thus, to use a common metaphor, the existing-data-set tail is often wagging the demographic-theory dog. Without a theory of fertility decline to direct data collection to be used for hypothesis testing, demographic researchers are susceptible to explaining fertility decline with spurious associations.

### **Critique of Social Interaction Theory**

The Bongaarts and Watkins article is a good example of this the tendency to rely on explanations involving spurious associations. Although Bongaarts and Watkins are correct in highlighting the role of personal networks in influencing changes in behavior and attitudes, they ignore the role of social networks in economic change. It is difficult to isolate the role of networks in the transformation of information about contraceptives versus information about economic opportunities. Their assertion that the diffusion of information about contraceptives can affect fertility patterns independently of social and economic circumstances would have to be proven rather than imputed from correlations between regional development and fertility levels. It is not likely that a developed region's economic influence on fertility rates would simply stop at its borders, especially if it is adjacent to an underdeveloped region with a population of people sharing "a common language and elements of a common culture" (Bongaarts and Watkins 1996, p. 647). Social networks would likely span these regions bringing inhabitants of underdeveloped areas connections to economic opportunities, which in turn cause temporary migration and increased trade as well as information exchange about family planning practices. Social networks are an essential element in the spreading of information about economic opportunities (Granovetter 1973).

Thus, the ultimate cause of fertility change is still development and greater industrialization. Bongaarts and Watkins have highlighted an aspect of fertility decline that needs to be incorporated into any model of fertility transition, but social interaction by itself cannot be used as an explanation of a change in behavior. Social interaction itself needs to be explained.

Even though they admit that the proliferation of channels of social interaction is a “concomitant of development” (Bongaarts and Watkins 1996, p. 667), they describe social interaction as an independent force on fertility. They state that, “We would expect more rapid fertility decline in countries where a multiplicity of channels connects communities, and slower fertility decline where such channels are sparse” (Bongaarts and Watkins 1996, p. 662). However, isolation from channels of communication is often an indication of economic isolation as well, so we are left with a description rather than an explanation.

Urbanization, increased educational opportunities, attitudinal change, and more extensive family planning services are other examples of spurious associations that have been used as explanations for fertility decline. Urbanization is certainly linked to fertility decline, but not in a direct way. Often, it interacts with other factors causing it to have differential force at different time periods (Handwerker 1992, p. 1247). Increased educational opportunities have also been shown to depend on the level of economic opportunities for women. When education cannot be parlayed into economic advancement, it does not affect fertility (Handwerker 1992, p. 1247). Attitudinal changes cannot be considered a cause of fertility decline because you cannot explain a change in preferences for family size by a change in preferences. This is a tautology (Handwerker 1986, p. 401).

The effect of family planning programs on fertility decline is somewhat more complicated. Certainly the ability to obtain modern, effective means to prevent contraception facilitates the limiting of births and is a technological necessity to achieve below-replacement fertility levels (Handwerker 1992, p. 1247). However, there is some

debate about the role family planning programs play in causing fertility decline. Throughout human history, unwanted childbearing has been prevented in a variety of ways including cultural taboos and indirect infanticide (Harris and Ross 1987; Scrimshaw 1983). The assumption that human fertility would be unrestrained without family planning programs is false because high fertility has always been below the biological maximum possible (Bongaarts 1975; Hirshman 1994, p. 206). Also, family planning programs have been shown to have ambiguous results and have even been shown to enable users to better space births to reduce infant mortality, effectively causing an increase in completed family size (Bledsoe 1994, p. 111; Easterlin 1985, p. 22-24; Handwerker 1992, p. 1247).

The concept of unmet need for family planning is a related factor that may have an ambiguous effect on fertility decline. Typically, the conceptualization and measurement of unmet need for family planning is another area of demographic study of fertility decline that has lacked a sufficient theoretical approach. The choices that demographers make in the collection and analysis of data regarding unmet need for family planning often reveal an under-emphasis on the testing and development of theories of human fertility. Specifically, the choice to base unmet need for family planning measurements on data collected only from women reveal a neglect of a theory of gender. I will discuss this in more detail later in this chapter.

### **National Level Studies of Fertility Decline**

Perhaps the main cause of the proliferation of demographic theories of fertility decline with spurious associations is the persistence of the choice to make nations the units of analysis without a theoretical justification. Because of its bias towards producing studies that have policy implications (Greenhalgh 1996), demography often conducts

studies with nation states as the primary unit of analysis. This is understandable given that the consumers of the results of studies, and often those funding the studies in the first place, are the nations themselves or international funding agencies that have a vested interest in partitioning data along national lines. Demographers often do not conduct their own data gathering and demography graduate students are discouraged from collecting their own data, so sources data for demographic investigation often come pre-packaged in discrete, nationally defined units. Also, governments sometimes have political needs that dictate that survey data be collected in idiosyncratic ways. This makes the combination of survey data across countries difficult, which further influences researchers to aggregate findings and to treat whole countries as individual cases.

This practice of considering nations as units of analysis has negative effects on building consistent and generalizable theories of demographic processes, especially fertility decline. The use of aggregate demographic data places important limitations on the types of theories that can be tested. This practice is the best evidence that theory is sometimes secondary to demographers' analyses of data sets (Greenhalgh 1995, p. 4; Hill 1997, p. 224; Kertzer 1997, p. 2; McNicoll 1980, p. 441). Theory suffers when nations are used as the default unit of analysis because, unless researchers can justify the theoretical connection between national status and the studied outcomes of their data modeling, it should not be used as a unit of analysis.

This is not to say that nations should never be used as units of analysis in fertility studies. In nations that have explicit, highly enforced demographic and fertility policies, like China, the use of a nation as a unit of analysis is theoretically justified. China's one-child policy surely influences the fertility decisions of many Chinese people (Greenhalgh

1988). Geoffrey McNicoll's (2001) analysis of pre- and post-transitional societies based on pro-natalist or anti-natalist policies and interventions of governments demonstrates the link between national identity and fertility behavior. However, a more common example is the use of national level data in the study by Bongarts and Watkins. They state that Costa Rica, Brazil and Chile were the first Latin American countries to enter the fertility transition (in 1965) and Bolivia and Guatemala were the last (in 1978) (1996, p. 650). There is no obvious explanation for how being Costa Rican produced decisions in 1965 that lowered fertility in 1965 while being Bolivian did not. Characteristics of these countries contribute to changing aggregate fertility rates, but countries do not experience the fertility transition. They reflect it. People experience fertility a transition and are led to do so through their participation in culture-forming social networks that channel information about how best to live one's life.

### **Culture Theory and Fertility Decline**

Rather than explaining fertility decline through a theory of *social interaction*, a theory of *culture change* that *includes* social interaction is much more powerful way to explain fertility decline. Fertility decline happens because anti-natalist behaviors and thoughts become culturally accepted by a group of socially interacting network members. This happens over time as new modes of resource acquisition become available, and new behaviors and thoughts are necessary to compete for these resources. Thus, it becomes culturally accepted to delay and limit childbearing while pursuing economic advancement and it becomes culturally prohibited to expect access to resources through other people (Handwerker 1989).

Cultures (groups of socially interacting members who share similar ideas and observe each other's behaviors) are the units of analysis in this theoretical framework.

Material changes in the environment act indirectly on cultures through direct influence on the lives of many their members. As members of a culture who are affected by material changes in the environment adjust to these changes, they discuss their lives with other members of their culture. After a period of dissonance between the existing culture and the behavioral adjustments to new material realities, a culture change process begins (Bernard and Pelto 1987). Eventually this process leads to changes in the thoughts and behaviors of those network members who have no direct experience with the material changes. Thus, social interaction is a key component to the process, but is not itself causing any change.

### **Gender and Fertility Decline**

Demography has often been criticized for its unsophisticated use of the concept of culture (Hammel 1990). Related to this criticism is the critique of demography for its neglect of gender in human fertility studies (Riley 1998; Riley 1997). This is important because, as I discussed in Chapters 1 and 2, a theory that accounts for differences in gender roles is central to theories of fertility decline. The area in which a demographic neglect of gender is the most obvious is in its assessment of unmet need for family planning. Over the years, many measures of unmet need for family planning have been developed, but studies have consistently used data collected only from women to understand this phenomenon (DeGraf 1991; Phan 1997; Ross 1997; Sai 1997; Westoff 1978; Westoff 1981a; Westoff 1988; Westoff 1981b).

It is true that women generally bear the primary responsibility for child rearing and they have the sole responsibility for child bearing. However, the practice of conceptualizing unmet need for family planning purely in terms of women's attitudes and behaviors means that no theory of gender is being used. Excluding men from the analysis

of reproductive desires assumes that a woman's preferences accurately represent a couple's preference and that no couples have conflict over reproductive decisions. It also means that there is no reference to gendered divisions of labor, gendered variation in access to resources, and gendered variation in power relations—all of which can effect a woman's ability to realize her own childbearing intentions.

Dodoo and Seal argue for a greater inclusion of men in fertility studies. They found that there were significant differences between men's and women's attitudes within individual couples and in aggregate measures (Dodoo and Seal 1994). Dodoo and Seal also found that a husband's preferences may at times eclipse his wife's preferences for reproductive outcomes by preventing her from using contraceptives. Other studies confirm the influence of spouses over each other in reproductive decisions (Bankole and Singh 1998; Ezeh 1993; Razzaque 1999). Ethnographic evidence has supported the contention that not just men but entire communities sometimes prevent women from using contraceptives when the women would otherwise want to limit their reproduction (Browner 1986). Zulu showed that in using traditional methods of birth control, older female relatives play a significant part in influencing reproductive decisions while men became involved with the introduction of modern methods (Zulu 1998).

Mason and Taj (1987) did a meta-analysis of studies in 30 developing countries where both men's and women's fertility preferences were measured. Their conclusion is that, although the prevailing literature suggests that women often want to have fewer children than men do and the gap between their attitudes and behaviors (i.e. they have more children than they want) is due to this difference, there is, in fact, no empirical evidence to support this position. However, their study averages the preferred number of

children for men and women for entire nations. This is driven, of course, by the fact that the individual studies in the meta-analysis had defined their populations of study as nations. However, aggregate averages of fertility preferences may be obscuring heterogeneity within each country (Dodoo and Seal 1994, p. 381).

An approach that takes gender into consideration would not expect consistent behaviors and preferences for men and women regardless of context. The countries in the meta-analysis of Mason and Taj are likely to have many different forms of gender institutions. Even within the individual countries in the study there are likely multiple gender systems in place at a given time. Certain circumstances may influence women to want more children than men, such as their lack of power compared to men in highly sexually stratified societies. High fertility in these societies may be a response by women to increase their avenues for obtaining resources through their children rather than relying solely on their husbands for income (Handwerker 1993, p. 42). In situations where women produce their own resources, they may want to limit their fertility because it is a hindrance towards pursuing educational and employment opportunities. If these two situations were going on at the same time in the same country, an overall average would give the impression that there is strong husband and wife agreement. Comparison of aggregate averages of fertility preferences for men and women does not take gender into consideration because gender implies cultural variability, which is not the same thing as national variability.

The main research question asked by Mason and Taj is interesting: what is the role of gender in reproductive decision-making? However, without operationalizing gender differences, the question is impossible to answer. A measurement of gender differences

would consider the context of the roles, the local sexual division of labor, and the expected attitudes and behaviors for men and women. As cultures change, these roles and expectations change. Whether or not there are consistent differences between sexes, regardless of gender, is an interesting question to study in its own right. However, this would have to be done with something other than aggregate averages.

Studies in Honduras (Magnani et al. 1998; Monteith et al. 1997b) conclude that there is a high level of unmet need for family planning, but again, these conclusions are based on surveys conducted with only women and use aggregate data. Questions remain about the extent of intra-national heterogeneity in the relationship between gender and reproductive attitudes in Honduras. In the proceeding sections, I address these issues with an analysis of two surveys conducted in Honduras in 1996, the “Encuesta Nacional De Epidemiologia Y Salud Familiar, 1996” and the “Encuesta Nacional De Salud Masculina, 1996.” I analyze these data sets with an emphasis on gender rather than sex as a means of investigating the differences in attitudes between women and men regarding reproductive intentions on a sub-national level.

### **Reproductive Attitudes of Honduran Men and Women**

The “Encuesta Nacional De Epidemiologia Y Salud Familiar, 1996” (National Survey of Epidemiology and Family Health or ENESF-96 (Monteith et al. 1997a)) surveyed 7,505 randomly selected women and the “Encuesta Nacional De Salud Masculina, 1996” (National Survey of Male Health or ENSM-96 (Monteith et al. 1998)) surveyed 2,925 randomly selected men. The two surveys produced independent samples—there were no data collected on spouses. Each survey asked the same questions regarding the number of children ever born, attitudes about ideal number of children, and knowledge, attitudes, and practice questions about contraceptives. Comparison of the

answers given by men and women at the aggregate level of the country as a whole show similarities. This is true for both total fertility rate and ideal number of children.

Comparison between these two measures reveals a difference between ideal number of children when compared with actual fertility rate, suggesting an unmet need for family planning.

Table 5-1 Median Ideal Number of Children by Sex and Location

Location	Men		Women	
	TFR	Ideal	TFR	Ideal
Tegucigalpa/SPS	3.70	2.8	3.14	2.7
Other Urban	4.71	3.0	3.94	2.8
Rural	5.28	3.4	6.34	3.3
Total	4.77	3.2	4.94	3.0
Source: (Monteith et al. 1997a, p. 100)				

Table 5-1 shows this comparison between men and women for three regions of the country. Within regions and for the country as a whole, men and women differ only slightly in their perceptions of the ideal number of children. The data are divided into three regions because of the significant differences in the three environments.

Tegucigalpa and San Pedro Sula are the two main urban areas of Honduras. Tegucigalpa is the capital and San Pedro Sula is the center for commerce. These two cities are significantly different than any other urban area in Honduras in both size and population. The other urban areas are much smaller and more closely tied with the rural areas of the country providing an intermediary category between Tegucigalpa/San Pedro Sula and the rural regions.

Table 5-2 Planned/Not Planned Status of Last Birth by Sex (in percentages)

Planned %		Not Planned		
		Desired % (Overall %)	Not Desired %	DK/NR %
Men	82.5	10.4 (92.9)	6.8	.2
Women	64.1	23.1 (87.2)	12.3	.5
Odds Ratio, Planned vs. Not Planned: 2.64 (2.25, 3.10)				
Odds Ratio, Desired vs. Not Desired: 1.92 (1.52, 2.44)				
Source: (Monteith et al. 1997a, p. 97)				

The similarity between the answers of men and women breaks down in table 5-2. Although table 5-1 would suggest non-significant differences between Honduran men and women in their desires for children, further exploration reveals some important differences. Table 5-2 shows a large difference between men and women in their perceptions of their most recent birth. Respondents were asked if their most recent birth (during the past five years) was planned. If the answer was “no”, the respondent was asked if the birth was desired or not desired (Monteith et al. 1998, p. 97). Men are 2.6 times as likely as women to say that their last birth was planned. In the column labeled “Desired”, the percentage in the parentheses indicates the combination of the percentage who planned their last birth and the percentage who did not plan their last birth but thought of it as desirable anyway. Men were 1.9 times as likely as women to say that the last birth was desired. These odds ratios are significant at the 95% confidence level.

These two tables seemingly contradict each other. In table 5-1, aggregate numbers show that, as Mason and Taj found, differences between sexes are, on the average, small. Table 5-2 shows cultural differences between men and women regarding specific births. These differences do not show up in aggregate data on the ideal number of children.

### **Analysis of *Dios Me Mande***

Because these tables only partially addressed the questions I had about the potential for cultural and gendered differences in the desirability of children in Honduras, I decided to conduct additional analyses of the raw data. I received SAS data sets of the raw data used to produce the demographic reports, as well as SAS programs to analyze this data, from the reproductive health division of the Centers for Disease Control. The SAS code that accompanied the data created new variables from combinations of individual questions and recoded the response categories for certain variables.

One interesting thing I noticed from looking at these programs was that not all of the responses to the ideal number of children question were being described in the final report. In the question that asks the ideal number of children desired by a respondent, one of the possible responses is *Dios me mande* or “However many God sends.” The SAS code that analyses the ideal number of children question effectively treated the answer, *Dios me mande* as “Don’t know.” On the one hand, this answer truly is a “Don’t know” response because the respondent is indicating an unknown quantity. However, this answer indicates something qualitatively different than “Don’t know” with implications for a theory of fertility decline. The final reports summarizing the findings from these surveys reported the numerical responses alone and ignored both the *Dios me mande* and “Don’t know” responses as missing values. Because I was looking for an explanation for why this question did not conform with other questions, I thought that the “Dios me mande” responses might provide a key to better understanding the aggregate responses to the ideal number of children question.

Although I was familiar with the common practice in survey analyses whereby non-numerical responses were re-coded as missing values, I asked the Centers for

Disease Control demographer who provided me the data, Paul Stupp, why these responses were recoded as “Don’t know.” His response was that there were so few of these answers that they were not important enough to analyze by themselves (personal communication, March 20, 2001). This made sense to me in relation to the goals of these studies: to describe the health characteristics of men and women in Honduras. Because my goals were very different (testing hypotheses derived from theory) I recoded this variable and re-analyzed the ideal number of children question including the *Dios me mande* responses.

The inclusion of the *Dios me mande* responses made it necessary for me to analyze the data with categorical statistical techniques. This is because the response *Dios me mande* is a nominal level response rather than interval level. The numeric responses to the ideal number of children question, on the other hand, are interval level. In order to analyze the interval level data in conjunction with the nominal level data, I had to collapse the interval level data into nominal categories.

The rule of thumb in statistical analysis is to always use a higher level of measurement when possible because higher levels of measurement contain more information (Bernard 2002, p. 42-47). Interval level data are higher than nominal level data. Therefore, my choice to collapse the interval level data into nominal categories might seem to be a violation of this rule of thumb. However, because nominal level data cannot be converted into interval level, the nominal level data would have to be thrown out in order to analyze the data on an interval level. This is exactly what the original analysts of the data did. In general, it is better to use interval level data when possible, but it is worse if doing so requires that some of the data be ignored.

### Re-analysis of National Data

Table 5-3 compares the percentages of people who gave a numerical response to the question about the ideal number of children to the percentage of those saying “Dios Me Mande.” The table breaks down these percentages for each of the regions of Honduras. Although the percentages are small in each region, people living in rural areas are more likely to say *Dios me mande*, indicating potential significance for this response in understanding fertility behavior in Honduras.

Instead of using *Dios me mande* as an expression of an unknown, I treated it as an indication of preference for a high level of fertility. That is, respondents are saying that they are not going to do anything to prevent a birth and are leaving it up to God. In table 5-4, I have assigned cases up to 4 children as “low desired fertility.” All other cases, either 5 or more or *Dios me mande*—are assigned to “high desired fertility.” (I chose the cutoff level of five because it was higher than the TFR for the entire country.) This table presents a compliment to Table 5-1, which showed a slight trend in the greater demand for children among more rural respondents. Table 5-4 is similar to Table 5-1 in that there is a substantial difference between rural and urban when indicating a preference for a high level of fertility.

Table 5-3 Has Ideal Number vs. “Dios Me Mande”

Location	Numerical Response	DMM	Total
Tegucigalpa/SPS	2410 (99%)	29(1%)	2439
Other Urban	2459 (98%)	57 (2%)	2516
Rural	4458 (92%)	402 (8%)	4860

Table 5-4 Dichotomized Ideal Number of Children. (High  $\geq$  5 or “Dios me mande”)

Location	Low	High	Total
Tegucigalpa/SPS	2259 (94%)	151(6%)	2410
Other Urban	2257 (92%)	202 (8%)	2459
Rural	3669 (82%)	1793 (18%)	4462

Tables 5-5 and 5-6 present the results of an analysis of reproductive preferences for women and men, controlling for region of residence. Table 5-5 details the distribution of answers to the ideal number of children question dichotomized as either a numerical response or a *Dios me mande* response. The table shows the raw number of answers for each response type, as well as the overall percentage, for men and women living in the three regions of Honduras.

Table 5-5 Has Ideal Number vs. “Dios Me Mande” by Sex and Location

		Has Number	DMM	Odds Ratio (95% CI)
Tegucigalpa/ SPS	Men	834 (98%)	15 (2%)	2.02 (.97, 4.21)
	Women	1576 (99%)	14 (1%)	
Other Urban	Men	768 (98%)	12 (2%)	.59 (.31, 1.12)
	Women	1691 (97%)	45 (3%)	
Rural	Men	1106 (95%)	59 (5%)	.52 (.39, .69)
	Women	3356 (91%)	343 (9%)	

Table 5-5 also shows odds ratios comparing the likelihood of men saying *Dios me mande* compared with women for each region. Table 5-5 also shows 95% confidence intervals for the odds ratios. For Tegucigalpa/San Pedro Sula, men are 2.02 times as likely to say *Dios me mande* than women. The confidence interval for this comparison includes 1, which means that it is not significant at the 95% confidence level. However, the interval is mostly above 1 and only dips slightly below 1 while it ranges up to 4.21.

Therefore, the odds ratio is probably significant at a confidence interval of slightly less than 95%. It is reasonable to conclude that men who live in Tegucigalpa/San Pedro Sula are more likely to say *Dios me mande* than the women who also live in these two cities. For the other urban areas, men are only 59% as likely to say *Dios me mande* as women. However, the confidence interval ranges well above 1 leading to the conclusion that there is no justification for claiming significant differences between men and women's responses in these areas. In the rural areas, men are 52 % as likely to say *Dios me mande* as rural women. The 95% confidence interval resides well below 1 giving justification to the claim that rural women are significantly more likely to say *Dios me mande* than rural men.

Table 5-6 Dichotomized Ideal Number of Children by Sex and Location

		Low	High	Odds Ratio (95% CI)
Tegucigalpa/ SPS	Men	771 (91%)	78 (9%)	1.47 (1.09, 2.01)
	Women	1488 (94%)	102 (6%)	
Other Urban	Men	701 (90%)	79 (10%)	.97 (.74, 1.29)
	Women	1556 (90%)	180 (10%)	
Rural	Men	944 (81%)	221 (19%)	.66 (.56, .77)
	Women	2725 (74%)	974 (26%)	

Table 5-6 represents a different dichotomization of the ideal number of children question. In Table 5-6, the answers to this question are divided into two categories: those who said that the ideal number of children is 4 or less and those who either said that the ideal number of children was 5 or more or *Dios me mande*, as in table 5-4. Table 5-6 divides the data into the frequency of responses for men and women living in the three areas of Honduras. Table 5-6 also gives the same type of odds ratio analyses that were presented in Table 5-5.

Although saying *Dios me mande* is not the same as the survey respondents indicating that they prefer a high number of children, I have included these responses together for analytic purposes. Those deciding to have as many children as God sends would typically shun the use of modern contraceptives because they believe that there are religious sanctions against curtailing the reproduction that would follow naturally from sexual intercourse. Therefore, for the purpose of this analysis, people who have attitudes favoring a high number of children are functionally the same as people who favor having all the children that God sends.

The results of the odds ratio analyses in Table 5-6 are also very similar to Table 5-5. Men living in the two major urban areas of Tegucigalpa and San Pedro Sula were 1.47 times as likely to say that they wanted a high number of children. This statistic is significant at the 95% confidence level. The percentages of men and women who live in other urban areas of Honduras are close to being exactly the same and show no significant differences. On the other hand, rural men are only 65% as likely as rural women to report that they desire a high number of children. The confidence interval for rural women and men is also well below 1, indicating a highly significant finding.

The most striking feature of Tables 5-5 and 5-6 is the flip-flop of percentages from men to women in the rural and major urban areas. Women are more likely to respond with higher numbers of children and they are more likely to say *Dios me mande* in the rural areas than men. However, in Tegucigalpa and San Pedro Sula, men are more likely to fall into these two categories. The urban areas besides Tegucigalpa and San Pedro Sula appropriately show no significant differences between the answers given by men and women.

## **Discussion**

In this chapter, I described the problems I have seen in the traditional demographic analyses of fertility decline. The biggest problem that I have noticed is the excessively inductive approach to investigating the causes of fertility decline. From this approach, many other problems with measurement and theoretical implications develop. I have demonstrated how a more theory driven approach, including a greater attention to culture, gender, units of analysis, and levels of measurement, can produce much different conclusions than approaches that neglect theory. I found that there is evidence of cultural differences between men and women in Honduras regarding the desirability of childbearing. I also found that these differences are related to rural or urban residence.

In the next chapters, I build on these findings by demonstrating my approach to measuring the culture of natality in Central Honduras. In Chapter 6, I discuss my choice of operationalization and my data collection strategy. In Chapter 7, I discuss the results of my analysis.

CHAPTER 6  
ADAPTATION AND ADMINISTRATION OF THE CHILDBEARING  
QUESTIONNAIRE

**Introduction: Natality Culture**

The term *pro-natal* has been used to describe cultural systems that promote childbearing (e.g. (Harris and Ross 1987, p. 11; Mason 2001, p. 308; Mason and Taj 1987, p. 619; Sangree 1997)). It is occasionally contrasted with *anti-natal* culture that discourages procreation (e.g. (Harris and Ross 1987, p. 11)). The fertility transition is often described as a process of change from a pro-natal culture to an anti-natal culture (Handwerker 1986, p. 10). However, the assertion of one, overall cultural pattern of natality (either pro- or anti-) assumes shared thought, feeling and behavior among the members of a population regarding the positive and negative aspects of reproduction. To test a theory of fertility decline that includes culture as a causal force, the existence of a shared natality culture—or cultures—must be operationalized and demonstrated.

In this chapter, I discuss the operationalization of *natality culture*. I discuss my choice to adapt the Childbearing Questionnaire (CBQ) (Miller 1995) to measure natality culture in central Honduras. The first section of this chapter is a description of the CBQ and the theoretical model of childbearing motivation that led to its development. I also discuss the results of empirical studies that have used the CBQ.

In the second section, I discuss the steps I took to adapt this questionnaire in an urban/rural field setting in central Honduras. I discuss the process of creating a culturally

appropriate translation of the original English questions into Spanish. I also discuss the steps I took to conduct an ethnographic investigation while I was adapting the scale.

In the third section, I describe the steps I took to administer the scale to a sample of Hondurans. I describe my iterative, multistage ethnographic approach in which qualitative and quantitative data were continually collected and analyzed. I also describe the selection and training of my research team, the development of two different sampling frames (quota and multi-stage stratified random), the finalization of the survey instrument and the administration of the survey. Finally, I describe the process of follow-up ethnographic interviewing which I used to clarify questions that developed during preliminary analyses of the survey data.

### **The Childbearing Questionnaire**

#### **The Childbearing Questionnaire and Evolutionary Theory**

Over the past two decades, Warren B. Miller has developed the Childbearing Questionnaire to measure the psychological traits of positive and negative childbearing motivation (Miller 1995). This questionnaire is designed to measure reproductive motivations, which are “enduring latent dispositions to behave in a particular way under certain circumstances” (Miller et al. 1999, p. 75). The theoretical framework that Miller used in the development of this questionnaire is similar to the evolutionary framework described in Chapters 2 and 3. Miller assumes that, through the process of evolution, human beings have evolved psychological structures that developed as a consequence of recurring environmental pressures on survival and reproduction (Miller et al. 1999, p. 58). Reproductive motivation is one of these evolved psychological structures.

Reproductive Motivation does not motivate an individual to have a specific number of children or have children at particular times in the individual’s lifetime. Instead,

reproductive motivation is a general bonding mechanism that is present in all higher animals, and is especially strong in primates (Miller et al. 1999, p. 58). This bonding mechanism works at both general and specific levels in the Central Nervous System. It motivates an individual to form lasting social bonds with other individuals. It also motivates bonding for specific types of relationships, including the bonding between infants and their parents, young children and non-caretaking members of their social group (siblings and other family members, playmates, neighbors, etc.), adults and other adults in sexual relationships, and adults and their children. The bonding system between parents and their children is called the nurturant system and is assumed to be the primary source of human reproductive motivation (Miller et al. 1999, p. 91).

The human parent-infant bonding system is different than in other animals. In non-human animals, the motivation to care for an infant is stimulated by direct exposure to infants. For these animals, sexual bonding leads to reproduction, which produces the required stimuli to trigger care-taking motivation in parents. For humans, the process is different. Human beings are capable of being motivated to nurture from knowledge about the process of reproduction alone. Instead of a reactive childbearing motivation, humans have a parent-infant bonding system that is both proactive and reactive (Miller et al. 1999, p. 55).

### **The Motivational Model Behind the CBQ**

The theoretical perspective that Miller used to design the CBQ does not assume a direct connection between motivational traits and behavioral outcomes. In Miller's theoretical framework, motivation is the first step in a five-step process leading to a reproductive event. Miller labels this theoretical framework the T-D-I-B psychological model. Figure 6.1 visually depicts this model. The T in the model represents the

psychological traits of the individual. Miller defines these traits as “neurally stored potential for feelings, thoughts, and action that has been acquired by a biological organism in the process of growth and development” (Miller 1994, p. 230). These traits are numerous and sometimes have conflicting influence on behavior. Miller describes two motivational traits that are associated with childbearing: positive childbearing motivation (PCM) and negative childbearing motivation (NCM) (Miller 1995, p. 476). Rather than assume a direct correspondence between genetic and motivational traits, Miller describes motivational traits as being the end product of both genes and environment (Miller et al. 2002, p. 4).

## Motivational Traits → Desires → Intentions → Behavior

Figure 6-1 T-D-I-B Psychological Model

The D and I in the model represent desires and intentions, respectively. Desires are an individual’s conscious wishes, wants, or concrete goals (Miller et al. 2002, p. 5). Regarding reproduction, there are three types of desires: a general desire to have children, a desire for a specific number of children, and a desire for the timing of childbearing. There are also desires to avoid childbearing as well as a desire to terminate a pregnancy if it has already occurred (Miller et al. 2002, p. 6). The development of desires is influenced by the interaction of all of an individual’s motivational traits, not just PCM and NCM. For example, general social-bonding or care-taking traits that are not necessarily associated with childbearing would theoretically interact with positive childbearing motivational traits and lead to higher childbearing desires. On the other hand, traits such as autonomy or orderliness have the potential to lower childbearing motivation. Intentions are similar to desires but represent a different type of conscious

state. While motivation is what one would like to do, intentions represent what one plans to do. Intentions can be thought of as desires constrained by reality (Miller et al. 2002, p. 7). Desires must be converted into intentions before an individual behaves.

Regarding childbearing, one force for shaping desires into intentions is the perception of the childbearing desires of one's partner. Figure 6-2 depicts this interaction by splitting the model into two halves, one for each partner. The childbearing desire of each partner interacts with the other partner's childbearing intentions through the perception of these desires. Figure 6-2 is also a combined male-female model because reproductive behavior involves the behavior of two people. The B in the model represents this reproductive behavior. The model could include a final step, making it a T-D-I-B-E model with the E representing a resulting reproductive event (pregnancies or births). Reproductive behaviors fall into two categories: 1. contraceptive (where the goal is to prevent conception) and 2. proceptive (where the goal is to achieve conception). These behaviors can be further divided into progestational (supporting and nourishing the fetus) or contragestational (preventing the continuation of the pregnancy) (Miller et al. 2002, p. 8) Because human beings have a long history of fertility regulation in situations where effective and safe methods of birth control and abortion have not existed, I extend these behaviors to pro-nurturing behaviors (care for infants) and anti-nurturing behaviors (direct infanticide or indirect infanticide through neglect) (Harris and Ross 1987).

Miller developed the CBQ to measure the independent effect of childbearing motivation in the T-D-I-B-E sequence. Because childbearing motivation consists of both positive and negative motivation, the CBQ contains two subscales: the Positive Childbearing Motivation Scale (PCM) and the Negative Childbearing Motivation Scale

(NCM). These scales are designed to measure the respondents' explicit self-rating of the desirability of a comprehensive list of positive and negative childbearing experiences. In previous studies, the scales were found to be both valid and reliable (Miller 1995, p. 479)

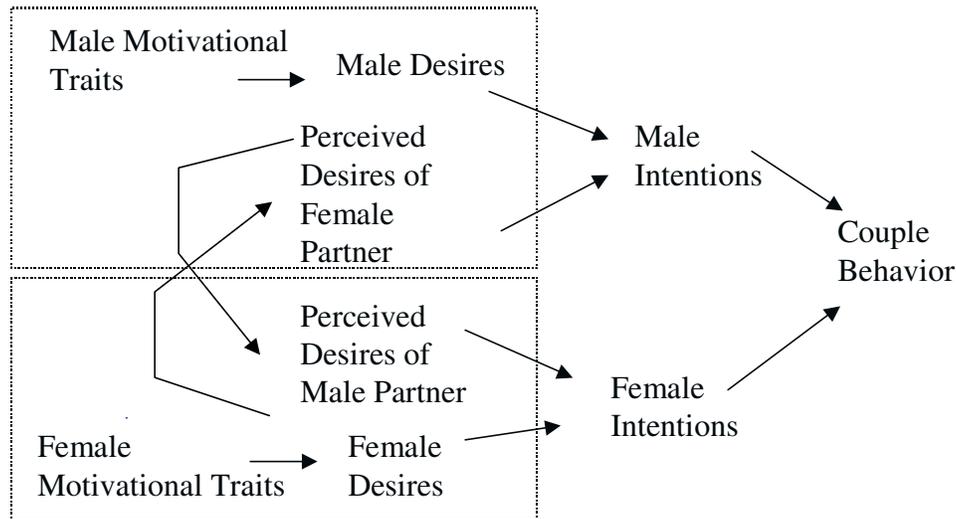


Figure 6-2 T-D-I-B Psychological Model with Partner Interaction (Source: Miller et al. 2002).

Miller also developed several sub-scales for the PCM and NCM. Miller developed these sub-scales using a mixture of statistical (factor and cluster analyses) and qualitative analyses to group together individual items by relevant themes (Miller 1995, p. 476). I have listed the entire set of CBQ items, including groupings by sub-scale, in Appendix A.

### **The Potential Cross-Cultural Application of the CBQ**

Although the CBQ was originally developed and tested on a very homogenous population (European-Americans, 20-40 year old, middle class men and women with either one or no children living in Silicon Valley California) the intent behind the scale was to develop a measurement of a human universal motivation for childbearing (Miller et al. 2002, p. 13). Miller acknowledges that the wording of the questions may have to be adjusted to use the scale in other cultural settings. He also acknowledges that additional

scale items may be necessary to account for different childbearing factors in other populations. However, Miller maintains that there is justification for assuming that the two dimensions of positive and negative motivations towards childbearing will exist in some form across cultures (Miller 1995, p. 483).

This assumption is only now being tested in settings that are culturally divergent from Miller's original sample. In this chapter, I detail my adaptation and use of this scale to measure childbearing motivation in central Honduras. In addition to the Honduran sample, the CBQ also has been used on a sample of Iranian men and women (Miller et al. 2002). The extreme homogeneity of the original longitudinal sample was a strategic choice by Miller to allow for the testing and development of the model without a cultural diversity confound. Although this choice is reasonable, so far the cultural homogeneity of populations sampled in tests of the CBQ have been assumed rather than empirically demonstrated. The analysis that I will report in Chapter 7 represents the first empirical test of the construct validity of a culture of childbearing motivation for a particular population.

### **Empirical Evidence Supporting the T-D-I-B-E Model**

Empirical tests on the original sample validate many aspects of the T-D-I-B-E model. The best predictor of reproductive behavior was intentions (Miller et al. 2002, p. 8). Desires were the best predictor of intentions, but had little effect on behaviors, independent of intentions (Miller et al. 2002, pp. 7-8). The explicit self-ratings of motivation (measured by the CBQ) produced the best prediction of childbearing desires (Miller et al. 2002, p. 6). Miller and colleagues have also tested the effect of implicit motivation (which can be measured by techniques asking respondents to write

imaginative stories which are then systematically coded for analysis) and found them to be stronger predictors of contraceptive behavior (Miller et al. 2002, p. 5).

Other factors not related to childbearing motivation, such as age, family composition (e.g. number of siblings), and social network composition have been found to have a predictive effect on the various model components (Miller et al. 2002, p. 7). For example, the employment status of the respondent's mother was found to be particularly predictive of childbearing motivation. This demonstrates that, although this model and this instrument are focused on the enduring psychological antecedents of childbearing behavior, these traits continually affect behavior through environmental factors.

An important empirical finding that has ramifications for an evolutionary perspective on fertility behavior is that the two scales, PCM and NCM, were found to be orthogonal to each other (Miller 1995, p. 483). This means that positive and negative motivation were found to vary independently of each other. This demonstrates that these two scales are not mirror image measurements of one underlying variable labeled childbearing motivation. They are each independently measuring two different motivational traits. This means that there is a possibility for various combinations of positive and negative childbearing motivations. Combinations include high positive motivation coupled with low negative motivation, high positive motivation coupled with high negative motivation, low positive motivation coupled with low negative motivation, or low positive motivation coupled with high negative motivation. This offers the possibility that low fertility may not necessarily be the result of low positive childbearing

motivation. Negative childbearing motivation may be sufficiently high to suppress the effect of positive motivation on childbearing.

### **Genes and Childbearing Motivation**

Miller et al. (1999) offer a test of the hypothesis that there is a genetic influence on childbearing motivation. Miller et al. tested the connection between genes and positive and negative childbearing motivation. The genes that Miller et al. chose for this study have been linked to neurotransmitters that are associated with mammalian nurturant systems and parental behaviors (p. 81). Also, other studies have found that these neurotransmitters influence the release of several hormones associated with the regulation of mammalian reproductive behavior (p. 82). Miller et al. found that there were genes that predicted PCM, genes that predicted NCM, and genes that predicted the intensity of both (p. 89). They also found that these genes primarily predicted the motivational aspects of the model but not desires or intentions. Interestingly, they found very few sex differences in these associations (p. 90).

This evidence of a genetic connection to both positive and negative childbearing motivation is another important indicator of the non-deterministic connection between evolution and fertility rates. Although a theoretical connection between genes selected for in the EEA and a positive motivation to bear children is entirely consistent with evolutionary theory, there is no necessary connection between this motivation and specific reproductive behaviors. Life history theory asserts that evolution would have an effect on the timing and quality of childbearing just as much as the quantity of childbearing. Depending on environmental conditions, prevention or delay of childbearing is a direct way of assuring higher quality for children already born or those to be born in the future. Thus, the genetic connection to negative childbearing motivation

as well as positive childbearing motivation is entirely consistent with what would be expected under evolutionary theory.

Miller's model is also consistent with Pott's (1998) variability selection hypothesis discussed in Chapters 2 and 3. Genes influence both negative and positive childbearing motivation, which interact with each other and environmental variables to influence reproductive behaviors. Reproductive behavior variability—having more or less children and investing more or less in each child—is assured through both genetic and environmental variability. Thus, a genetic influence on reproductive behavior does not imply a genetic determination of a specific level of fertility. Negative (or positive) childbearing motivation is more likely to be expressed under certain environmental conditions.

Some critics have stated that a problem with the suggestion that there is an important genetic influence on human reproductive behavior is that human groups share roughly the same set of genes. These genes, through natural selection, would consistently promote high fertility. They argue that because human groups do not all express high fertility behavior, cultures and environments are more important in determining fertility rates (Harris and Ross 1987, p. 11). However, the theoretical model and empirical tests of Miller and colleagues contradict these assertions. For practical purposes, genetic variation among human groups may be considered irrelevant in human behavioral studies. However, within human groups, there is important variation on the individual level. Sexual reproduction is a means of maintaining genetic variability among members of a species. Considering life history theory and the extreme variability in the EEA, it is adaptively important to maintain variable genetic influence on childbearing motivation.

With this perspective, antinatal behaviors cannot be used to justify dismissal of the genetic influence on human reproductive behavior.

Theories of the genetic influence on human reproductive behavior can only be falsified through empirical testing. Miller's motivational model provides the framework through which tests of the independent effects of genes and environment on childbearing can be conducted. Miller and colleagues have produced several tests of this model in which the independent effects of genetic and environmental variables are measured.

The effect of culture on individual childbearing motivation has so far been simply assumed in order to facilitate the testing of the model. In the original tests (Miller 1995), the choice of a homogenous sample (in ethnicity, socio-economic status, age and parity) was assumed to control for culture. In a later test (Miller et al. 2002), a comparison of samples from California, Honduras and Iran were compared for possible cultural differences in childbearing motivation. The assumption of cultural homogeneity in the one test and cultural heterogeneity in the other seems reasonable but testing the assumption would produce more credible results.

In the next section, I describe the process of data collection I undertook in order to empirically demonstrate the existence or non-existence of homogeneity in natality culture on a sample of people from central Honduras. In Chapter 7, I describe the results of the analysis of these data.

### **Adaptation of the Childbearing Questionnaire in Central Honduras**

#### **Research Location**

The area I chose to conduct fieldwork on natality culture was the city of Catacamas in the *departamento* of Olancho, Honduras. I lived in the city for eleven months beginning in July, 2000 while I was collecting data. I interviewed people who lived in

the city and in the surrounding rural areas. I chose this area for several reasons. First, I wanted to understand the cultural differences in natality that were suggested by the findings I discussed in Chapter 5. The findings suggest a cultural difference in gender relations and attitudes about fertility for people living in rural areas compared with people in urban areas. Catacamas is a good place to study this issue because it is an urban center of a mainly rural, agricultural region. It offered convenient interviewing access to both urban and rural people.

Another reason I chose this field site was because I had lived in the area while conducting fieldwork on another project in July of 1998 and was familiar with local gender and fertility conditions. In this previous research, I conducted surveys with people about their reproductive histories and I was struck by the variety of family compositions. I was particularly struck by the differences between those living in the urban area and those living in the adjacent rural areas. While many urban families were composed of two or three children, the rural families were typically composed of six, seven, eight, or more children.

This previous research also put me in contact with many local health workers, including medical doctors, and health organizations working in various capacities throughout the city. Many of these health organizations were working on reproductive health projects and were enthusiastic about facilitating my research. These organizations typically serviced both the city population as well as the populations living in the surrounding rural areas. These contacts made the prospects for completing a rural-urban comparison on reproductive issues plausible.

From this field visit, I also realized that Catacamas was an interesting place to explore issues relating to gender. Catacamas is located within the *departamento* (which is something like a county) of Olancho. Olancho is one of the largest *departamentos* in Honduras and is one of the most rural and least densely populated. From my previous field stay, I also learned that Olancho was known throughout Honduras for its high level of *machismo*. The primary local interpretation of *machismo* was that it indicated the belief in the superiority of men over women, especially in household decision-making. In some preliminary discussions with people about fertility, I heard *machismo* blamed for unmet need for family planning. I heard that there were women who did not want to have a large number of children but they did because their husbands wanted more children. They were afraid of confronting their husbands about this because they were not supposed to question a man's authority. Also, I heard that many men were *celosos*—jealous of their wives' sexuality—and wanted them to be pregnant all the time so that they would not have sex with other men. However, although I was told that *machismo* was common, I also heard many people, including men, condemn it as a social evil. This made Catacamas seem like a fruitful location to study fertility and its relation to shifting notions of masculinity and femininity.

### **Instrument Translation**

The first step I took in the translation process was to have the instrument translated into Spanish by a native Spanish-speaker before I went into the field. In order to have more confidence that the choices made by the translator captured the original intent of the English, I had another native Spanish-speaker translate the Spanish instrument back into English. This allowed me to see if there were any significant shifts in meaning occurring during the translation process (Brislin 1986; Weller 1998). I discussed the items that

changed meaning with the translators and we came to an agreement about what word choices would be the best.

The next step was to consult with more bilingual, native Spanish-speakers living in Catacamas. I asked two medical doctors familiar with conducting surveys to read the questionnaire and offer suggestions about wording changes. I explained the objectives of my research to them, which helped improve their suggestions. Both doctors had lived in the area for around ten years but grew up in Western Honduras. This gave them an interesting perspective on the people in the area. They are both Honduran, but because they grew up elsewhere they had an outsider's perspective on the local population. They gave me many practical suggestions on wording changes as well as tips on conducting surveys in the area. We also had many long conversations on the behavior and attitudes of the people in Catacamas.

### **Ethnography and Scale Adaptation: Instrument Pre-Test**

#### **Determining cultural validity of scale items**

Once I had a working translation of the survey, I tested it on 57 people. Because I knew that many people in the area (urban and rural) were not literate, I conducted each interview verbally. Although I had many bilingual people contribute to the choices in wording of the Spanish questionnaire, there was still the potential that people would interpret the questions differently than the original intent of the scale's author. The people who helped me translate the survey were all well educated and familiar with survey questions. Many of the people I planned on interviewing were not as educated and did not have as much experience with surveys as the translators. Therefore, the only way to make sure that the questions were making sense was to administer the questionnaire on a test sample and probe for potential misunderstandings.

Besides finalizing the wording of the questionnaire, I also used the practice interviews as a means of collecting ethnographic data on natality culture. Scale adaptation and participant observation were the two methodological strategies I used while living in Catacamas from July 2000 until June 2001. Both of these strategies continually informed each other during the data collection process. While I was conducting interviews, I was living in a neighborhood of Catacamas, making friends with my neighbors, participating in their lives, interacting with their children, and watching them interact with their children. I was continually taking field notes to record my interactions in the community. At the same time, I was conducting interviews using the CBQ translation. The scale adaptation and structured interviewing helped me to understand explicit natality culture while the participant observation methods I used were helped me to understand implicit natality culture (DeWalt et al. 1998). When I learned something about one type of culture, it improved my understanding of the other type of culture.

I conducted the pre-test interviews as semi-structured ethnographic interviews. My main objective of this stage of data collection was to collect ethnographic information on natality culture. Although I was asking survey questions, my objective was not to make quantitative comparisons among respondents. I treated the people that I interviewed in the pre-test as ethnographic informants. I decided to do this as a consequence of my experience conducting structured interviews in Catacamas on other projects. I noticed that many questionnaire respondents were more than eager to add qualifications to their responses to structured questions. This is common for people who are not used to the brusque style of a structured interview. I noticed that if the survey respondents did not

realize that the goals of the interview (to record short direct answers to questions) they often attempted to engage me in a conversation about the question topics. When the objectives of data collection are to produce data that can be used to make reliable, quantitative comparisons, this extraneous conversation is a problem. However, I could not help but notice that I learned a lot about their culture through their discussion of the questions. I also learned which questions made sense, which questions did not, which questions were unnecessary and what questions were not being asked. For this stage of the project, I decided to simulate the structured questionnaire setting but encourage the extraneous information exchange so that I could make qualitative observations about the cultural models the informants were using to generate answers to the survey questions.

When I asked a question and the respondent gave me more than a straightforward answer, I recorded the additional conversation in notes underneath the question on my survey sheets. I found that I could use these notes to help me remember most of the additional conversation and write more detailed notes after the interview. Once each interview was completed, I sat for roughly thirty minutes and wrote out a narrative description of the interview. The description included the additional information I received during the interview as well as any overall impressions I had of the interview. At the end of the day, after I had completed interviewing, I typed the notes I took during the day into an electronic file. While I was typing, I took the opportunity to expand on these notes with overall impressions about how the interviewing process was proceeding.

While I interviewed, I also watched for interesting non-verbal responses to the questions. If the respondent laughed, smiled, looked surprised, looked shocked, looked angry, or paused to think, I would ask them to explain their reaction to the question. I

recorded verbal and non-verbal reactions in notes on my questionnaire sheets and used this data in my evaluation of the validity of the survey questions.

This process helped me evaluate problems with the wording of particular scale items. I was able to recognize questions that had wording problems because these were questions that the respondents often asked me to clarify. If they either seemed confused by the question or they specifically asked for more clarification, I would explain the question to them in other words. Once they recognized the concept that I was describing, they would answer the question. When this would happen, I noted the wording variation that made it more understandable. Sometimes the respondents would offer their own wording as a way of confirming my question. I would note these suggestions as potential changes to the questionnaire for future rounds of the survey.

### **Modification of the CBQ**

This qualitative data collection process helped me to think of additional scale items that should be included in the questionnaire. Originally, I had intended to conduct these test interviews in two phases. The first phase was going to be a more open semi-structured interview in which I asked the respondents to tell me all of the positive and negative aspects of having children. This is a validation strategy in which the scale items are generated from scratch (Brislin 1986; Weller 1998). If the respondents mention the items on their own without prompting, there is more reason for confidence that the questions are valid indicators of the overall concept that is being measured (such as positive and negative aspects of childbearing).

However, I used this strategy only sparingly because I found it difficult to draw out a list of items that fit the abstract categories of positive and negative childbearing motivations. In a previous study, I was successful in using a modified freelisting (Weller

and Romney 1988) technique to create lists of positive and negative aspects of childbearing (Kennedy 2002). This research was based on 26 semi-structured interviews conducted in Oaxaca City, Mexico in 1997. Each interview lasted around an hour. In the data collection process, I had difficulty drawing out a list of positive and negative aspects of childbearing from a straightforward freelist prompt. The respondents were usually inclined to say that it is natural to have children and children are expensive, but then stop. However, I found that respondents could easily list many positive and negative aspects of childbearing during the course of a conversation about children. This prompted me to engage the respondents in a conversation, record it, and then create the freelists from transcriptions of the recordings.

Because I interviewed a different population of people for the CBQ testing, I decided to see if the traditional freelisting technique would be more successful than my Mexican study. I experimented with a few different freelist prompts (“Why do people have children”, “What are some benefits to having children”, etc.), but the results were the same. Therefore, I decided to use the questionnaire items as conversation prompts and then probe the respondents for additional aspects of childbearing motivation not included in the original questionnaire. When I started asking people to rate the desirability of the positive aspects of childbearing or the undesirability of the negative aspects, they often would start describing their general feelings about childbearing. I listened for interesting anecdotes, metaphors, rationalizations, contradictions, etc. and I probed them for more information about things they thought were important for me to know.

The respondents often reacted to the scale questions by describing their feelings about concrete examples from their own lives. It seemed to be much easier for them to place their feelings about childbearing in a specific, personal context rather than to describe their feelings about hypothetical or abstract childbearing situations. When the respondents talked about their own experiences with positive and negative aspects of childbearing, I listened for items that were not on the original scale but were culturally significant and deserved to be added to the questionnaire.

Before I began testing the CBQ, I added items that came up during my Mexican interviews. The additional items that I added can be found in Appendix 1. Because these items were not on the original CBQ scale, I paid particular attention to the respondents' reaction when I read these questions to see if they seemed relevant to positive and negative childbearing motivation.

I concluded that the items in the original CBQ with the addition of the items I added from my previous study comprised a comprehensive list of positive and negative aspects of childbearing motivation. Many of the items were instantly recognizable to the respondents and it seemed obvious to me that they knew exactly what I was talking about. Sometimes they nodded their heads as they answered the question or they started to answer before I finished reading every word of the question. This was an indication that the question pinpointed an emotional connection the respondent had with that aspect of childbearing. A few items did not seem to make much of a connection to many of the respondents. I discuss individual items later in this chapter and in Chapter 7.

I did not add any additional items to the CBQ besides the items I added from my Mexican research. I did not see enough evidence that there were any significant items

missing from the CBQ supplemented by the additional items I added before interviewing began. However, there is the potential that the data collection method—using structured questions to prompt qualitative responses—could have suppressed the elicitation of additional items.

A significant change that I made to the presentation of the CBQ was a change in the scale's four point rating system. The English version of the CBQ asks respondents to rate the desirability of the positive scale items as very desirable, moderately desirable, slightly desirable, or not desirable. The negative scale items ask respondents to rate the undesirability of the scale items as very undesirable, moderately undesirable, slightly undesirable and not undesirable (Miller 1995, p. 476). After consulting with local translators, I decided to experiment with a five-point scale. The reason for this is because we could not decide which Spanish words would be the best substitutions for slightly, moderately, and very. We decided to use the words *un poco*, *mas o menos*, *mucho*, and *bastante* to represent four different levels of desirability or undesirability.

Another consideration was that the original CBQ was administered as a paper questionnaire, but I administered it orally. Many people living in Catacamas were illiterate. The five point scale allowed me to present the scale with a visual guide: I put my hand up with the palm facing them and I pointed to my thumb for “not desirable” (*no le gusta*), my index finger for the first level of desirability or undesirability (*le gusta un poco*), and so on.

However, I was soon convinced that the informants were not reliably distinguishing between *un poco* or *mas o menos* nor were they distinguishing between *mucho* or *bastante*. I would sometimes repeat the answer I was given and the respondents would

say, “Yes” and nod their heads but then say one of the other choices, as if they were the same thing. There were a few respondents who perfectly grasped the distinction between the response categories. Some of them even gave me the number of the response (0,1,2,3,4) that was written on my questionnaire sheet rather than say the words corresponding to that choice because they were more highly educated and were familiar with standardized tests and questionnaires. However, because I had no confidence that the majority of respondents understood the need for fine distinction in their answers, I decided to make the scale responses as basic as possible. I decided against using the five-point scale and reduced the original four-point scale to a three-point scale: not desirable or undesirable (*no le gusta, no le molesta*), somewhat desirable or undesirable (*le gusta mas o menos, le molesta mas o menos*), and very desirable or undesirable (*le gusta bastante, le molesta bastante*).

### **Pre-Test sample**

I chose the sample of people to pre-test the scale questions using a convenience sampling strategy. My strategy in selecting people for the pre-test was to maximize the variety of types of people I interviewed while minimizing the cost and time necessary to complete a sufficient number of test interviews. After consulting with my local contacts, I decided to interview people who were in waiting rooms at various urban and rural clinics. The clinics were run by organizations that were familiar with my project and gave me approval to approach people in their waiting rooms. They told me that the people sometimes have to wait several hours and many of them would be happy to have something to do while they waited. Each day, I went to the clinics and approached various people and asked them if they wanted to participate in my study. Most of the people that I approached said yes, but there were a few people who refused. I tried to

avoid approaching people who were obviously ill. I often interviewed people who accompanied someone else to the clinic and waited until their companion finished consulting with a doctor.

This strategy was successful in generating a good amount of qualitative and quantitative data in a short period of time. The clinics were good locations to interview a wide variety of people without having to spend an excessive amount of time and energy traveling all over the area. The population of my study was the entire Catacamas region, including the urban inhabitants as well as those living in the outlying rural *aldeas* (villages). Encountering a mixture of urban people to interview was not difficult. However, encountering a large number of rural people from various locations would have occupied a significant amount of time and energy. Some of the rural areas had good clinics, but most of them either had clinics without adequate staff and equipment or no clinics at all. Each day, a significant proportion of the patrons of the urban clinics were from the surrounding *aldeas*. Because Catacamas was the center of a large rural region that had very poor health infrastructure, the visitors to the clinics came from a variety of locations. Because I had no way of knowing if the rural visitors to the urban clinics differed from those who did not travel to the city clinics, I also conducted some interviews in two rural clinics as well.

The urban visitors came from a variety of neighborhoods. I interviewed at two different urban clinics. One was a clinic run by a local non-governmental religious organization. This clinic was not free, but it was less expensive than the clinics run by independent doctors. The doctors who worked in the clinics were well respected in the area. People who were able to afford more expensive, private clinics often visited these

clinics instead. The combination of low cost and good reputation gave the clinic a diverse clientele, which aided my goal of interviewing a wide variety of people. However, because the clinic was religiously affiliated (non-Catholic, evangelical Christian) and was not free, I had a suspicion that I might have some form of bias if I interviewed in that clinic alone. To counteract this, I also interviewed in the city's state run clinic, which was free. This public clinic also had a large waiting room, which was usually full every day and offered the same interviewing opportunity as the private clinic. I received permission from the clinic staff to interview people in their waiting room.

To maximize the variability the types of informants I spoke with, I included a short demographic questionnaire at the end of the scale questions. I asked questions that measured age, wealth, religious affiliation, marital status, parity, educational background, family composition, and employment. Each day after interviewing, I entered this data into an electronic file. I reviewed univariate and various combinations of bivariate statistics for these demographic categories daily. This helped me determine the potential biases of my sample, which I attempted to correct with subsequent interviews.

For example, mid-way through interviewing I noticed that my sample was skewed towards young women and older men. I realized that the clinics had a large amount of young women in the waiting rooms, probably because many of them were there with their young children or were waiting for gynecological exams. Most of the men who came to the clinics were older men who came to the clinic with their own health problems or accompanied family members. Not many young men came to the clinics. People told me it was seen as unmanly for a young man to see a doctor. They would not go to a clinic unless it was absolutely necessary. They also were not usually at the clinics

because they could not take time off from work. There were older women at the clinics, but I realized that I tended to avoid interviewing them if I had another type of person available to interview. After I analyzed these statistics and saw what my interviewing tendencies were, I was able to direct myself towards the categories of people that were not equally represented in my sample. I made sure that if I saw a young man or an older woman at a clinic, I would make a special effort to ask them for an interview. Using this strategy, I was limited some of the bias that would have unknowingly entered my non-random sample selection.

Because I was not trying to make quantitative comparisons among the informants in order to make generalizations about the entire population, having a representative sample was not important in this stage of my research. However, it was important to limit under-representation of important categories of people because of the possibility that they might represent a divergent viewpoint on natality culture. Making the demographic characteristics of my convenience sample explicit also helped me in my qualitative analysis of the qualitative data I collected. Although the sample was not representative, knowing the overall demographic characteristics of the sample enabled me to factor this in to my analysis of the comments made about childbearing.

The non-random nature of the pre-test data collection allowed for some important flexibility in the direction of sample selection. As I tested the scale I noticed that rural women gave interesting answers that diverged from the rest of the sample on certain key variables. Towards the end of the pre-test process, once I had enough people in the various categories that I decided were important (young men, older women) I over-sampled rural women in order to explore their answers to certain questions in more detail.

### **Scale Administration**

Data collection proceeded in six stages. The first stage involved building a research team to do interviews, help determine the sample selection process, locate interviewers, modify questionnaire instruments, transcribe interviews, and to help me with my preliminary ethnographic and survey analysis. The next stage involved training these interviewers to conduct the survey. The third stage was an administration of the questionnaire to a quota sample of respondents. The fourth stage involved re-interviewing a small sub-sample of the respondents. These re-interviews were unstructured, formal interviews and were tape recorded and transcribed. The next stage was another administration of the questionnaire on a randomly selected sample. The sixth and final stage was another round of unstructured re-interviews of survey respondents.

### **Building a Research Team**

The first step in my process of administration of the modified CBQ was to assemble a research team. During the entire pre-test, I was the only interviewer collecting data. I realized that the information I was able to collect was probably limited because I was not Honduran and was not a native Spanish speaker. The ethnographer's status as an outsider is often to her or his advantage because nothing in the new culture is taken for granted and informants are more willing to explain mundane aspects of their lives with an outsider (Spradley 1979, p. 50-51). However, there are many practical aspects of field research and scale adaptation that require insider expertise. Although my Spanish was competent enough for me to converse with people about the questionnaire, changes in the wording of the scale items usually required the expertise of native-Spanish speakers who were familiar with locally used expressions. Also, there were many

practical aspects of interviewing that required assistance from someone who lived in the local area. Determining such things as the locations and the best times to locate people for interviewing, and the sensitivity of my questions required local knowledge that I did not have. I also wanted to match interviewers and interviewees by sex to minimize the bias that might result with a man asking a woman (or a woman asking a man) questions about reproductive issues.

Following the suggestions of Handwerker (Handwerker 2001, pp. 253-259), I also wanted assistants to fulfill the additional role of key informants. I was planning a multi-stage iterative data collection process that depended on analysis in the field. Subsequent stages of data collection depended on analysis of the data from the previous stage. The most efficient way to do this was to have people working on my project with me who would be available to answer questions about what I was learning in the field. I wanted to have people who knew my project well to discuss the findings that surprised or confused me. I also wanted someone to help me make decisions about data collection procedures that would build on these preliminary findings.

I hired two interviewers, a man and a woman, who were local health workers experienced in survey administration and were interested in my project. The administrators of the local clinic where I did my interviewing introduced me to my assistants after I asked them if they knew of anyone who would be interested in working on my project. I presented my project to them and had a discussion about the issues I was investigating. It was clear from my discussions that they were both very interested in the issues of fertility decline and changing gender roles. They both had both worked as

interviewers on past reproductive health surveys in the area and were very knowledgeable about survey administration.

### **Research Team Training**

Although these assistants were experienced interviewers, we had an extensive period of training before beginning the survey administration. The training period was important for them to understand my goals and expectations. It also helped me get to know them personally and to develop a friendly teamwork relationship. This relationship was important because I wanted to learn as much from them as I was learning from my other informants. The best way to learn from them was to have ongoing friendly conversations about the work they were doing.

The first step in the training process was to revise the questionnaire. I asked them to read the questionnaire and to identify problems with question wording. I also wanted them to look for problems that might hinder the administration of the questionnaire. They also clarified issues that came up while I was administering the pre-test questionnaire. I asked them to clarify questions that confused the respondents and questions that generated answers that I was not expecting.

The respondents seemed to interpret some of the questions differently than the original English wording. I explained to my assistants my interpretation of the questions to help them understand what the question meant to me. For example, one of the most problematic questions asks about the desirability of fulfilling one's potential by having children. The reaction I received most often was an immediate "No." This often confused me because the respondents were otherwise very favorable towards other aspects of childbearing. I came to realize that they were interpreting this as a question about their desire to fulfill their potential *to* have children (having as many children as

physically possible). I tried to change this wording to reflect my understanding of the question but I was not able to find a suitable alternative. I discussed this question with my assistants. After much discussion of the potential wording options we thought of a successful wording change that reduced ambiguity.

During these discussions of wording changes, we discussed gender relations and fertility preferences in the Catacamas area. These discussions were usually very animated because the topic was obviously very interesting to all of us. These conversations were also helpful in making clear the issues behind the questionnaire and helped improve their understanding of the importance of the data collection and analysis. We had several brainstorming sessions of questionnaire analysis and project planning before they began to administer the questionnaire.

I decided to have them begin practicing administration of the questionnaire the same way I conducted the pre-tests. They went to the same clinics where I interviewed and approached people waiting in the waiting rooms. At first, I listened to them conduct their interviews. I took notes about how they presented the study, how they read the introduction and the questions, how they interacted with the respondents, and how they coded the answers. After I watched them conduct a few interviews each, we discussed problems or potential problems with their interviewing. When I was confident that they understood what I wanted from them, They found people to interview on their own. They both conducted ten practice interviews each.

After they finished with their practice interviews, we met again to discuss issues they noticed while administering the interviews. Before administering the questionnaire, there were many questions that they did not think had any wording problems. Because

they were both well educated, they had no problem understanding the questions on the questionnaire themselves and thought that the respondents would not be confused. However, after administering the questionnaire to a small number of people, they saw problems in how some people interpreted the questions. They realized that certain words were not commonly used in everyday speech by most of the people we interviewed. After discussing the problems, we decided on additional wording changes that would make the questions clearer. Once we cleared up all of the wording problems, we finalized the format of the questionnaire.

### **Random and Non-random Sampling**

Because the primary goal of my administration of the survey was to measure a cultural variable (natality culture), there were unique sampling considerations. One of the assumptions of most classic statistical procedures is that cases are independent of each other. This implies that the residuals (or errors) of statistical models are not correlated. If they are correlated, some type of confound exists, such as spatial or temporal autocorrelation, and must be controlled for in order to improve the model's predictive power. However, cultural data by definition is non-independent because culture is created through social interaction. If there is a culture for a domain in a population, measurements of individuals on this domain are going to be correlated. Therefore, understanding the correlation is the goal of ethnography and controlling for it is undesirable (Handwerker and Wozniak 1997, p. 874).

Classical statistical tests assure independence for non-cultural data through random sampling. Handwerker and Wozniak (1997) demonstrated that when using techniques specifically designed to measure cultural data (such as those I discussed in Chapter 4), random sampling produces the same results as convenience samples made up of experts

in the culture. Random samples are important in the study of culture only when estimating the prevalence of cultures in a population (Handwerker 2002, p. 99).

However, until cultural boundaries are defined and understood, random samples can be counter-productive. In an exploratory phase of cultural research, it is more important to locate and interview individuals who can best help researchers understand the characteristics of cultural boundaries.

I administered the modified CBQ questionnaire in two phases using both random and non-random sampling strategies. The goal of the first phase was to identify the culture or cultures of natality, to determine the construct validity of the concept of natality culture, and to understand the meaning of the cultural boundaries. These goals made it more important to find informants who represented different categories of people and who would be good informants. I planned to use descriptive statistics techniques to analyze the cultural data collected in this phase. In the second phase (described later in this chapter), the analysis goals included inferential techniques in order to develop generalizations of the entire population.

### **Quota Sample**

In my first step towards developing a sampling strategy, I identified life event factors that might be causing cultural diversity. My theoretical perspective (discussed in chapter 2) dictated that sex and rural or urban location were the most important variables. During my pre-test interviews and my discussions of these interviews with my assistants, I identified two other variables that might be important in producing divergent cultural views of natality: age and income. For age, I decided on an age range that matched the traditional age range of reproductive health studies: 18 to 50 years old. I broke the age range into two groups: young (18-34 years old) and old (35-50 years old).

My research assistants and I chose income as a measure of wealth because it seemed to be the only variable that would divided people consistently across urban and rural locations. I originally intended to use a lifestyle inventory that measured wealth by determining how many items or services respondents had in their homes. Items included cars, stereos, televisions, indoor plumbing, etc.). However, after lengthy discussions with my assistants and analysis of the pre-test demographic data, I came to the conclusion that there were rural people who did not have these items or services yet could be considered wealthier than urban people who had them. Many rural people who owned large amounts of cattle were very wealthy by the standards of Catacamas but did not have these items or services because they lived in undeveloped areas. On the other hand, many poor urban residents had these services because they were cheap and available. In the end, I took my assistants advice and used income as the criteria to divide the sample into levels of wealth. We used three levels of income that roughly corresponded to \$0 - \$69, \$70 - \$199, and more than \$200 per month. My assistants believed that these levels successfully divided people into the three wealth classes that existed in Catacamas.

I originally intended to measure wealth as an interval level variable by asking the respondents the exact amount they earned each month. During the pre-test interviews and during the assistants' practice interviews, the questionnaire had a question that asked for this amount directly. However, my assistants and I saw that this was a problem because many respondents seemed reluctant to give out this information. I noticed that some respondents seemed embarrassed to say how much they made if it was very little. People who made a relatively good income also seemed embarrassed when asked this

question. Respondents sometimes seem startled that they were asked about their income, hesitated before answering, glanced around the room, whispered the answer, etc.

In Catacamas, there is an obvious contrast between people who have a lot of money and people who are very poor. This inequitable distribution of wealth is probably the cause of the hesitation to answer this direct question about income. During the practice interviews, I had my assistants experiment with two questions: one direct monthly income question and a range question. They asked the range question if the respondent seemed reluctant to give an answer to the direct question. After the practice interviews, my assistants agreed that this was a better way to ask the wealth question. Therefore, we measured wealth with an ordinal-level variable.

I developed a sampling frame that divided 200 interviews into 24 categories. Each category represented a unique combination of the four variables described above. Each category had a target quota of either 8 or 9 interviews. At the start of interviewing, I gave each of my interviewers a sheet of paper that had a chart detailing the individual categories (See Appendix F). I instructed them to locate people to interview that fell into the different categories. Each day when they returned with their completed paper questionnaires, I entered the data into an electronic file and calculated how many interviews in each category had been completed and how many more were left to complete. I gave an updated chart to the interviewers (along with fresh copies of questionnaires) each morning before they began interviewing again. The chart informed them of how many more interviews they needed to complete in each category.

The interviewers needed to draw on their knowledge of the area as well as their social network connections to locate people to interview in the different categories. Both

interviewers had to complete 100 interviews each, with the male interviewer interviewing 100 men and the female interviewer interviewing 100 women. In each 100 interviews, 50 were urban and 50 were rural residents. Finding the right number of people for each of the age and income categories was more difficult than finding equal numbers of men and women or rural or urban residents. Once the interview was completed, it was not difficult to determine which age and income category the respondent belonged to because the interviewers asked the respondents demographic questions in addition to the CBQ scale questions. However, the interviewers did not always feel comfortable asking the respondents for their age or income before beginning the interview, so they had to guess what category they fit into before approaching a potential interview candidate. Most of the time they were able to find people they needed to complete the quota for each category. Both of the interviewers had great familiarity with the people in the city and the surrounding areas from their work as health providers. They were able to identify locations where they would be able to find people matching the quota criteria. They also tapped their extensive social networks in the area to complete the quotas.

Sometimes they guessed about age or income incorrectly and ended up completing excessive interviews in a few of the categories. Also, some of the categories were more difficult to complete than others, resulting in some quota categories that had too few completed interviews and others that had more than their share. Overall, 18 of the 24 categories had at least eight interviews, four had seven, and two had only six interviews. (See Appendix F for details.)

In addition to locating people with the various combinations of sex, age, income, or area of residence, I asked my assistants to interview people who might have interesting

perspectives on natality culture. I asked them to think about people they know and try to interview people who have expressed weak or strong childbearing motivations. Also, I encouraged them to locate respondents who might have an interesting perspective on gender relations in Catacamas. This non-random sampling process helped us to better define and understand the boundaries of intra- and inter-cultural diversity.

### **Combining Exploration with Questionnaire Administration**

The phase one data collection had an important qualitative component in addition to the collection of responses to the structured CBQ questionnaire. This qualitative component was important because I was still exploring natality culture during phase one. In the pre-test, I collected responses to the questionnaire, but I did not use this data to make comparisons among respondents. I used the survey questions as a framework for conducting ethnographic semi-structured interviews in order to generate qualitative data on natality culture. The pre-test phase was pure exploration of natality culture and respondents' reaction to the scale questions.

In phase one, on the other hand, I collected data to make systematic comparisons among respondents. During the pre-test, I came to some preliminary conclusions about natality culture. I saw patterns in the responses to the questions and began to generate hypotheses. For example, I hypothesized that there was one pattern of pro-natality culture with some important intra-cultural diversity. However, the exploratory data I collected did not lend themselves to the testing of hypotheses. The systematic administration of the questionnaire in phase one allowed me to go beyond pure exploration and to test the construct validity of natality culture.

However, I still wanted to have an exploratory component in my phase one data collection. There were two components to the phase one exploration of natality culture.

First, as an experiment, I decided to allow the interviewers to continue the qualitative data collection techniques I used during the pre-test. I showed them my questionnaires from the pre-test and described how I asked the scale question and recorded the unprompted verbal responses in addition to the scale responses. I encouraged the interviewers to record this explanatory discourse onto the questionnaires so that I would be able to read it and evaluate it along with the scale responses. The experiment worked well. The interviewers enjoyed being able to discuss questions with the respondents rather than simply record the scale responses. This process also involved them in the data on a much deeper level. Our conversations about the study improved and this deepened my understanding of natality culture. Each day, the interviewers would bring me their completed questionnaires and I would record the qualitative responses to the survey questions in an electronic file.

The second exploratory component was a series of re-interviews I conducted with respondents from the phase one survey. After analyzing the scale data and conducting tests of construct validity using principal components analysis (see the discussion of this method in Chapter 4 and the results of this analysis in Chapter 7), I chose respondents who were representative of cultural clusters. I also chose respondents based on their qualitative responses. It was obvious that certain respondents were more interested in the subject and more verbose. This identified them as good candidates for follow-up unstructured interviews. At the end of each questionnaire, the interviewers asked the respondents if they could contact them again. I created a sub-set of respondents who said that they would not mind being interviewed again and who seemed to be good sources of

more ethnographic data. I discussed these respondents with my assistants and they gave me their opinion of these respondents' potential as unstructured interviewees.

When we were able to locate the respondents for the follow-up interview, I conducted a tape-recorded, unstructured interview that lasted up to ninety minutes. Locating the rural respondents was sometimes very difficult because there was no way to communicate with them other than driving to where they lived, seeing if they were home and asking them to do the interview. The level of development in Catacamas was so low at the time of my study that many urban residents did not have phone service. Phone service in the rural areas was almost non-existent. Therefore, we identified many possible respondents and interviewed the ones that we were able to locate. It was easier to locate the urban residents but it was more difficult to establish a time for an interview. On many occasions, we found the interviewee's residence but we were unable to conduct an interview because they were not at home (even if we had a prior appointment). We occasionally had to return to the residence several times before we were able to complete a follow-up interview.

Before each unstructured follow-up interview, I made a brief list of questions for the respondent based on their questionnaire answers. However, I allowed the conversations to drift in unexpected directions depending on the topics that the interviewee mentioned. If they made an interesting point, I would ask them to expand on that point so that I fully understood what they were saying and did not make false assumptions.

Another experiment that was successful was my decision to include my assistants in the interviews. After asking the respondents if they would be interested in being

interviewed again, the interviewers recorded a name and address on the questionnaire sheet. However, addresses used in Catacamas and many other places in Honduras were not exact. They were usually descriptions of the location of a residence rather than a street name or house number. These descriptions usually consisted of a relation to a landmark in the village or neighborhood (e.g. the Baptist Church, the book store, the big mango tree). To find a residence using this type of address required a working knowledge of the area, so I paid the interviewers to help me find the respondents and ask them for an additional interview.

I quickly realized that having assistants with me during these interviews was an advantage. One advantage was that the respondents usually recognized the assistants from the interview and usually welcomed us into their homes immediately. More importantly, having one of my assistants present at the unstructured interview helped me to gain more knowledge from the interview than I would have gained otherwise. I was always the primary interviewer, but there were many times that the presence of another interviewer helped improve the interviewing session. The primary benefit of having an assistant with me during the interview was the improved communication. Occasionally, I did not understand something that the informant said and the assistants re-stated it. This usually created a prompt for the informants to provide more information about what they just said. Other times, my questions or comments made it clear that I did not understand something that the informant said and my assistants would pointed this out. This improved the flow of the interview.

Another benefit was that my assistants were very knowledgeable about my interviewing objectives and actively participated in the interviews. They understood the

types of issues that were important to my research and they looked for opportunities to draw out this information from the informant. Occasionally, the informant said many interesting things quickly. Having a second person thinking of questions was helpful in identifying remarks that were in need of clarification or points of view that needed expansion. Over time, I developed a good interviewing rapport with my assistants and we used our combined efforts to maximize the amount and quality of exploratory data generated from these unstructured interviews.

### **Scale Administration Phase Two: Random Sample**

I conducted phase two of my scale administration on a random sample of people in Catacamas and its surrounding rural villages. I used a random sample because the main goal of this phase was to produce explanatory rather than exploratory findings (Johnson 1998, p. 139). My analysis objectives were to use inferential statistics to produce findings that could be generalized to the entire population. A random sample is an important element in generalizability of findings because it minimizes the introduction of unknown bias into the sample selection.

The distribution of the population was very different in the urban areas compared with the rural areas. There was also significant diversity within the urban area and within the rural area. Most of the population in the Catacamas region was concentrated in the city. Most of the city population was concentrated in the center of the city. Some of the rural villages were more connected to the city of Catacamas than others. The lifestyle in these villages was more urban than other villages. In order to account for this diversity, I conducted a multistage cluster sample.

### **Urban Sampling Frame**

With the help of my assistants, I divided the neighborhoods in the city into two groups: the center neighborhoods and the peripheral neighborhoods. The center neighborhoods were very urban and had a higher population density than the rest of the city. This is where most of the shop owners, doctors, lawyers and other high-income professionals lived. This area had many city services, such as city sewage, water, electricity, phone service, and garbage collection. The peripheral neighborhoods, on the other hand, had a less dense population with low-income workers and a lack of city services. Many residences did not have electricity, phone service, city sewage service, or garbage collection and had infrequent or no city water service. Usually, the roads in these areas were not paved. In general, the neighborhoods on the periphery had more rural characteristics than the neighborhoods in the center of the city.

In all, there were 45 neighborhoods in Catacamas, 13 in the center and 32 on the periphery. One of these neighborhoods extended from the center of the city to the periphery. We decided to split this neighborhood into a central neighborhood and a peripheral neighborhood. This pushed the number of neighborhoods to 46. I selected a simple random sample of five central neighborhoods and five peripheral neighborhoods using Excel's random number generation function. From the ministry of health, I obtained census information about the city neighborhoods. Each neighborhood had a list of numbered blocks and each block had a list of numbered houses. For each selected neighborhood, I added up the number of houses and selected four simple random samples of houses. Two of these samples were for interviewing men and two were for interviewing women. There were two samples in anticipation of cases where there was not an eligible respondent (an adult man or woman) living in the residence. If there was

no eligible respondent, the interviewers selected the first residence from the secondary sample.

The number of houses I selected for these samples differed between the central and peripheral neighborhoods. All of the central neighborhoods had a large number of houses (range of 98-281). I selected five houses for each of the central neighborhood samples. For the peripheral neighborhoods, there was a big difference in the number of houses (range 14-421). In order to account for this large difference in population size, I used a disproportionate stratified random sample (Bernard 2002, p. 150-151). I originally planned on having a proportionate stratified random sample, but one of the neighborhoods I selected had seventy percent of the total number of houses in the selected neighborhoods while three of the neighborhoods had less than seven percent of the total houses. I wanted to sample at least two houses in each neighborhood. In order to do this, I had to lower the number of houses selected in the large neighborhood and select a disproportionate sample.

Once I selected the houses for the sample, finding the residences and completing the interview was straightforward. Although numeric addresses were rarely used in Catacamas, each house did have an assigned block and house number that corresponded with the ministry of health census data. The average person who lived in Catacamas had no idea which block or house number they lived in, even though the number was written somewhere on the outside of their home. These numbers were not very prominent. They were written with some form of permanent marker and were usually located on gates or over the front door to the house. My interviewers had experience using this sampling

method from previous interviewing projects. They knew where to look on the front of the house to identify the block and house number.

Once the interviewers found the selected the residence, they asked to speak with an adult (18 years old to 50 years old) man or woman who lived in the home. If there were more than one living there, they would select one at random by flipping a coin. If there was no adult man or woman, or if the adult man or woman refused, they would add a house from the second sample for that neighborhood. If there was an eligible adult living in the home but they were not home at the time, the interviewers asked for a better time to contact them and returned to complete the interview.

### **Rural Sample**

We also divided the rural regions into groups. One of my assistants worked for the Ministry of Health as an investigator of infectious outbreaks. His work often took him to the surrounding regions of Catacamas. He was very familiar with the similarities and differences of the various rural villages. We divided a map of the rural areas surrounding Catacamas into five sectors. These sectors corresponded to the regional division the ministry of health used in its investigations. These areas differed with each other based on terrain—some were in mountainous areas and some were in valleys—their level of development, and their distance from Catacamas. In order to account for the diversity represented by each of these sectors, I selected a simple random sample of two villages from each sector using Excel's random number generator function.

It was impossible to select a sample of rural respondents before going to the villages to interview. The ministry of health office in Catacamas did not have census information for the rural villages. Each village had its own sampling issues and we planned on making sampling decisions once we arrived to conduct interviews. My

assistants knew that some of the villages in the sample had their own regional government-run health clinics and probably had census information. We decided that this would be the best sampling frame to use if available. For the villages without census information, we decided to create our own ad hoc sampling frame once we arrived in the village.

Three of the five regions had health clinics with census information that provided us with a sampling frame. The clinics had a sheet of paper for each household in the village with information about the people who lived there. We selected households at random by selecting sheets at random. We first eliminated the households without adults in the 18-50 age range. Next, we shuffled the pages (which were not in any particular order to begin with) and selected a systematic random sample of the pages (Bernard 2002, p. 146-148).

We selected a sample size for each village that was proportional to the amount of people in the villages. We noticed that in two of the sectors, some of the selected villages were very small (around 20 residences). We selected additional villages in those sectors to add to the sample. For one sector, we added a third village. For the other sector, we sampled people living in each village because they were all very small. The selected villages for the other three sectors had enough people living in them to limit the sample to two villages.

For the villages that did not have census information, we developed a sampling frame on the spot with the help of a local person. We first went to the village and surveyed the streets and counted the houses in the area. We then went to the local store in the village and asked someone working there for information about the houses. We

first confirmed with them the total number of houses we counted in case we did not see all of them or some of the houses did not actually have people living there. We then asked for the names of the families who lived in each house. We wrote these names on slips of paper, rolled the paper up into little balls, put them in a hat, and then selected a sample. We determined the number of houses to select by estimating the proportional size of that village compared with the other villages in the region.

For each sector, we interviewed ten men and ten women. The same male assistant who conducted the phase one interviews located and interviewed all of the male respondents in phase two. Unfortunately, between phase one and phase two, my female assistant began working at a hospital in another city that was a forty-minute drive from Catacamas. Because she began working there a short time before the commencement of phase two, she was not able to take time off to continue working on my project. She finished work each day in the early afternoon, which allowed her enough time to continue doing the urban interviews only. The rural villages were sometimes an hour or two away and, because some of them were accessible only via a four-wheel drive vehicle, we had to leave early in the morning and work all day to meet our interviewing goals.

Because there was no way that my female assistant could meet this schedule, I hired another female assistant. I hired another health worker who also worked at the ministry of health. This assistant was someone I had worked with before on a previous project. On this project, I trained her to conduct structured interviews and knew that she was professional and a hard worker. After explaining the questionnaire to her I had her conduct five practice surveys so that she would not be surprised by the nuances of the

questionnaire. Once we discussed and resolved all of her questions, we began the rural interviews.

### **Phase Two Questionnaire Modifications**

I modified the questionnaire before phase two interviewing. I added several sections to address issues that came up in the phase-one scale analysis and the unstructured interviews. I added a section that measured the respondents' knowledge and use of family planning methods. This section was used in the two Honduran health studies that I discussed in Chapter 5 (Monteith et al. 1997; Monteith et al. 1998). I also included a section about gender roles with questions about reproductive decision-making, household division of labor, and acceptability of extramarital relations. These were issues that surfaced during the unstructured interviews. I also added a section that addressed the perceptions of female employment opportunities. I first made a list of all the types of employment given as answers on the phase-one survey. I then discussed this list with my assistants and with their help I modified the list to include a selection of job types that were typically male, a selection that were typically female, and a selection that were not necessarily male or female. The phase two interviewers presented the respondents with this list and asked them if the job types were male, female, or could be performed by or either men or women. The demographic section of the phase one questionnaire remained the same with some slight modifications. (See Appendix B, C, D, and E for the Spanish and English versions of the questionnaires for phase one and phase two.)

The CBQ questions were not modified from phase one to phase two. However, because of the added length of the questionnaire, I decided to eliminate some of the questions that seemed to be unnecessary for an analysis of natality culture. I determined

which questions were unnecessary based on my analysis of the phase one data and from the qualitative responses to these questions. The questions I removed did not contribute much to the overall variance. Also, these questions seemed to be confusing to the respondents.

## CHAPTER 7 ANALYSIS

### **The Development of the Hypothesis of One Culture of Pronatality**

After the series of ethnographic interviews in the pre-test, I hypothesized that there was an overall pattern of childbearing motivation. The pattern I expected to find consisted of high positive childbearing motivation scores and low negative childbearing motivation scores. In other words, I expected to see evidence of pronatal culture. The reason I expected this was because, as I was asking the series of positive motivation questions, many people seemed to draw on an overall childbearing-as-positive-experience cognitive model. They would say *todo* (everything) and nod their heads as I asked about each type of positive experience. They did not appear to be considering each individual question too deeply. Instead, they anticipated that their answer would be “very desirable” because they assumed that they thought every aspect of childbearing was a desirable experience.

I realized that they were not just going through the motions, however, when I asked them questions that implied that they thought having a large family was desirable (for example, “having as many children as God sends” or “being the center of a large and active family”). Many times I noticed respondents giving one positive answer after another until we asked one of these questions. At that point, they had to stop themselves from giving another *bastante* answer, think for a second, and admit that they did not want to have a large family.

I noticed the same type of answering pattern for the negative questions, only in the opposite direction. Many respondents seemed to dismiss the idea of negative aspects of childbearing. If they were asked about some mundane aggravation, such as putting up with a child's noise and disorder or taking care of them when they are sick, they would reply, "*¡Son hijos!*" (They're children!). This implied that they accepted children and the things that children did as part of life. The daily inconveniences of children were not something that they considered desirable or undesirable. There did seem to be a sub-set of NCM questions that evoked "highly undesirable" answers, but these answers only solidified my belief that there was an overall pronatal culture. The aspects of childbearing that typically received "highly undesirable" answers were what I describe as fears about child development. Questions that fell into the "Fears and Worries of parenthood" NCM subscale (see Appendix A) deal with a parent's concern that their child is not developing into a healthy, happy member of society. Even if the respondents of these questions were part of a highly pronatal culture, worries associated with the successful development of children would be understandably undesirable.

Although I noticed this overall pattern in the way people were answering CBQ questions, there were subtle differences in how each respondent answered the scale questions. Frequently, respondents answered individual questions differently than I would have expected given my assumptions about an overall pattern of pronatal culture. Because of the large number of items in the CBQ, it was impossible for me, using qualitative analysis alone, to determine if these deviations were randomly distributed or if they represented evidence against one pattern of pronatal culture. In the next section, I

discuss my analysis of the phase one CBQ data and the tests for construct validity I performed using the methods discussed in Chapter 4.

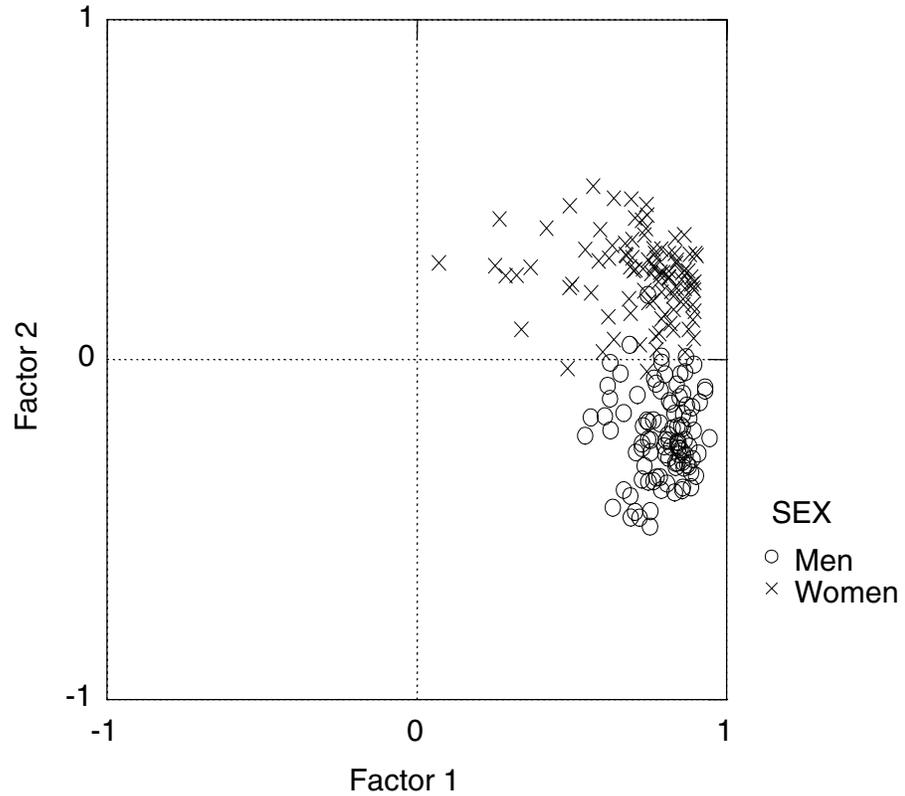


Figure 7-1 Scatter Plot of First Two Factors of PCA for all CBQ Items–Phase One

### **Construct Validity of Pronatality Culture**

I conducted a Principle Components Analysis (PCA) of the phase one CBQ data using SAS’s “proc factor” procedure with no rotation. I first transposed the data so that it was in a variable-by-informant matrix rather than an informant-by-variable matrix (Handwerker 2001, p. 190). This allows for the creation of an informant-by-informant similarity matrix (Handwerker 2002, p. 113; Romney et al. 1986, p. 322). Figure 7-1 is a scatter plot of the informants’ loadings on the first two factors of all of the phase one CBQ data. This graph is a representation of the similarities and dissimilarities among the

respondents. Each point on the graph represents an individual who responded to the questionnaire. Factor 1, the horizontal axis, represents the broadest range of commonalities among the respondents (Handwerker 2001, p. 190). Factor 2, the vertical axis, represents the second broadest range of commonalities among the respondents. The closer the points are to each other, the closer the totality of the individuals' CBQ responses are, at least with regard to the first two factors. In figure 7-1, circles are men and Xs are women.

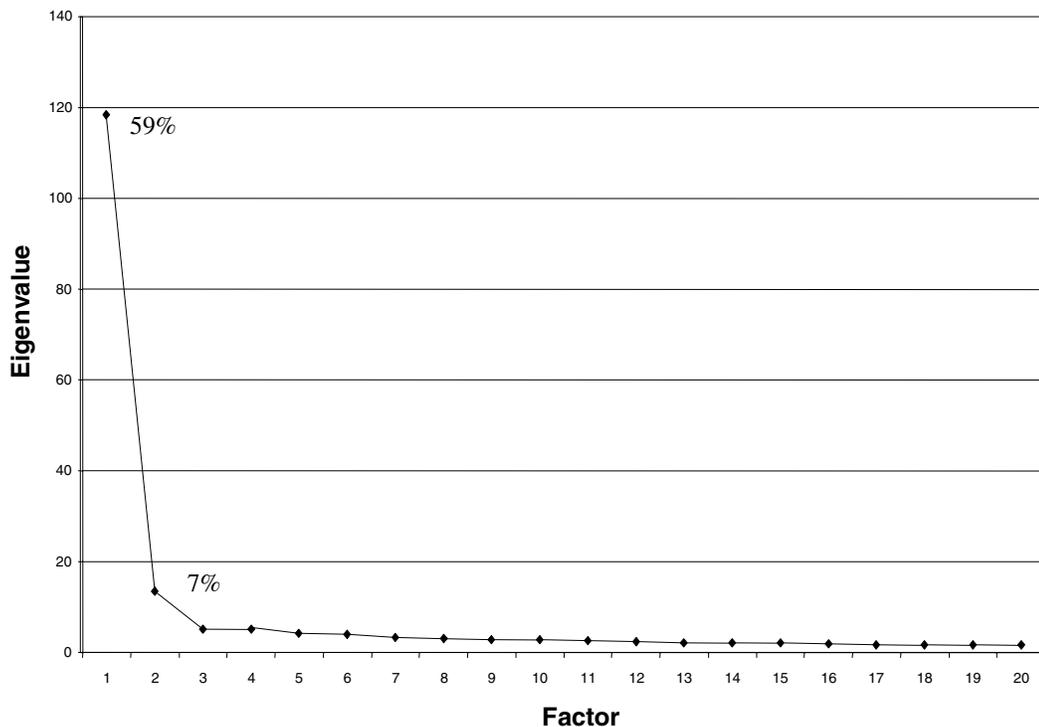


Figure 7-2 Scree Plot of PCA Eigenvalues for All CBQ Questions–Phase One

Figure 7-2 is a scree plot of the eigenvalues of all of the factors for the PCA analysis of the CBQ data for phase one. This plot shows the relative importance of the factors produced by the PCA. The evaluation of the relative importance of the first factor

compared with the remaining factors offers a test of the hypotheses that there is an overall cultural pattern behind the domain under study. If the first factor is large relative to the other factors, there is evidence of only one pattern of variance in the data, which is evidence of a culture (Romney et al. 1986, p. 323). In Figure 7-2, there is a sharp fall in eigenvalues from factor 1 to factor 2. The points on the plot representing factors 1 and 2 have percentages next to them. These percentages represent the amount of variance in the data that is explained by the factor. Factor 1 explains 59% of the data and factor 2 explains 7 % of the data. The fact that factor 1 accounts for over 50% of the variance and there are no respondents with negative values for factor 1 gives evidence that there is an overall pattern in the data. This is evidence that there is *a* culture of childbearing motivation (Handwerker 2002, p. 113; Handwerker 2001, p. 190; Romney et al. 1986, p. 323).

Table 7-1 shows the variable factor loadings produced by the PCA sorted by factor 1. Table 7-2 shows the same factor loadings sorted by factor 2. (The definitions of the variable names that are used in Tables 7-1 and 7-2 can be found in Appendix A). The PCM questions are displayed in bold. There are many variables that have high loadings on factor 2 (greater than .5 or less than -.5). This indicates that, although there is evidence of one culture of childbearing motivation, there is some important cultural diversity represented by factor 2.

The important detail to notice about Table 7-1 is that Factor 1 almost perfectly distinguishes between the positive and negative childbearing motivation questions. Most of the PCM questions are loading high on factor 1 while most of the NCM questions are loading low. Although it might seem obvious that the positive and negative childbearing

questions would tend to receive opposite responses from the same respondent, this is not necessarily the case. As I discussed in Chapter 6, Miller found that the PCM and NCM subscales were actually measuring two non-correlated traits (Miller 1995, p. 483). Thus, there is potential that the administration of this scale in another cultural setting might produce a different distribution for factor 1 loadings.

Table 7-1 Factor Loadings for PCA of All CBQ Items Sorted by Factor 1–Phase One

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
<b>EXITO</b>	1.026	0.125	<b>DEBERES</b>	0.372	0.837
<b>UTIL</b>	1.011	0.035	<b>DARLUZ</b>	0.348	-1.789
<b>AMOR</b>	0.995	0.124	<b>SEGURID</b>	-0.089	3.140
<b>DEPEND</b>	0.992	0.092	<b>VEJEZ</b>	-0.177	-0.310
<b>GUIAR</b>	0.984	0.031	<b>PEPE</b>	-0.193	2.275
<b>COMPART</b>	0.983	0.012	<b>IMPEDIDO</b>	-0.223	1.689
<b>APELLID</b>	0.964	-0.006	<b>JEFE</b>	-0.284	-1.565
<b>AYUDAV</b>	0.958	0.139	<b>DOLOR</b>	-0.345	1.303
<b>COMPLET</b>	0.954	-0.100	<b>INCAPAZ</b>	-0.392	-2.648
<b>TIEMPO</b>	0.948	0.015	<b>SUFRIR</b>	-0.467	1.261
<b>CHINEAR</b>	0.946	0.063	<b>TRABAJE</b>	-0.484	0.298
<b>FERTIL</b>	0.935	-0.036	<b>CRIANDO</b>	-0.929	2.455
<b>HEREDAR</b>	0.924	0.185	<b>DINERO</b>	-1.103	-2.133
<b>VIDA</b>	0.923	-0.198	<b>SALUD</b>	-1.156	-1.198
<b>SOCIED</b>	0.895	0.098	<b>OTRONIN</b>	-1.189	-0.745
<b>FUNCION</b>	0.886	-0.389	<b>DESAGRA</b>	-1.229	0.648
<b>ADMIA</b>	0.861	-0.332	<b>RUIDO</b>	-1.317	0.149
<b>VARON</b>	0.827	-0.485	<b>CARRERA</b>	-1.390	0.032
<b>JUGAR</b>	0.823	-0.256	<b>CASA</b>	-1.397	0.402
<b>CUSTUMB</b>	0.823	0.259	<b>DECUIDAR</b>	-1.471	0.077
<b>SATIS</b>	0.808	-0.481	<b>LIBERTAD</b>	-1.483	0.362
<b>MUJER</b>	0.771	0.022	<b>CARGA</b>	-1.489	-0.918
<b>AVERGU</b>	0.756	0.146	<b>DIOS</b>	-1.510	-0.903
<b>FELIZ</b>	0.722	0.765	<b>ECONOMIC</b>	-1.531	0.516
<b>FORTAL</b>	0.672	-0.875	<b>ENFERMO</b>	-1.623	0.228
<b>HERMAN</b>	0.645	-0.969	<b>EXIGENTE</b>	-1.642	-0.376
<b>NIETO</b>	0.607	-0.626	<b>ENERGIA</b>	-1.735	-0.335
<b>MOVER</b>	0.494	-0.110			

In this setting, figure 7-1, 7-2 and tables 7-1 and 7-2 offer evidence that there is a pronatal culture. The culture is not perfectly pronatal, however. There are many PCM items that overlap on factor 1 with NCM items. In a later section, I will analyze the factor loadings in order to describe the cultural agreement and disagreement about childbearing motivation.

Table 7-2 Factor Loadings for PCA of All CBQ Items Sorted by Factor 2–Phase One

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
SEGURID	-0.089	3.140	<b>MUJER</b>	0.771	0.022
CRIANDO	-0.929	2.455	<b>TIEMPO</b>	0.948	0.015
<b>PEPE</b>	-0.193	2.275	<b>COMPART</b>	0.983	0.012
IMPEDIDO	-0.223	1.689	<b>APELLID</b>	0.964	-0.006
DOLOR	-0.345	1.303	<b>FERTIL</b>	0.935	-0.036
SUFRIR	-0.467	1.261	<b>COMPLET</b>	0.954	-0.100
<b>DEBERES</b>	0.372	0.837	<b>MOVER</b>	0.494	-0.110
FELIZ	0.722	0.765	<b>VIDA</b>	0.923	-0.198
DESAGRA	-1.229	0.648	<b>JUGAR</b>	0.823	-0.256
ECONOMIC	-1.531	0.516	VEJEZ	-0.177	-0.310
CASA	-1.397	0.402	<b>ADMIA</b>	0.861	-0.332
LIBERTAD	-1.483	0.362	ENERGIA	-1.735	-0.335
<b>TRABAJE</b>	-0.484	0.298	EXIGENTE	-1.642	-0.376
<b>CUSTUMB</b>	0.823	0.290	<b>FUNCON</b>	0.886	-0.389
ENFERMO	-1.623	0.228	<b>SATIS</b>	0.808	-0.481
<b>HEREDAR</b>	0.924	0.185	<b>VARON</b>	0.827	-0.485
RUIDO	-1.317	0.149	<b>NIETO</b>	0.607	-0.626
AVERGU	0.756	0.146	OTRONIN	-1.189	-0.745
<b>AYUDAV</b>	0.958	0.139	<b>FORTAL</b>	0.672	-0.875
<b>EXITO</b>	1.026	0.125	DIOS	-1.510	-0.903
<b>AMOR</b>	0.995	0.124	CARGA	-1.489	-0.918
<b>SOCIED</b>	0.895	0.098	<b>HERMAN</b>	0.645	-0.969
<b>DEPEND</b>	0.992	0.092	SALUD	-1.156	-1.198
DECUIDAR	-1.471	0.077	<b>JEFE</b>	-0.284	-1.565
<b>CHINEAR</b>	0.946	0.063	<b>DARLUZ</b>	0.348	-1.789
<b>UTIL</b>	1.011	0.035	DINERO	-1.103	-2.133
CARRERA	-1.390	0.032	INCAPAZ	-0.392	-2.648
<b>GUIAR</b>	0.984	0.031			

### **Elimination of Sex-Bias in the CBQ**

As I analyzed Table 7-2 in conjunction with Figure 1, I noticed a potential problem with the results. Figure 1 shows an extreme split between the loadings of men and women on factor 2. There is almost no overlap between men and women on the vertical axis. This made me wonder if there were particular questions that were sex-biased and should be eliminated from the analysis. In Table 7-2, I noticed that there were several questions that loaded either very high or very low on factor 2 and could be considered sex-biased. For example, the variable PEPE (“How desirable is breast (bottle) feeding a baby?”) stood out during the pre-test as a question that consistently received different responses from men and women. The main problem with this question is that the male and female versions of the question are very different. Men cannot breast feed, so bottle-feeding is used as a substitute. However, the response from men when they heard this question was usually highly negative because they considered bottle-feeding a less desirable option than breast-feeding. They said that it was less healthy than breast-feeding and did not consider the idea of bottle-feeding desirable. Honduras is a very poor country and many Hondurans cannot afford to purchase baby formula in the first place. I considered this question to be sex-biased and dropped it from subsequent analyses.

There are several other questions that are similarly sex-biased. The PCM question DARLUZ (“How desirable is giving birth to a baby (Helping your wife give birth to a baby?)”) and the NCM questions SALUD (“How undesirable is having a baby who strains my (wife’s) health?”), SUFRIR (“How undesirable is experiencing (Seeing my wife experience) the discomforts of pregnancy?”), and DOLOR (“How undesirable is experiencing (Seeing my wife experience) the pain of childbirth?”) refer to physical experiences that women have and men do not. Although men can empathize with their

wives while they experience pregnancy and childbirth, they can never feel the same feelings. I eliminated these questions, along with PEPE, from further analysis.

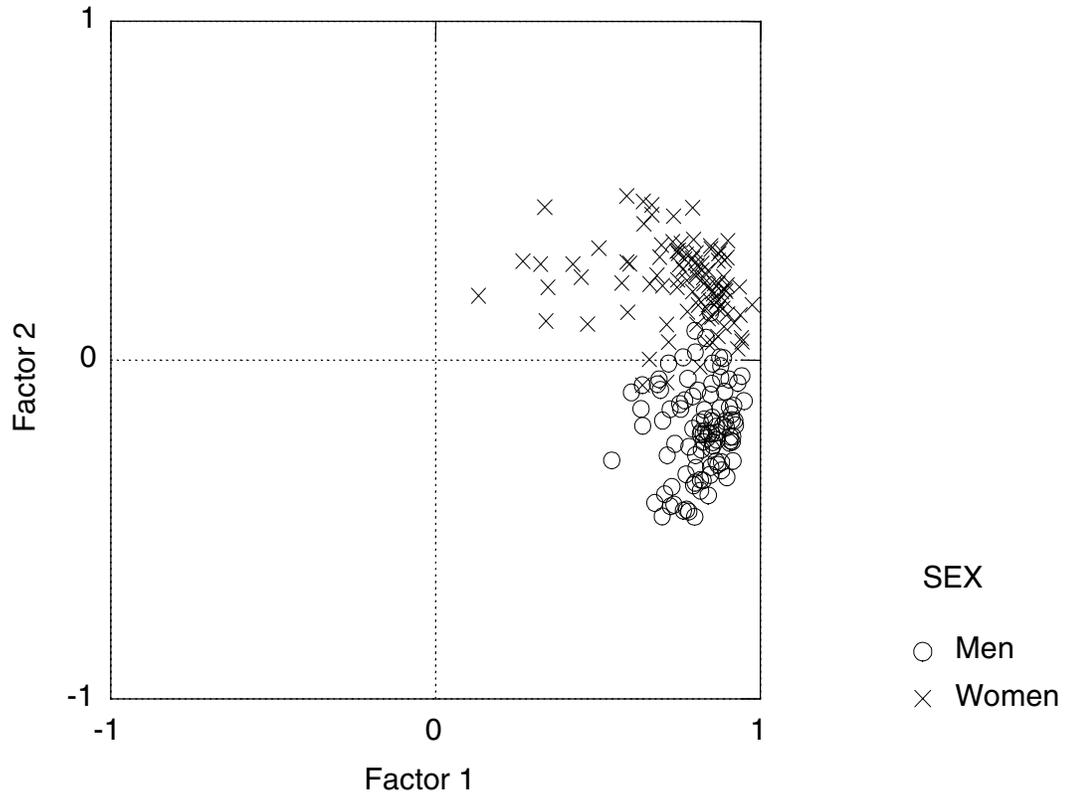


Figure 7-3 Scatter Plot of First Two Factors of PCA for all non-sex biased CBQ Items—Phase One

Figures 7-3 and 7-4 show the results of the re-analysis of the CBQ data without the sex-biased questions. Figure 7-3 is a scatter plot of the PCA factor loadings for the respondents to the CBQ without the sex-biased questions. Figure 7-4 is a scree plot of the eigenvalues of the factors from the PCA on the CBQ data without the sex-biased questions.

The results of the PCA without the sex-biased questions are not much different than the results with the entire set of CBQ questions. Figure 7-3 shows only a slightly different configuration of points than figure 7-1. The shape of the scree plot in figure 7-4

and the consistently high factor 1 loadings continue to support the hypothesis of a strong pattern of natality culture. Even without the sex-biased questions, there remains a strong split between the answers given by men and women on factor 2, giving evidence of important intra-cultural diversity. The first factor explains 64% of the variance in the answers to the CBQ questions and the second factor explains 6%. The removal of the sex-biased questions improved the strength of the cultural pattern of natality.

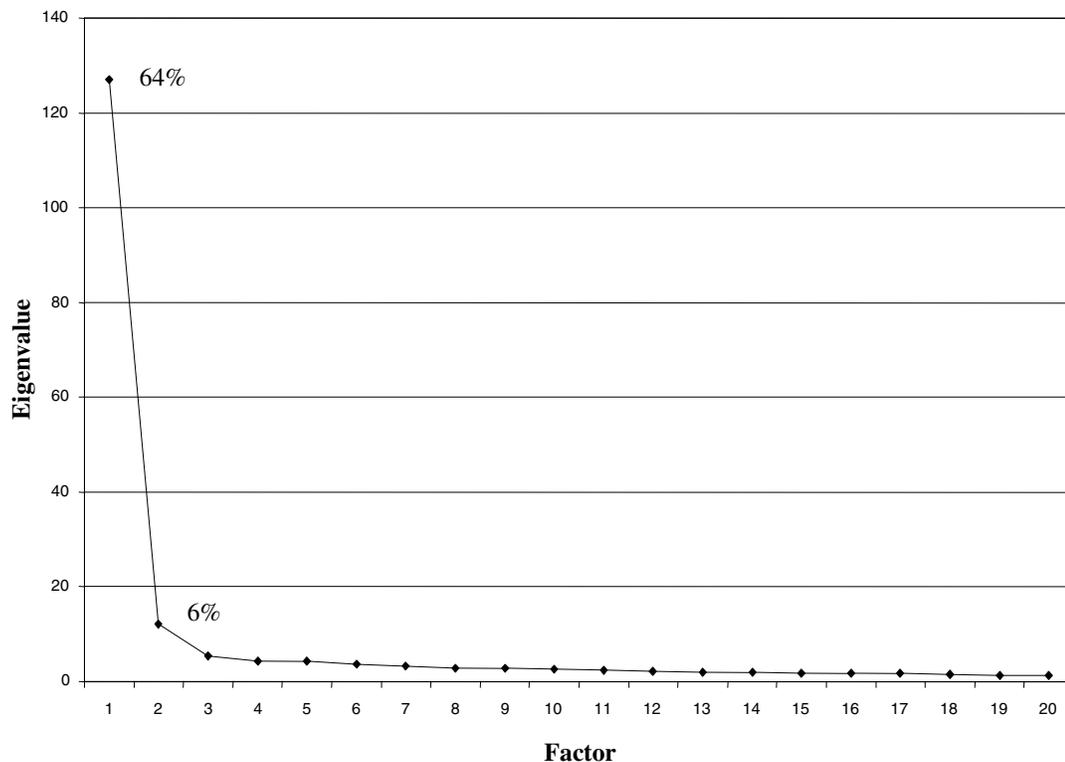


Figure 7-4 Scree Plot of PCA Eigenvalues for Non-Sex Biased CBQ Questions—Phase One

Tables 7-3 and 7-4 show the factor loadings of the variables from the PCA after removing the sex-biased questions. Once again, the majority of the PCM variables load high on factor 1 while the majority of NCM questions load low. There remains a sub-set of PCM variables that load negatively on factor 1 and a sub-set of NCM variables that

load positively. In the next section, I will analyze the agreement and disagreement the respondents show regarding the desirability of the CBQ questions in order to describe the pattern of natality culture.

Table 7-3 Factor Loadings for PCA of All Non-Sex Biased CBQ Items Sorted by Factor 1–Phase One

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
<b>EXITO</b>	0.982	0.145	<b>HERMAN</b>	0.611	-1.063
<b>UTIL</b>	0.966	0.033	<b>NIETO</b>	0.576	-0.650
<b>AMOR</b>	0.952	0.149	<b>DEBERES</b>	0.358	1.029
<b>DEPEND</b>	0.950	0.117	SEGURID	-0.079	3.429
<b>GUIAR</b>	0.940	0.048	VEJEZ	-0.171	-0.175
<b>COMPART</b>	0.940	0.052	IMPEDIDO	-0.216	2.055
<b>APELLID</b>	0.923	-0.016	<b>JEFE</b>	-0.275	-1.524
<b>AYUDAV</b>	0.917	0.151	INCAPAZ	-0.383	-2.649
<b>COMPLET</b>	0.913	-0.092	<b>TRABAJE</b>	-0.463	0.288
<b>TIEMPO</b>	0.904	0.080	CRIANDO	-0.893	2.817
<b>CHINEAR</b>	0.904	0.116	DINERO	-1.064	-2.235
<b>FERTIL</b>	0.894	-0.072	SALUD	-1.109	-1.171
<b>HEREDAR</b>	0.883	0.159	OTRONIN	-1.139	-0.671
<b>VIDA</b>	0.881	-0.198	DESAGRA	-1.183	0.787
<b>SOCIED</b>	0.855	0.104	RUIDO	-1.267	0.279
<b>FUNCION</b>	0.845	-0.401	CARRERA	-1.336	0.225
<b>ADMIA</b>	0.823	-0.317	CASA	-1.347	0.591
<b>VARON</b>	0.787	-0.472	DECUIDAR	-1.413	0.194
<b>JUGAR</b>	0.784	-0.212	LIBERTAD	-1.424	0.501
<b>CUSTUMB</b>	0.783	0.296	CARGA	-1.435	-0.858
<b>SATIS</b>	0.770	-0.544	<b>DIOS</b>	-1.454	-0.875
<b>MUJER</b>	0.738	-0.025	ECONOMIC	-1.470	0.584
AVERGU	0.723	0.175	ENFERMO	-1.559	0.322
FELIZ	0.692	0.888	EXIGENTE	-1.582	-0.251
<b>FORTAL</b>	0.641	-0.908	ENERGIA	-1.670	-0.236

### **Description of Culture via Analysis of Factors and Ethnographic Interviewing–Phase One**

In the previous section, I demonstrated the empirical evidence supporting the hypothesis of pronatal culture among the respondents to the CBQ. However, this pronatal culture is not absolute. The cultural pattern is more complex than a simple

pattern of positive childbearing aspects being rated as highly desirable and negative childbearing aspects being rated as highly undesirable. There are several positive childbearing questions that load with negative childbearing questions and vice versa. In this section, I will discuss in detail the characteristics of the pattern of pronatal culture through a combination of analysis of the factor loadings and analysis of the qualitative data I collected while conducting ethnographic interviews.

Table 7-4 Factor Loadings for PCA of All Non-Sex Biased CBQ Items Sorted by Factor 2–Phase One

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
SEGURID	-0.079	3.429	<b>GUIAR</b>	0.940	0.048
CRIANDO	-0.893	2.817	<b>UTIL</b>	0.966	0.033
IMPEDIDO	-0.216	2.055	<b>APELLID</b>	0.923	-0.016
<b>DEBERES</b>	0.358	1.029	<b>MUJER</b>	0.738	-0.025
FELIZ	0.692	0.888	<b>FERTIL</b>	0.894	-0.072
DESAGRA	-1.183	0.787	<b>COMPLET</b>	0.913	-0.092
CASA	-1.347	0.591	VEJEZ	-0.171	-0.175
ECONOMIC	-1.470	0.584	<b>VIDA</b>	0.881	-0.198
LIBERTAD	-1.424	0.501	<b>JUGAR</b>	0.784	-0.212
ENFERMO	-1.559	0.322	ENERGIA	-1.670	-0.236
<b>CUSTUMB</b>	0.783	0.296	EXIGENTE	-1.582	-0.251
<b>TRABAJE</b>	-0.463	0.288	<b>ADMIA</b>	0.823	-0.317
RUIDO	-1.267	0.279	<b>FUNCION</b>	0.845	-0.401
CARRERA	-1.336	0.225	<b>VARON</b>	0.787	-0.472
DECUIDAR	-1.413	0.194	<b>SATIS</b>	0.770	-0.544
AVERGU	0.723	0.175	<b>NIETO</b>	0.576	-0.650
<b>HEREDAR</b>	0.883	0.159	OTRONIN	-1.139	-0.671
<b>AYUDAV</b>	0.917	0.151	CARGA	-1.435	-0.858
<b>AMOR</b>	0.952	0.149	<b>DIOS</b>	-1.454	-0.875
<b>EXITO</b>	0.982	0.145	<b>FORTAL</b>	0.641	-0.908
<b>DEPEND</b>	0.950	0.117	<b>HERMAN</b>	0.611	-1.063
<b>CHINEAR</b>	0.904	0.116	SALUD	-1.109	-1.171
<b>SOCIED</b>	0.855	0.104	<b>JEFE</b>	-0.275	-1.524
<b>TIEMPO</b>	0.904	0.080	DINERO	-1.064	-2.235
<b>COMPART</b>	0.940	0.052	INCAPAZ	-0.383	-2.649

Figure 7-5 shows the same graph as figure 7-3 with the addition of descriptions of the clusters of points. I have given the factor 1 axis the general description of “Pronatal

Culture.” Scores on factor 1 represent how well an individual respondent agrees with this overall pronatal culture. As opposed to an absolute pronatal culture, this pattern of pronatality is a qualified pronatal culture. Table 7-3 shows that two NCM variables, AVERGU (“How undesirable is having a child who embarrasses or disgraces the rest of the family?”) and FELIZ (“How undesirable is having an unhappy and poorly adjusted child?”) are negative childbearing motivations that were typically rated as very undesirable. These two variables are in contrast with other negative aspects of childbearing (e.g. ENERGIA–“How undesirable is spending time and energy involved in childcare?”) that were not considered undesirable because they were just normal aspects of childbearing. Table 7-3 also shows three PCM variables that loaded negatively on factor 1. This indicates that they were not considered desirable aspects of childbearing. These variables were JEFE (“How desirable is being the center of a large and active family?”), TRABAJE (“How desirable is having children that work for you?”), and DIOS (“How desirable is having all the children that God sends you?”).

My analysis of the semi-structured and unstructured interviews confirms that these variables, which are exceptions to absolute pronatalism, are related. Each question that does not conform to the factor pattern is in some way related to the conflict between the quantity and quality of children. As I discussed in the previous chapter, I developed the hypothesis that there was a pronatal cultural pattern from my analysis of the qualitative interview data. However, I realized that many of my informants objected to the idea of having more children than they could support. I also realized that, even though some respondents stated that they enjoyed all aspects of childbearing and nothing about raising

children bothered them, they were in fact bothered by worries associated with raising successful children.

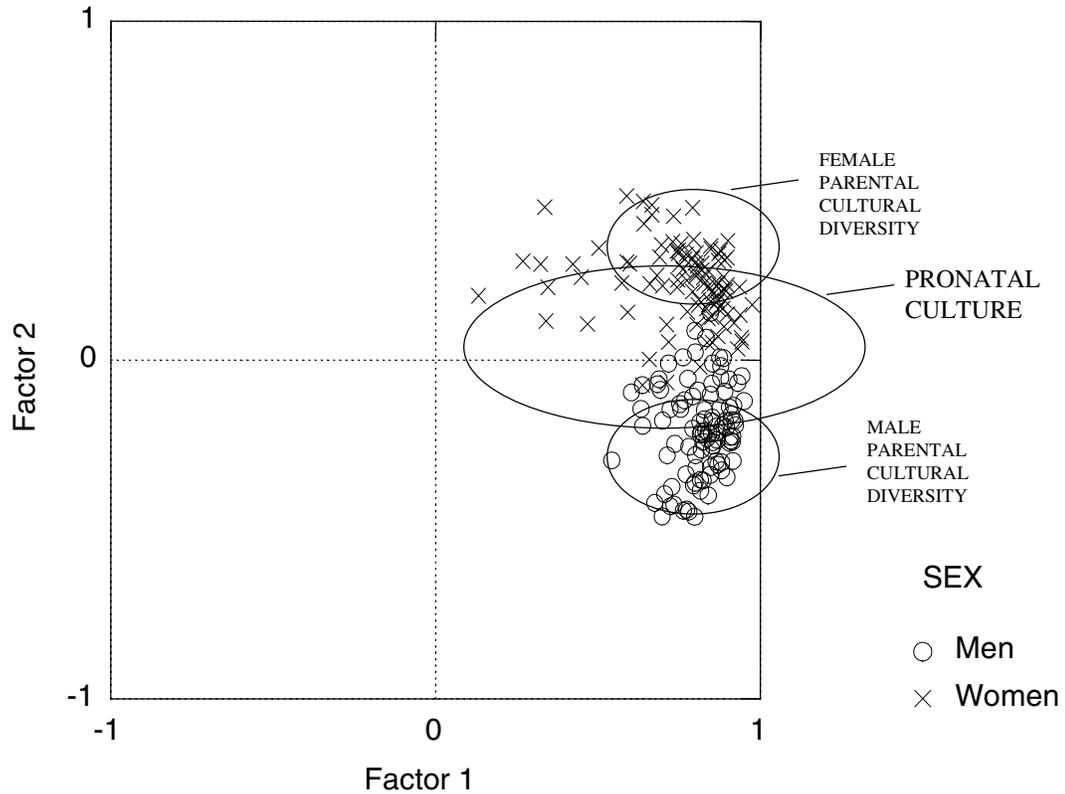


Figure 7-5 Scatter Plot of First Two Factors of PCA for all non-sex biased CBQ Items with descriptions of cultural patterns– Phase One

When I asked them questions that implied a desire for large families, many of them expressed their objections to this. They often gave me examples of people they knew or had seen who were poor yet had more children than they could support. The questions DIOS and JEFE most often invoked this type of reaction. A common reaction to DIOS was to state that, even though it is a sin to use contraception, it was a worse sin to have more children than you could support. For the question JEFE, the most common reaction was to state that they liked the idea of being the center of an active family, but they did

not want to have a large family. They did not want to have more children than they could support.

My interpretation of the reaction to the positive question TRABAJE and the negative questions FELIZ and AVERGU is that people are concerned with the ability of their children to be successful and independent adults. When hearing the question TRABAJE, many respondents replied that it was exploitation for parents to make their children work for them. They would often add that it was better if children worked for their own families. They were implying that their children's success in life was more important than the benefits they would receive from their labor.

This concern for successful children also came through in the reactions to FELIZ and AVERGU. Although many respondents expressed that the everyday negative aspects of childbearing, such as putting up with noise, disorder, disagreeable children or sacrificing their liberty or finances, did not bother them at all, worrying about their children's futures did bother them. Many respondents interpreted the question AVERGU as a question about the undesirability of having a delinquent child. Delinquency was a frequent topic of the conversations I had with people about children. Many people worried about having children who turned out to be delinquents. They often complained about what they perceived as a rise in delinquency in Catacamas. I often heard people place the blame for the rise of delinquency on parents who had more children than they could support. They suggested that children turn into delinquents when they do not receive enough attention from their parents. FELIZ elicited the same type of responses as AVERGU.

Although these reactions to the questions DIOS, JEFE, TRABAJE, FELIZ, and AVERGU were common, it was clear from the semi-structured and unstructured interviews that there were also respondents who differed from the majority. Some respondents expressed their agreement that a person should have as many children as God sends them because the Bible told them to do so. Others stated that they did want large families. Also, some respondents reacted to the TRABAJE question by agreeing that children should work for their parents when they are old enough because their parents worked for them up until that point. Some respondents reacted to the AVERGU and FELIZ questions by stating that these things did not bother them because children were going to develop however they developed and it was not something a parent could change. The parent should accept their children how they are. However, it seemed obvious from the semi-structured and unstructured interviews that these points of view were in the minority. The analysis of the factor 1 variable loadings confirmed this assumption. The dominant cultural pattern of the respondents in phase one was that of modified pronatalism.

Figure 7-5 also shows descriptions of the intra-cultural diversity represented by factor 2. The figure shows two primary clusters, one with positive factor 2 scores and one with negative factor 2 scores. The two symbols used in this graph show a clear separation between the answer sets of men and women. There is only slight overlap between the factor scores of men and women. Men tend to load negatively on factor 2 while women tend to load positively.

Table 7-4 shows the factor loadings of the PCA for the entire non-sex biased phase-one CBQ sorted by factor 2. I first produced these PCA loadings while I was in the field.

I examined the factor loadings after the phase one survey administration but before the first round of unstructured interviews. At first, I could not explain why there were such stark differences between men and women on the contrasting factor 2 variables. There were certain variables that loaded either extremely high or extremely low (higher than 2 or lower than  $-2$ ) on factor 2. Men tended to score high on such variables as INCAPAZ (“How undesirable is feeling guilty or inadequate as a parent?”) and DINERO (“How undesirable is having a child who makes it necessary for me (my wife) to have a job?”). Women tended to score very low on these variables. Women tended to score high on the variables SEGURID (“How undesirable is worrying about the health and safety of my child?”), CRIANDO (“How undesirable is worrying whether I am raising my child the right way?”), and IMPEDIDO (“How undesirable is having a baby who is born deformed?”). Men tended to score very low on these variables.

The only variable for which I immediately understood the split between men and women was DINERO. This question is actually different for men and women. Men are asked to rate the undesirability of their wives working, while women are asked to rate the undesirability of having to work themselves. My ethnographic interviews made it clear that many men considered it a male responsibility to be the financial provider for their families. Therefore, for men, if their wives worked out of necessity, this would be very undesirable because it would indicate that they were not fulfilling their responsibilities as men.

It was more difficult for me to understand why the other variables would be central to a split between men and women. INCAPAZ, SEGURID, CRIANDO, and IMPEDIDO all seemed to invoke issues that would be troubling to any parent regardless of sex or

gender system. I could not understand why so few women indicated that it was very undesirable to feel inadequate as a parent. Also, I could not understand why so few men felt that it was very undesirable to worry about the health and security of their children or worry if they were raising their children the right way. In order to understand why there was such a stark split between the sexes on these questions, I asked my informants to explain the split during the follow-up unstructured interviews.

I found that men and women answered these questions differently because of different cultural expectations and responsibilities for them as parents. Men primarily thought of their responsibilities as financial providers. Women, on the other hand, were expected to be the primary caretakers of the children on a daily basis. Therefore, for the men, “feeling guilty as a parent” was mainly tied to an inability to fulfill economic responsibilities. Given the poor economic climate of Honduras at the time of my research, many parents felt an inability to provide for their children economically. This inability apparently translates to inadequacies and guilt for men. Women, on the other hand, think of their motherly responsibilities mothers as including all of the childcare activities they fulfill on a daily basis. Therefore, they were much less likely to feel inadequate and guilty.

Women were more likely to indicate that they were bothered by worries associated with a child’s health and security, raising their child the right way and having a deformed or retarded child. I was told that women would often take the sole blame of having a deformed or retarded child because the child developed in their bodies. Also, because they bore the primary responsibility of taking care of the child on a daily basis, a child with developmental or health problems would impact their lives more than men. This is

the same for worrying about the health and security. Because mothers are usually in charge of a child's daily life, they take more of the responsibility if there are difficulties with the child's health or security. Although women are very unlikely to feel bothered by feelings of inadequacy or guilt as a parent for a child's day-to-day activities, they generally rated as very undesirable the feeling that they were not raising their child the right way. I interpret this seeming contradiction as indicating that women worried about the long term effects of their parenting (i.e. raising their children the right way) but generally felt that they were fulfilling their daily parenting responsibilities.

### **Description of Culture via Analysis of Factors and Ethnographic Interviewing– Phase Two**

Figure 7-6 shows the same scatter plot of PCA factor loadings as figure 7-3, but for the phase two respondents. The variables used in this analysis include all of the CBQ questions administered in phase two except the same sex-biased questions I discussed earlier. One difference between figure 7-6 and figure 7-3 is that figure 7-6 has four symbols, rather than two. A circle represents urban men, an "X" represents urban women, a triangle represents rural women, and a cross represents rural men.

Just as in phase one, there is visual evidence of one culture of childbearing motivation among the phase two informants. The majority of the respondents load high on factor 1 and cluster around a score of 0 for factor 2. Figure 7-7 confirms that factor 1 accounts for a large proportion of the overall variance in the respondents' answers. Factor 1 represents 58% of the variance and explains 11.6 times as much variance as the next biggest factor. This is evidence that there is one overall pattern of natality culture. There is also evidence of intra-cultural diversity in phase two, represented by the spread of points scoring low on factor 1 and high on factor 2. The most interesting thing about

this spread of points is that nearly all of the divergent points are represented by triangles, indicating that rural women were more likely to vary than men or urban women.

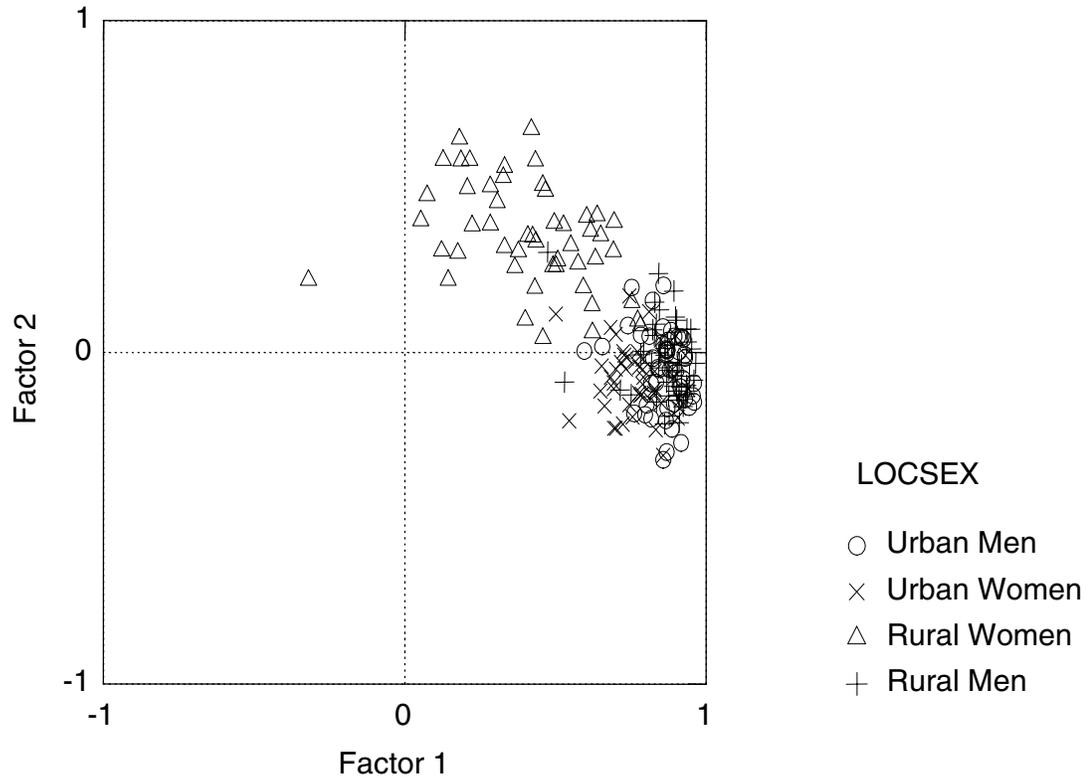


Figure 7-6 Scatter Plot of First Two Factors of PCA for all non-sex biased CBQ Items—Phase Two

### The Threat of the Introduction of Interviewer Error

At first, when I saw that the rural women were answering differently from the rest of the respondents, I wondered whether this was due to error introduced by hiring a new interviewer. As I mentioned in the previous chapter, I was unable to have the same female interviewer from phase one complete the rural interviews for phase two.

Unfortunately, it is difficult to quantitatively assess if there is error being introduced by the interviewer or if the differences in answers is due to the characteristics of the set of respondents. A t-test comparison between the new interviewer's data and the data from

other interviewers would be pointless because rural women might systematically answer questions differently because they are rural women and not because the interviewers are administering the questionnaires differently.

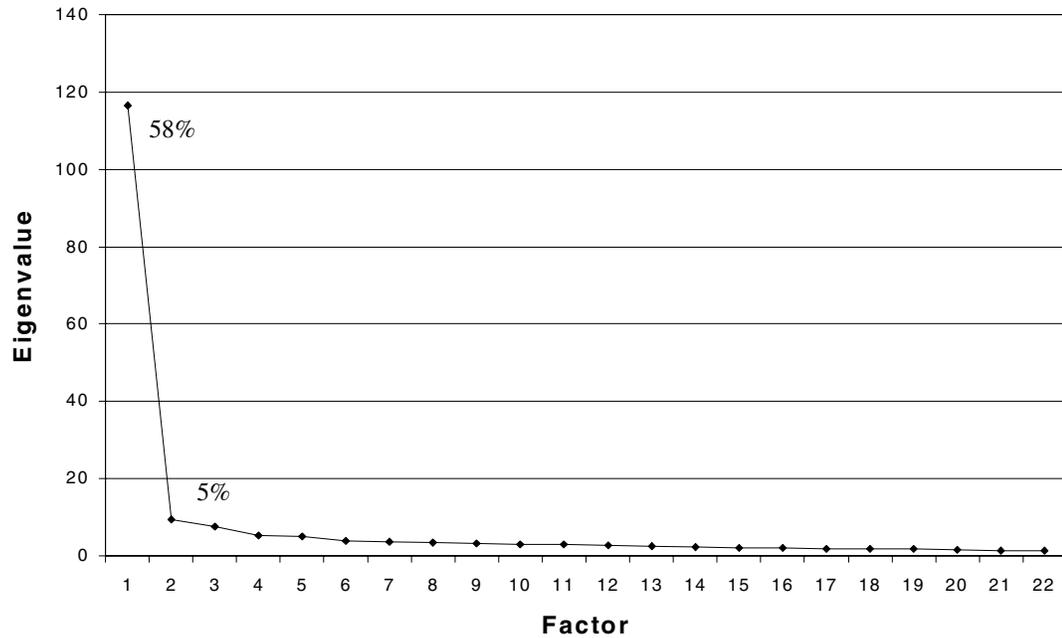


Figure 7-7 Scree Plot PCA Eigenvalues for All non-sex biased CBQ Questions–Phase Two

Other than the differences in the CBQ data, I have no reason to suspect that this interviewer administered the questionnaires in a less than competent manner. I trained and worked with her on a previous, much more strenuous, project with a much more difficult questionnaire. From my knowledge of her work, I hired her again because I felt that she had the ability to be a successful interviewer on my project. Also, our extensive validation of the questionnaire in previous phases of the project produced an instrument that was relatively free of ambiguity. Thus, anyone who had a command of the language

and could read clearly and record answers should have been able to administer the questionnaire successfully.

I concluded that there is a more likely explanation for rural women diverging from the cultural pattern in phase one. Although we interviewed rural women of various ages and economic strata in phase one, the random sampling in phase two forced us to interview people who might not have been interviewed in phase one. In phase two, we randomly selected villages outside of Catacamas that were very difficult and time consuming to reach. For example, in one region, we drove for three hours along the side of a mountain in a four-wheel drive vehicle on roads that would not support any other type of motorized transportation. Once we reached the end of the road, we hiked further up the side of the mountain for forty minutes to reach one of the villages that was randomly selected. During phase one, we sought out rural people to interview, but we did not make this type of effort to locate respondents. This leads me to conclude that a more likely explanation for the divergent answers of rural women from the overall cultural pattern is that they represent an intra-cultural sub-group. I am assuming that the sample of phase one rural women was over-represented by women who lived closer to the urban center of Catacamas.

### **Phase Two Factor Analysis**

Table 7-5 displays the PCA factor loadings for the non-sex biased CBQ variables for phase two sorted by factor 1. Table 7-6 displays the same loadings sorted by factor 2. Similarly to phase one, the phase two PCA demonstrates empirical evidence of one culture of pronatality. With only three exceptions (AVERGU, JEFE, and DIOS) the PCM variables load positively on factor 1 and the NCM variables load negatively. The continued existence of AVERGU, JEFE, and DIOS as exceptions to absolute pronatality

leads me to characterize the culture of childbearing motivation as qualified pronatality.

The phase two respondents, just as they were in phase one, are resistant to rating as highly desirable questions that imply a desire for a large number of children. Also, they resisted rating most negative aspects of childbearing as highly undesirable except the aspects having to do with worrying about a child's development and success in life.

Factor 1 for phase two is different than factor 1 for phase one, but not significantly.

Although TRABAJE loads positively on factor 1, it is the lowest positively loading PCM variable. FELIZ and SEGURID load negatively on factor 1, but they are the NCM variables that are closest to zero.

Table 7-5 Factor Loadings for PCA of All Non-Sex Biased CBQ Items Sorted by Factor 1-Phase Two

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
<b>AMOR</b>	1.060	0.266	AVERGU	0.250	1.915
<b>GUIAR</b>	1.057	0.373	FELIZ	-0.132	2.198
<b>DEPEND</b>	1.045	0.181	SEGURID	-0.319	1.326
<b>ADMIA</b>	1.037	0.268	<b>JEFE</b>	-0.453	0.926
<b>UTIL</b>	1.023	-0.135	IMPEDIDO	-0.517	1.927
<b>VARON</b>	1.014	0.142	VEJEZ	-0.631	1.703
<b>AYUDAV</b>	1.005	0.357	RUIDO	-0.690	-0.888
<b>COMPART</b>	0.994	0.251	DINERO	-0.725	-0.961
<b>SOCIED</b>	0.988	-0.057	DESAGRA	-0.812	1.039
<b>FERTIL</b>	0.986	-0.613	SALUD	-1.056	1.018
<b>TIEMPO</b>	0.955	-0.891	ECONOMIC	-1.128	0.006
<b>SATIS</b>	0.947	-0.667	CRIANDO	-1.136	-0.295
<b>VIDA</b>	0.942	0.001	<b>DIOS</b>	-1.233	-2.300
<b>CHINEAR</b>	0.942	-0.451	OTRONIN	-1.239	-0.380
<b>MUJER</b>	0.865	0.399	CARRERA	-1.300	-0.111
<b>COMPLET</b>	0.864	-0.584	LIBERTAD	-1.304	-0.540
<b>CUSTUMB</b>	0.856	-0.803	ENFERMO	-1.335	1.081
<b>JUGAR</b>	0.832	-0.508	EXIGENTE	-1.355	1.184
<b>NIETO</b>	0.830	-0.356	INCAPAZ	-1.364	-1.707
<b>FUNCION</b>	0.828	-2.131	DECUIDAR	-1.368	-0.844
<b>FORTAL</b>	0.804	-0.234	ENERGIA	-1.470	-0.502
<b>DEBERES</b>	0.621	0.115	CARGA	-1.488	-1.198
<b>TRABAJE</b>	0.309	0.481			

The loadings on factor 2 are different for phase two than they are for phase one. Phase two does not show the same definitive contrast between men and women which was obvious in phase one. The phase two factor 2 does, however, show a sharp contrast between rural women and everyone else. This change in factor loadings may seem to indicate a lack of reliability in the characterizations of cultural patterns using this method. However, it is important to note that, although the secondary factors for phase one and phase two are different, these factors only represent six and five percent of the overall variance, respectively. Subsequent factors represent less of the overall variance, but only slightly. It is reasonable to expect that there will be some shift in the overall variance explained by factors with repeated measurements. The most important finding using this method—that there is an overall cultural pattern of pronatality with some intra-cultural diversity—did not change from one sampling method to another.

The variables that load high on factor 2 (over 1.0) are all NCM variables. The highest loading variables (FELIZ, IMPEDIDO, AVERGU) are variables that imply some sort of concern for the long-term development of children. People who rated these questions as highly undesirable were concerned about developing happy and well-adjusted children, children who were not physically or mentally handicapped, and who did not develop into delinquents. The variable VEJEZ (“How undesirable is being a burden to your children in your old age?”) also loaded high on factor 2. In my unstructured and semi-structured interviews, the respondents who rated it as very undesirable said that they were afraid of being burdens on their children, but the only thing they could do to prevent this was to raise their children correctly. If they did this, their children would not think of them as burdens. I concluded from these discussions

that some people thought that it indicated a development issue. If children thought of their parents as burdens and abandoned them in their old age, they were probably not raised the right way. For those who did not rate this question as undesirable, they said that it was the duty of children to take care of their parents in their old age. They were not bothered with the idea of their children having to take care of them in their old age. They accepted it as a part of life.

Table 7-6 Factor Loadings for PCA of All Non-Sex Biased CBQ Items Sorted by Factor 2—Phase Two

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
FELIZ	-0.132	2.198	CARRERA	-1.300	-0.111
IMPEDIDO	-0.517	1.927	UTIL	1.023	-0.135
AVERGU	0.250	1.915	<b>FORTAL</b>	0.804	-0.234
VEJEZ	-0.631	1.703	CRIANDO	-1.136	-0.295
SEGURID	-0.319	1.326	<b>NIETO</b>	0.830	-0.356
EXIGENTE	-1.355	1.184	OTRONIN	-1.239	-0.380
ENFERMO	-1.335	1.081	<b>CHINEAR</b>	0.942	-0.451
DESAGRA	-0.812	1.039	ENERGIA	-1.470	-0.502
SALUD	-1.056	1.018	<b>JUGAR</b>	0.832	-0.508
<b>JEFE</b>	-0.453	0.926	LIBERTAD	-1.304	-0.540
<b>TRABAJE</b>	0.309	0.481	<b>COMPLET</b>	0.864	-0.584
<b>MUJER</b>	0.865	0.399	<b>FERTIL</b>	0.986	-0.613
<b>GUIAR</b>	1.057	0.373	<b>SATIS</b>	0.947	-0.667
<b>AYUDAV</b>	1.005	0.357	<b>CUSTUMB</b>	0.856	-0.803
<b>ADMIA</b>	1.037	0.268	DECUIDAR	-1.368	-0.844
<b>AMOR</b>	1.060	0.266	RUIDO	-0.690	-0.888
<b>COMPART</b>	0.994	0.251	<b>TIEMPO</b>	0.955	-0.891
<b>DEPEND</b>	1.045	0.181	DINERO	-0.725	-0.961
<b>VARON</b>	1.014	0.142	CARGA	-1.488	-1.198
<b>DEBERES</b>	0.621	0.115	INCAPAZ	-1.364	-1.707
ECONOMIC	-1.128	0.006	<b>FUNCION</b>	0.828	-2.131
<b>VIDA</b>	0.942	0.001	<b>DIOS</b>	-1.233	-2.300
<b>SOCIED</b>	0.988	-0.057			

Other questions that load highly on factor 2 include SEGURID, EXIGENTE

(“How undesirable is being responsible for a needy and demanding baby?”), ENFERMO

(“How undesirable is taking care of a sick child?”), DESAGRA (“How undesirable is taking care of a baby who is disagreeable and irritating?”), and SALUD (“How undesirable is having a baby who strains my (wife’s) health?”). My interpretation of this block of questions is that, in contrast with the questions discussed in the previous paragraph, they represent day-to-day difficulties associated with childcare rather than worries of long term child development. SALUD, which indicates a concern for a child’s health and security, could certainly fit into both groups.

These variables that load high on factor 2 are contrasted with two PCM questions DIOS and FUNCION (“How desirable is fulfilling my potential by having children?”) and two NCM questions CARGA (“How undesirable is having a baby who is a burden to my husband (wife)?”) and INCAPAZ. These load strongly negative on factor 2. At first, the reason these questions load together on this factor was difficult for me to see. These questions represent a mixture of types of childbearing experiences. However, when I considered that rural women scored high on this factor and low on this set of questions as a group, it became easier for me to interpret.

In general, women are expected to be the primary caretakers of children and have the most responsibility for their development in Catacamas. However, from my observations and from what I learned from my informants, this is especially true in the rural areas. Many women in the urban area of Catacamas worked outside of their homes. This was almost non-existent in the rural areas. Urban husbands are more likely to participate in childcare activities than their rural counterparts. Urban women are still considered the primary caretakers of their children, but the notion that childcare is a

shared activity between husbands and wives is much stronger in the city than the villages. In the villages, this idea is almost non-existent.

With this in mind, I can interpret this block of questions as representing a contrast to the childbearing concerns that rural women have, which are represented by the block of questions loading high on factor 2. Rural women are concerned with two categories of childcare: worrying about their future development and putting up with the day-to-day struggles of raising children. On the other hand, they are not concerned about something such as the burden a child might place on their spouse. Because rural women did most of the childcare themselves without help from their husbands, they would understandably not place too much importance on burdening their husbands with a child. Also, rural women do not feel inadequate as mothers because they are dedicating their lives to raising their children.

The inclusion of DIOS in this block of questions is interesting because of the results of the national data I discussed in Chapter 5. The national data showed that rural women were more likely than rural men to say that their ideal number of children was however many God sent them. However, when I re-interviewed women who indicated desirable to the question DIOS in phase one, I was often told that they answered this way because of a sense of obligation. They considered using contraceptives a sin. However, several of these women had tubal ligation surgery even though they favored having as many children as God sent them. They told me that they would like to have as many children as God sent them, but they could no longer continue having children because of economic pressures. These conversations about *Dios me mande* gave me the impression that rural women were feeling a sense of cognitive dissonance about the number of

children they had. On the one hand, they wanted to fulfill the expectation of having the number of children that God sent. On the other hand, they felt the need to pursue the female sterilization operation because God had already sent them too many children. Therefore, I consider DIOS to be consistent with the block of questions that represent aspects of childbearing that rural women would find undesirable. Having all the children that God sends is a major burden on these women. They often fulfill this expectation out of obligation but suffer the majority of the consequences.

FUNCION is another interesting question that made sense to me as a part of this block only after I considered how it related to the lives of rural women. As I discussed in Chapter 6, the wording of this question underwent the most changes from the first translation until the actual administration of the questionnaire. My assistants and I finally settled on a wording that stressed that the word “potential” was referring to one’s potential as a person, not the physical potential to have children. However, I am not convinced that many people in Catacamas could understand having children as relating to fulfilling one’s potential as a person. For many people, especially rural people, having children is such an integral aspect of life that the thought of not having children does not enter their minds. This is why it was very difficult to ask people to name the positive aspects of children. Having children is so much a part of life for many people that contemplation of positive motivating aspects of childbearing was uncommon. I think that many people considered having children such an integral aspect of life that, even when we stressed that we were asking about fulfillment of their potential as a person, they continued to interpret the question as fulfillment of their physical potential to have

children. Therefore, I am not surprised that this question is linked closely with DIOS as an indication of a preference for a large number of children.

### **Factor Analysis of Sub-Scales: PCM**

Because the overall cultural pattern of childbearing motivation is strong pronatality, which, for the most part, contrasts the PCM questions with the NCM questions, I decided to analyze the individual sub-scales independently in order to better understand the cultural diversity. Figure 7-8 is a scatter plot of the first two PCA factor loadings on all non-sex biased PCM questions. This scatter plot also shows a description of the factor patterns, which I will discuss below. Figure 7-9 shows the scree plot of the eigenvalues produced by the PCA of the PCM. It is clear from these figures that the cultural agreement on positive childbearing motivation in isolation is slightly less than the overall agreement. The points are more distributed in the scatter plot. The overall amount of variance explained by factor 1 is less and the ratio of explained variance between factor 1 and factor 2 is lower. However, factor 1 is still 8 times as large as factor 2. The strength of factor 1 still indicates a large amount of cultural agreement on the positive aspects of childbearing.

Table 7-7 shows the first two PCA factor loadings sorted by factor 1 and table 7-8 shows these same loadings sorted by factor 2. Factor 1 has no variables that load significantly high and positively (greater than .5) and only four variables that load negatively (DIOS, JEFE, TRABAJE, and DEBERES). My interpretation of this factor is that it represents a contrast between a preference for a large number of children and all other positive childbearing motivations. I have discussed how DIOS, JEFE, and TRABAJE relate to a preference for a high number of children earlier in this chapter. DEBERES (“How desirable is fulfilling your religious feelings about family life?”) also

relates to number of children because the primary influence of religion on childbearing in Catacamas was the rejection of contraception by the Catholic Church and other religious groups. It is interesting to note that, although the overall pattern of childbearing motivation is decidedly pronatal, those who favor the positive childbearing aspects having to do with large family size are the cultural outliers. Factor 1, which explains nearly half of the overall variance in the PCM questions, is primarily driven by a rejection of these aspects.

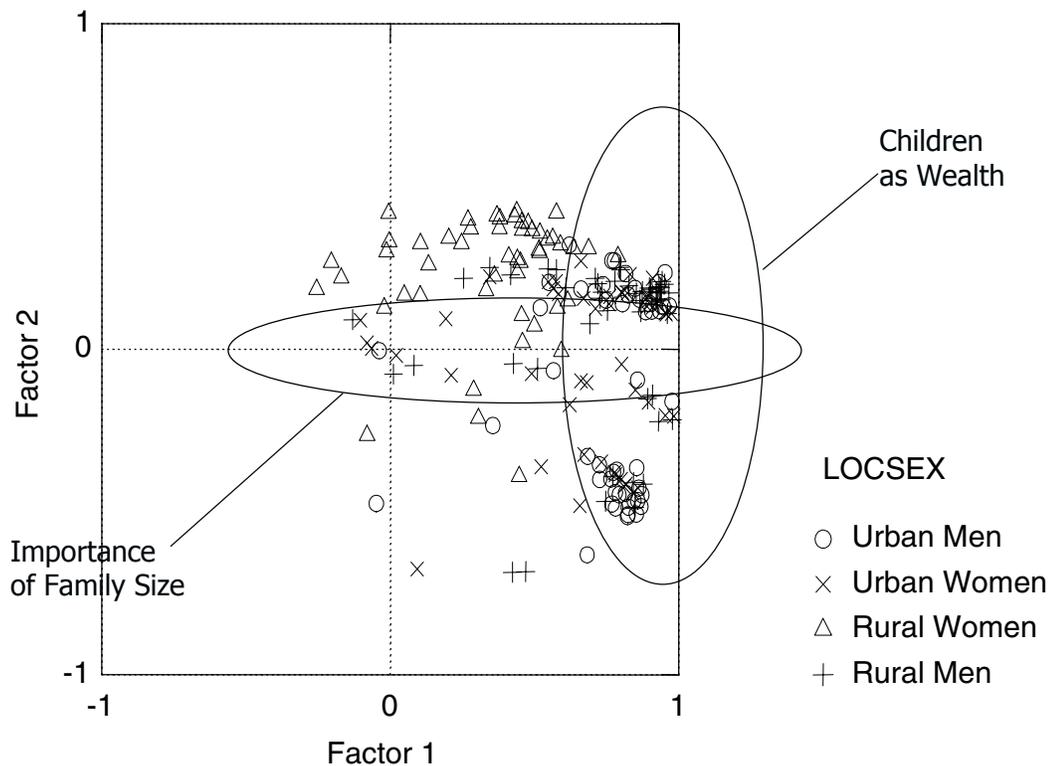


Figure 7-8 Scatter Plot of First Two Factors of PCA for all non-sex biased PCM Items—Phase Two

In figure 7-8, I named the factor 2 dimension of the scatter plot “Children as Wealth” because the variables loading high and low seem to be contrasting children’s non-economic value with their value as household providers. Table 7-8 shows that

TRABAJE is the variable that is loading the strongest on the positive side of factor 2.

TRABAJE is contrasted against SATIS (“How desirable is giving my husband (wife) the satisfaction of being a father (mother)?”), JUGAR (“How desirable is playing with your child?”), FUNCION, and DIOS. All four of these questions indicate positive aspects of childbearing that are not financially linked. In fact, DIOS was often interpreted as guaranteeing financial hardship.

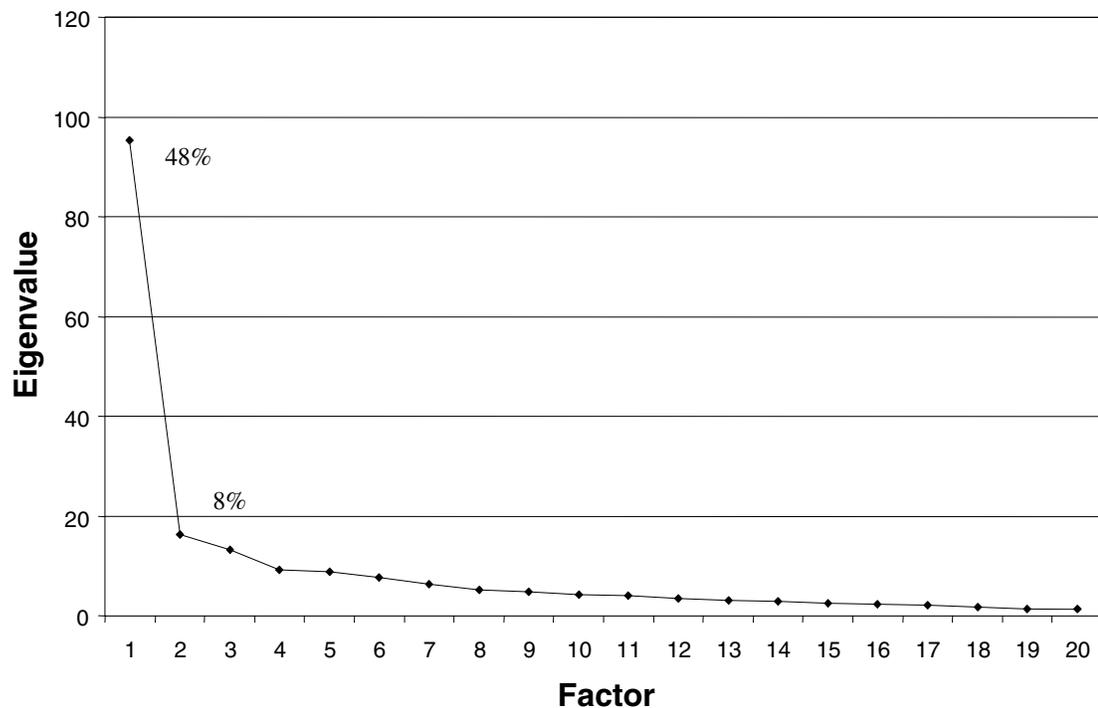


Figure 7-9 Scree Plot PCA Eigenvalues for non-sex biased PCM Questions–Phase Two

#### Factor Analysis of Sub-Scales: NCM

Figure 7-10 is a scatter plot of the PCA factor loadings for the non-sex biased NCM questions. Figure 7-11 is the scree plot of the eigenvalues for the PCA of the NCM. The PCA analysis of the NCM sub scale shows that, for negative aspects of childbearing,

there is much less cultural agreement. The points on the factor loading scatter plot are much more spread than for the previous analyses. Also, the scree plot indicates that the first factor is not significantly larger than the second factor. There is not a large drop from the first to the second factor because it only explains 2.3 times the amount of variance.

Table 7-7 Factor Loadings for PCA of Positive Non-Sex Biased CBQ Items Sorted by Factor 1–Phase Two

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
ADMIA	0.515	0.160	TIEMPO	0.308	-0.508
GUIAR	0.507	0.204	CUSTUMB	0.242	-0.379
DEPEND	0.504	0.061	MUJER	0.220	-0.101
AMOR	0.497	0.151	JUGAR	0.202	-0.801
UTIL	0.456	-0.102	COMPLET	0.194	-0.389
FERTIL	0.444	-0.332	FUNCION	0.173	-1.044
AYUDAV	0.434	0.498	NIETO	0.166	-0.197
COMPART	0.432	0.359	FORTAL	0.117	-0.144
VARON	0.411	-0.044	DEBERES	-0.233	0.127
SOCIED	0.410	-0.015	TRABAJE	-0.752	4.371
SATIS	0.350	-0.627	JEFE	-2.419	0.259
CHINEAR	0.333	-0.103	DIOS	-3.834	-1.189
VIDA	0.323	-0.215			

In figure 7-10, I've named the factor 1 axis "Quality of Children" because the variables that load high are mainly related to long-term child development. These variables are contrasted with variables that represent temporary parental inconveniences and sacrifices. Table 7-9 shows the first two PCA factor loadings sorted by factor 1 and table 7-10 shows these same loadings sorted by factor 2. AVERGU and FELIZ are the variables that load high on factor 1 and CARGA, ENERGIA, INCAPAZ, DECUIDAR ("How undesirable is straining our marriage with a baby?"), and CARRERA ("How undesirable is being kept from my (having my wife being kept from her) career or job by a baby?") are some of the variables that load negatively. AVERGU and FELIZ load

significantly higher than any other variable. Their loadings are 2.901 and 1.847, respectively, while no other variable has a loading of .7 or higher. The variables that load negatively, on the other hand, are only gradually more negative. None of them loads lower than  $-1.0$ .

Table 7-8 Factor Loadings for PCA of Positive Non-Sex Biased CBQ Items Sorted by Factor 2–Phase Two

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
TRABAJE	-0.752	4.371	CHINEAR	0.333	-0.103
AYUDAV	0.434	0.498	FORTAL	0.117	-0.144
COMPART	0.432	0.359	NIETO	0.166	-0.197
JEFE	-2.419	0.259	VIDA	0.323	-0.215
GUIAR	0.507	0.204	FERTIL	0.444	-0.332
ADMIA	0.515	0.160	CUSTUMB	0.242	-0.379
AMOR	0.497	0.151	COMPLET	0.194	-0.389
DEBERES	-0.233	0.127	TIEMPO	0.308	-0.508
DEPEND	0.504	0.061	SATIS	0.350	-0.627
SOCIED	0.410	-0.015	JUGAR	0.202	-0.801
VARON	0.411	-0.044	FUNCION	0.173	-1.044
MUJER	0.220	0.101	DIOS	3.834	-1.189
UTIL	0.456	-0.102			

Visual inspection of the vertical axis (factor 2) reveals that the split between sexes that appeared in the phase one analysis shows up again. The split between men and women is not as stark as it was in figure 7-3 but it is clear that the majority of points on the lower half of the plot are representing either rural men or urban men. The upper half contains mostly points representing rural and urban women. Factor 2 is primarily driven by the variable DINERO, which is weakly contrasted against the variables SEGURID and IMPEDIDO. As I discussed in the analysis of phase one, DINERO was typically rated as highly undesirable by men because they often felt it was an embarrassment for them to have their wives work. They felt that this would represent their inability to provide for their families sufficiently. Also, women, because of their role as the primary

caretakers of children, typically rated *SEGURID* and *IMPEDIDO* as highly undesirable. *AVERGU* also loaded highly negative on factor 2. It is perhaps linked with *DINERO* because they both (for men) represent embarrassing situations whereby parental responsibilities are not being met.

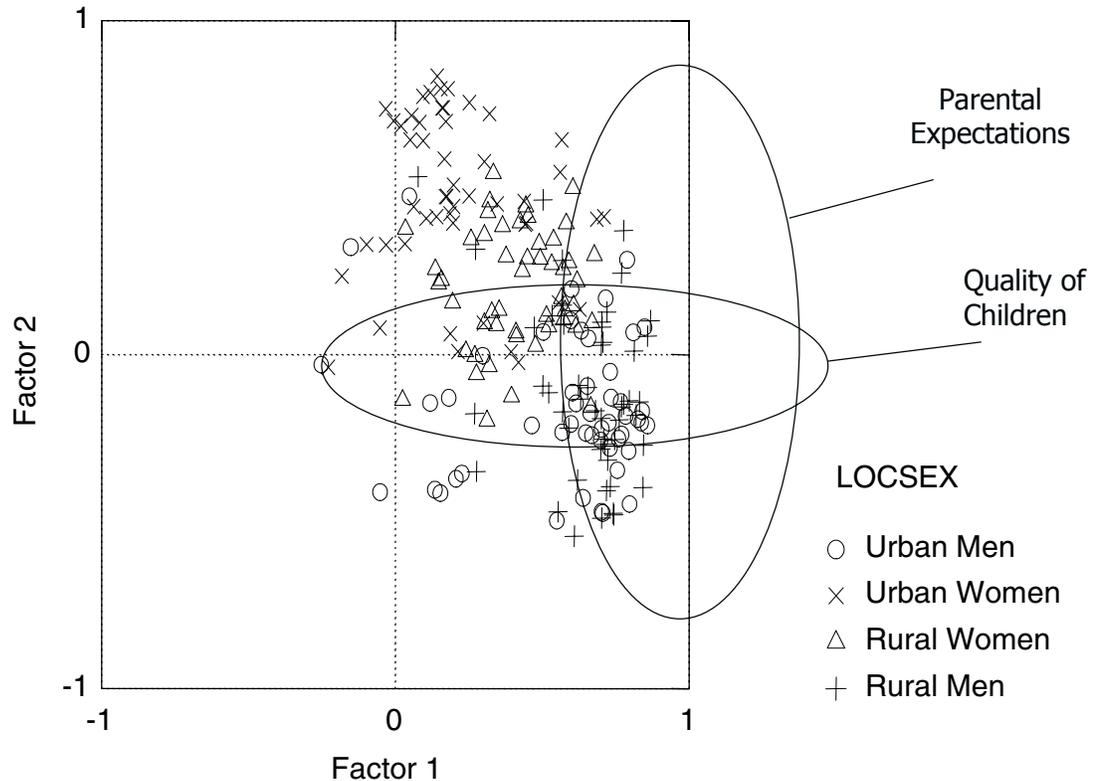


Figure 7-10 Scatter Plot of First Two Factors of PCA for all non-sex biased NCM Items—Phase Two

### Examination of Intra-Cultural Variation Using OLS Regression Analysis

The preceding analyses of intra-cultural variation has relied mainly on visual inspection of the distribution of two variables, sex and urban or rural residence. Because there are several other variables that have a theoretical influence on cultural agreement for the domain of childbearing motivation, I further analyzed the data with ordinary least squares regression analysis (OLS). The dependent variables in the multiple regression

analyses are the factor loadings for the first factor in the overall CBQ analysis, the PCM analysis and the NCM analysis. These factor scores represent the amount that individual respondents conformed to the cultural agreement on the set of variables in the PCA analysis. The regression analysis will determine which factors predict cultural conformity.

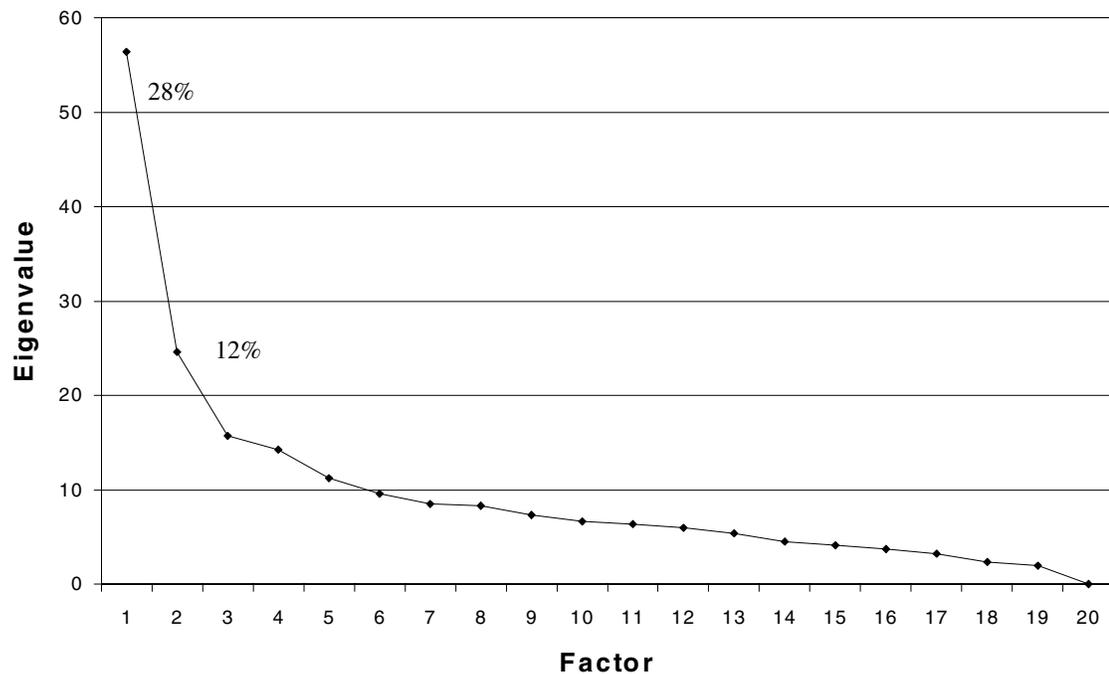


Figure 7-11 Scree Plot PCA Eigenvalues for non-sex biased NCM Questions–Phase Two

The independent variables that are included in the regression analyses described in this section include sex, area of residence, age, number of children, education, and religiousness. A dummy variable FEMALE represents the independent variable sex. It's value is 1 if the respondent is a woman and 0 if the respondent is a man. Another dummy variable called URBAN represents location of residence. This variable is equal to 1 if the

respondent lives in the city of Catacamas and 0 if the respondent lives in one of the surrounding villages. AGE, EDUCATION, and CHILDREN are all straightforward variables that represent the number of years living, the number of years of school, and the number of children ever born (currently living or not), respectively. RELIG2 is a variable that represents the answer to a question about how religious respondents consider themselves. The answers range from very religious (equal to 1) or not religious at all (equal to 4). I chose to present the analyses of these variables because they are either significant predictors of the cultural measurements (the factor 1 loadings) or they are important as control variables. There were other variables that I included in other regression analyses that I am not presenting here. I did not find any evidence that they were important as either predictors or control variables. I will discuss these variables later in this section.

Table 7-9 Factor Loadings for PCA of Negative Non-Sex Biased CBQ Items Sorted by Factor 1–Phase Two

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
AVERGU	2.901	-1.070	CRIANDO	-0.500	0.637
FELIZ	1.847	-0.198	OTRONIN	-0.534	-0.067
VEJEZ	0.681	-0.519	EXIGENTE	-0.627	-0.238
SEGURID	0.638	2.893	ENFERMO	-0.645	-0.139
IMPEDIDO	0.529	1.916	LIBERTAD	-0.707	-0.145
DINERO	0.509	-1.933	CARRERA	-0.735	-0.271
RUIDO	0.407	0.318	DECUIDAR	-0.800	-0.297
DESAGRA	0.194	0.655	INCAPAZ	-0.802	-0.385
SALUD	-0.185	-0.082	ENERGIA	-0.924	-0.437
ECONOMIC	-0.289	-0.217	CARGA	-0.960	-0.421

Table 7-11 shows the results of an OLS regression analysis using the statistics package SYSTAT. The dependent variable (F1MFAL) is the factor loading for the first factor from the PCA analysis. This is the factor loading for the analysis of the entire CBQ questionnaire, except for the sex-biased questions. This is also the factor that I

have previously described as the measurement of the culture of (qualified) pronatality.

Higher scores on this factor represent conformity with the overall natality culture, which considers most aspects of childbearing positive.

Table 7-10 Factor Loadings for PCA of Negative Non-Sex Biased CBQ Items Sorted by Factor 2–Phase Two

VARIABLE	FACTOR 1	FACTOR 2	VARIABLE	FACTOR 1	FACTOR 2
SEGURID	0.638	2.893	ECONOMIC	-0.289	-0.217
IMPEDIDO	0.529	1.916	EXIGENTE	-0.627	-0.238
DESAGRA	0.194	0.655	CARRERA	-0.735	-0.271
CRIANDO	-0.500	0.637	DECUIDAR	-0.800	-0.297
RUIDO	0.407	0.318	INCAPAZ	-0.802	-0.385
OTRONIN	-0.534	-0.067	CARGA	-0.960	-0.421
SALUD	-0.185	-0.082	ENERGIA	-0.924	-0.437
ENFERMO	-0.645	-0.139	VEJEZ	0.681	-0.519
LIBERTAD	-0.707	-0.145	AVERGU	2.901	-1.070
FELIZ	1.847	-0.198	DINERO	0.509	-1.933

The adjusted R-Squared for the model is .514. This represents the proportion of intra-cultural variation that the model explains, controlling for the number of independent variables (Handwerker 2001, p. 226-227). The most important and significant ( $p < .001$ ) independent variables are FEMALE and URBAN. CHILDREN is also another significant variable ( $p < .05$ ) but does not have as large a coefficient as FEMALE or URBAN. The model also controls for AGE, RELIG2, and EDUCATION. These are not significant predictors in this model.

Table 7-12 shows the results of another OLS regression model. The dependent variable (F1MFP) is the factor loadings for the first factor of a PCA analysis on the PCM variables (non-sex biased) alone. Previously, I described this variable as the measurement for the “Importance of Family Size” culture. Higher scores on this factor represent conformity with the culture of family size manageability. Low scores represent cultural diversity that favors larger families.

Table 7-11 Sources of Intra-cultural Variation for Pronatality

Dep Var: F1MFAL N: 199 Multiple R: 0.727 Squared multiple R: 0.528

Adjusted squared multiple R: 0.514 Standard error of estimate: 0.157

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	0.872	0.062	0.000	.	14.092	0.000
FEMALE	-0.256	0.023	-0.569	0.956	-11.225	0.000
URBAN	0.190	0.025	0.422	0.787	7.557	0.000
AGE	-0.001	0.002	-0.041	0.522	-0.592	0.555
CHILDREN	-0.011	0.005	-0.154	0.470	-2.130	0.034
RELIG2	-0.003	0.013	-0.013	0.937	-0.248	0.805
EDUCATION	-0.006	0.003	-0.105	0.720	-1.794	0.074

## Analysis of Variance

Source	Sum-of-Squares	df	Mean-Square	F-ratio	P
Regression	5.326	6.000	0.888	35.841	0.000
Residual	4.755	192.000	0.025		

Table 7-12 Sources of Intracultural Variation for Manageable Family Size Culture

Dep Var: F1MFP N: 198 Multiple R: 0.718 Squared multiple R: 0.515

Adjusted squared multiple R: 0.500 Standard error of estimate: 0.211

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	0.778	0.083	0.000	.	9.377	0.000
FEMALE	-0.195	0.031	-0.328	0.956	-6.368	0.000
URBAN	0.165	0.034	0.278	0.782	4.877	0.000
AGE	-0.004	0.002	-0.137	0.521	-1.957	0.052
CHILDREN	-0.035	0.007	-0.370	0.470	-5.033	0.000
RELIG2	0.044	0.017	0.132	0.937	2.545	0.012
EDUCATION	0.001	0.004	0.012	0.716	0.195	0.846

## Analysis of Variance

Source	Sum-of-Squares	df	Mean-Square	F-ratio	P
Regression	9.049	6.000	1.508	33.852	0.000
Residual	8.509	191.000	0.045		

The adjusted R-Squared for the model is .500, which indicates that the model explains 50 percent of the intra-cultural diversity, controlling for the number of

independent variables. Once again, the variables FEMALE and URBAN are the most significant ( $p < .001$ ) and strongest predictive variables in the model. CHILDREN and RELIG2 are also highly significant ( $p < .001$ ), but with less predictive power. Age is significant at the .10 level but is very weakly predictive. The only variable that is not significant is EDUCATION, which is in the model for control purposes only.

Table 7-13 shows the results of an OLS regression model on the first factor's loadings from the PCA analysis of the non-sex biased NCM questions. I describe this factor as "Fears about quality of Children." Higher scores on this factor relate to conformity with the cultural pattern of considering long-term developmental childcare concerns more important than short-term childcare burdens.

Table 7-13 Sources of Intra-cultural Variation for Fears About Quality of Children Culture

Dep Var: F1MFN N: 199 Multiple R: 0.638 Squared multiple R: 0.407

Adjusted squared multiple R: 0.389 Standard error of estimate: 0.210

Effect	Coefficient	Std Error	Std Coef	Tolerance	t	P(2 Tail)
CONSTANT	0.625	0.082	0	.	7.584	0
FEMALE	-0.308	0.03	-0.575	0.956	-10.122	0
URBAN	-0.155	0.034	-0.29	0.787	-4.628	0
AGE	0.002	0.002	0.066	0.522	0.862	0.39
CHILDREN	0.006	0.007	0.065	0.47	0.8	0.425
RELIG2	-0.012	0.017	-0.04	0.937	-0.695	0.488
EDUCATION	0.003	0.004	0.048	0.72	0.731	0.465

#### Analysis of Variance

Source	Sum-of-Squares	df	Mean-Square	F-ratio	P
Regression	5.800	6.000	0.967	21.973	0.000
Residual	8.446	192.000	0.044		

The adjusted R-Squared for the model is .389, which indicates that the model only accounts for around 39 percent of the cultural diversity, controlling for the number of

independent variables. The variables FEMALE and URBAN are once again the most highly significant and highly predictive of the model's independent variables. None of the other controlling variables are significant in the model.

I also ran modified versions of these regression models with two other variables. These two variables represented variables that I considered to be theoretically important in the determination of cultural diversity. The first variable was a measurement of the family's income, based on three levels: low, medium, high. These three levels match the levels that I used to separate the sample in phase one. I did not find this variable to be strongly predictive or significant in any of the above models. The inclusion of this variable did not change the results that I discussed above. I decided to not include it as a control variable because it is correlated with the urban/rural variable.

The other variable that I measured and included in preliminary regression models was a variable that measured perception of employment opportunities for women. As I discussed in Chapter 6, each respondent was asked about a series of job types. They were asked if the job type was something that should be done by women, men or could be done by both. I dichotomized each of these job variables into another variable that had a value of one if the respondent said that the job could be done by a woman or could be done by both. The variable had a value of zero if they said that only men could do the job.

I ran a Guttman scale analysis on the set of dichotomized variables using the statistics package Anthropac (Borgatti 1992). The coefficient of Reproducibility was .879. This gives evidence that the list of employment types represented a set of items that measure an underlying unidimensional variable (Bernard 2002, p. 302-304). I call this variable, "Perception of female employment opportunity." However, when I aggregated

the individual job type variables into an overall female employment opportunity measurement and included it into regression models as an independent variable, I found that the variable had no predictive ability. Therefore, I removed it from subsequent regression models.

### **Discussion of Analysis**

The main conclusion that I draw from the analysis presented above is that the two factors that are the most important in determining agreement and diversity for natality culture in Catacamas are sex and location of residence. For each cultural domain, sex and location were highly significant predictors and were responsible for a large percentage of the intra-cultural variance. There were other variables that were significant predictors, but none had anywhere near the effect on the overall model that sex and location had.

The interpretation of the effect that sex and location have on natality culture is complicated. For both men and women, there appear to be some contradictory tendencies. Although participating in the overall pronatal culture, they are also participating in intra-cultural patterns that suggest conflicting tendencies.

For women, especially rural women, there appears to be some level of cognitive dissonance regarding the issue of family size. Through analysis of the entire CBQ data it is clear that rural women are more likely to diverge from the overall pattern of pronatality. This does not imply that they have more antinatal tendencies than other categories of people. As I discussed earlier, the pattern of pronatality culture is qualified because there is agreement that family sizes need to be limited to a manageable number. The analysis of the PCM questions alone shows that rural women were more likely to diverge from this cultural pattern of manageable family size. I interpret this finding as

indicating that rural women are even more pronatal than the overall pattern of natality—at least with regard to family size.

My ethnographic experience confirms that rural women in Catacamas have much to gain from being the parent of a large family. This is mainly because of the lack of social roles for rural women outside of motherhood. There is very little female employment for women in the villages outside of Catacamas. Even domestic work, which employs a large number of poor urban women, is not much of an option in rural areas. Urban areas have more opportunities for poor women to be domestic workers because urban women are more likely to work outside of the home. The households with two working parents create a demand for domestic workers that does not exist in the rural areas. This lack of economic opportunity makes rural women more dependent on their children for economic support, especially because their husbands do not always share their income with their families. Therefore, rural women experience a benefit from large families that is not present to other categories of people in Catacamas.

On the other hand, women are more likely to diverge from the pattern of negative childbearing motivation that considers worries about long-term development of children to be more important than the temporary inconveniences of raising them. This is understandable considering women's place in Catacamas as the parent primarily responsible for childcare. Because they are more likely to experience the inconveniences and sacrifices associated with childcare, it makes sense that they would be more likely to diverge from this pattern. Urban women are more likely than rural women to diverge from this pattern, which also makes sense considering the availability of non-childcare related opportunities in the urban area. Rural men are the most likely to conform to the

overall pattern, which is also understandable given that they are the least likely to be burdened with childcare. Although urban men are less likely to partake in household or childcare activities than urban women, they are more likely than their rural counterparts. Therefore, although rural women are more likely to be favorable to larger families, women in general are more likely to be bothered by the day-to-day inconveniences associated with childcare.

There are also some interesting sources of cognitive dissonance at work for men, especially urban men. From the analysis of the PCM data, men are more likely to conform to the pattern of considering worries associated with the long-term development of their children to be the primary sources of negative childbearing motivation. However, the second factor of the NCM analysis also makes it clear that men consider their wives having to work to be a negative concern as well. As I discussed earlier, many men considered that their duties as fathers and husbands included being the sole provider for the household. As a result of my participant observation and ethnographic interviewing, I came to realize that these two concerns are sometimes in conflict.

My male assistant, who was also one of my key informants, confirmed this conclusion. He told me about his personal conflict with these two issues. When he was young and newly married, he absolutely refused to allow his wife to work, primarily because of the ridicule he thought he would receive from other men. He said that he resisted this because he was a *machista* when he was younger. His *machista* behavior included heavy drinking, being abusive to his wife, and having sexual relations with other women. However, he eventually changed his behavior and supported his wife to continue with school. She now works nights as an accountant and he willingly takes care

of their youngest child while she is at work. He also proudly claims that he has stopped behaving like a *machista* in other ways. He credits his change of heart to his desire for his children to have better lives than he had. His main motivating force is that he wants them to get University degrees. He realized that his behavior, including his treatment of his wife, was having a negative effect on his children's development. He also strongly credits his desire for his wife's income to help pay for his children's education expenses as a turning point in his attitude towards her and his family. He strongly believes that this is a common thing for other men in Catacamas as well.

This also is consistent with the finding that rural men are more likely than urban men to conform to the pattern of placing long term developmental concerns above the temporary inconveniences associated with childcare. Urban men participate in childcare to a much higher degree than rural men and are more likely to diverge from the pattern that de-emphasizes day-to-day childcare aggravations.

It is possible that these contradictions, which hint at the possibility of cognitive dissonance for both men and women, are key elements in the culture change process that occurs during a fertility decline. As Honduras becomes more urbanized and as there are more employment opportunities besides agricultural production, women are having access to more roles besides motherhood and are relying less on their children for economic support. The demands of childbearing and childrearing are in conflict with attaining these new roles and opportunities. Men and women are seeing educational and employment opportunities for their children that did not exist before. They are also realizing that large families have a diminished opportunity to pursue these opportunities. Also, men are realizing that they have to resolve the dissonance between their perception

of their place in the household and the goals they have for their children. Resolution often comes from their rejection of previously held notions that men need to be the sole providers for their families and that they have the right to avoid participating in childcare because of their provider status.

Men like my assistant realize that, in order for their children to have successful lives, they will have to give them this opportunity through education. Higher education will allow their children to become more competitive for the few well paying jobs that exist in Honduras. They realize that, in order to give their children these opportunities, they cannot afford to resist allowing their wives to work. Because of greater educational and employment opportunities for women, sharing the economic burden with their wives becomes even more attractive. This changes the intra-household dynamics between men and women. It also leads to the re-definition of male and female parental roles.

As men and women continually work to resolve these conflicts, both in their behaviors and their minds, they participate in the discourse on parenting and childcare with members of their social network. It is through this process that new cultural models of motherhood and fatherhood are created. This redefinition of masculine and feminine roles is the epicenter of the fertility decline process.

## CHAPTER 8 CONCLUSION AND DIRECTIONS FOR FUTURE RESEARCH

### **Findings**

In this work, I presented an investigation of fertility decline in Honduras. I argued for a theoretical model of fertility decline that ranges across social science disciplines. Also, I promoted a particular style of research, called anthropological demography, in which fieldwork is combined with secondary data analysis. In the style of research, typically un-operationalized concepts, such as culture, are fully operationalized and measured. As an example, I offer here what I believe to be the first extended operationalization and measurement of natality culture.

My findings indicate that cultural differences regarding childbearing motivation are primarily driven by two variables: sex (male and female) and location (urban or rural). This is true at the national level as well as at the local level in Honduras. These cultural differences are manifest in the quality and quantity of the children that people say they want.

My goal in this project, and one of the primary goals of anthropological demography in general, is to provide a context for demographic changes that are ongoing. The analysis of secondary data sources is a valuable and necessary part of the study of population change. However, as my analysis in Chapter 5 demonstrated, this type of analysis cannot answer all our questions. In fact, new questions were created through the analysis of secondary data, and I have argued that anthropological demography, firmly based on field research, is a tool for answering many such questions.

The fieldwork component of anthropological demography allows us to understand how people are evaluating their options, on the ground, while they decide how many children to have. It allows us to investigate how ideas—such as what it is to be a man/father or woman/mother—have an effect on people’s fertility decisions and how those ideas change in response to material circumstances. In other words, fieldwork-based demography gives a window into how ideas are constructed and re-constructed by groups of people as the world changes around them.

Although the findings of this study are not an exhaustive test of any one theory of fertility decline, they support a combination of resource access theory and embodied capital theory (outlined in Chapter 2). As Kaplan’s embodied capital theory would predict, I found that people are constantly evaluating tradeoffs between quantity and quality of children. There was a clear understanding of the tradeoffs between having a large family and having a manageable amount of children. People decide what is a manageable amount of children based primarily on their evaluation of how much education they can afford. People recognize that their children are living in a changing economy that now requires adults to have certain skills to be competitive in the marketplace.

As Handwerker’s resource access theory would also predict, parents are concerned with education for their children because they recognize that there are opportunities to access resources for people with certain skills. Also, as Handwerker has argued, it is clear that changing channels of resource access are causing a culture change process. I found cultural diversity in people’s conception of what constituted suitable family size and what constituted good quality children. Ideas about what constitutes a large or small

family and what constitutes sufficient investment in children are shared—that is, they are cultural. However, this sharing is not perfect because the cultural definitions of what constitutes good quality children and what constitutes a good quantity of children are constantly being modified as people live their lives, engage in conversations, and interact with people around them. This interaction creates the meaning that people need in order to face the challenge of raising children in an environment with changing channels to resource access.

Another set of cultural definitions that are shaped by resource access is the understanding of what it is to be a man/father/husband and women/mother/wife. The people whom I studied are negotiating between accepted definitions of masculinity and femininity and new opportunities to access resources for themselves and their children. These new opportunities are causing people in individual households to reorganize their personal definitions of masculinity and femininity into more workable models. As life history theory and resource access theory predict, changing opportunities do not affect men and women equally. They each have their own reproductive objectives, which sometimes conflict. I have demonstrated that sex is a major force in determining cultural diversity of childbearing motivation. However, the expression of sex differences in natality culture is a function of environmental forces.

Another important finding in my work is that the realms of positive and negative childbearing motivation have different cultural trajectories. I found that there was strong cultural agreement on positive childbearing motivation coupled with important cultural diversity associated with negative childbearing motivation. This demonstrates that fertility decline does not necessarily imply that children are less desirable to people with

lower fertility. People are not necessarily having fewer children because they do not want them. Instead, their negative motivations, which include worries that they are giving their children the opportunity to have good lives, are growing stronger.

I conclude that, at this point, the people of Catacamas are going through a negotiating process with these positive and negative motivations vying for primacy. My field experience and my data analysis suggest that the people there are resolving some contradictions about parenthood/motherhood/fatherhood. I expect to see fertility continue to decline in the coming years as many people look for ways to give their children better lives. Also, I expect to find that cultural changes will proceed as people re-define what constitutes a successful family.

### **Future Research**

My original intent in this research was to produce a building block of knowledge about the process of culture change and fertility decline. Both culture change and fertility decline are processes that occur over time and space. Each occurrence of a fertility decline will have certain differences from other instances of fertility decline. This makes repetition of data collection and replicability of findings of utmost importance to produce confidence in conclusions about the general process of fertility decline. This forces the work of determining general laws about this process to go beyond the scope of any one project, any one researcher, or even any one discipline. I have presented my theory, methods, and findings in a way that I hope will facilitate future research on fertility decline.

There are certain immediate projects that can build on the findings presented here. First, a complete repetition of the data collection for testing the entire T-D-I-B psychological model of childbearing motivation is required to determine the validity of

the model across cultures. The data collected in this work measured the “T” element of the model, but determining the relationship between motivational traits and desires, intentions, and behaviors in a variety of cultural settings would allow us to generalize or modify the conclusions of this study. The measurements of cultural agreement that I developed for this project can be used to empirically determine the effect of culture on the T-D-I-B sequence.

Further measurement of T-D-I-B model will also help to illuminate the process of culture change and fertility decline. Theories that link infrastructural and structural changes to changes in reproductive behavior typically assume changes in cognitive evaluations of reproduction. The exact nature of these changes has been mostly assumed. The direct measurement of the T-D-I-B model in various contexts is a way to test theoretical links among infrastructure/structure, reproductive behavior, and cognition.

Perhaps the most important direction for future research is the repetition of this study. Firstly, this study should be repeated in other areas of Honduras. This will allow for greater understanding of the connection between local findings and national level data. Repetition in the Honduran cities of Tegucigalpa and San Pedro Sula are the most important locations for a repetition of this study. This is because of the prominence of these two cities in the lives of most Hondurans. Also, because of the high rate of urbanization in Honduras, it is likely that the lives of the average Honduran of the future will become more like the lives of those now living in these two major cities.

Another fertile area for a repetition of this study is in a more remote and rural area than those surrounding Catacamas. Although areas of this study were relatively isolated from Catacamas, the degree of isolation from an urban lifestyle was miniscule compared

with other areas of Honduras. Repetition of data collection in the major urban areas and isolated rural areas will help to refine the conclusions of this study regarding the effect of urbanization on natality culture.

Also, this study should be repeated in Honduras on targeted ethnic groups. In the interest of simplicity, I designed this study to ignore the issue of ethnicity. The respondents were all assumed to be Mestizo. However, there are likely to be aspects of natality culture that vary according to ethnicity. Therefore, it is important to repeat this study on a population of ethnic minorities in Honduras. Honduras has many indigenous populations living in various areas throughout the country. Also, the northern coast of Honduras has a substantial population of Garifuna people and other descendents of African slave populations. Comparisons among these various ethnic groups may or may not result in substantial differences in natality culture. It is important that the hypothesis that ethnicity influences natality culture in Honduras undergo a rigorous test.

Repetition of this data collection and analysis outside of Honduras is also important to build on the findings of this study. Because fertility decline is a global phenomenon, it is important to have comparative data from as many places around the world as possible. In particular, it would be beneficial to have this study repeated in areas that have populations with different fertility rates than Honduras. Repetition of this study among western European populations, which have some of the lowest fertility rates in recorded history, would help to better define the cultural changes that parallel fertility decline. Also, it would be important to repeat this study with populations that have even higher fertility rates than Honduras.

The greatest benefits of a repetition of this research may come from a re-study of the same population at several points in time in the future. This is the only way to definitively describe a process of change over time. With this type of data collection, conclusions about culture change will have more validity. A major benefit of this repetition is that changes in the cultural data can be compared with changes in other variables, such as the TFR of Honduras. Also, cultural trends can be compared with trends in other macro-level economic indicators. The most important types of economic variables would be those that indicated trends in employment opportunities for women. A re-study of the same population at several points in time in the future would also allow for the tracking of a natural experiment. If Honduras undergoes a precipitous fertility decline in the near future, this study can serve as a baseline data source for the cultural conditions before the TFR drop.

In any case, repetition of this study will help to fill in the blanks of fertility decline theory across the social sciences. In the end, the success of this work will be judged by its utility to other researchers who study fertility decline. In order to develop a more complete understanding of fertility decline, it is important that fertility research continue in as many disciplines as possible. It is my hope that my interest in conducting interdisciplinary research on fertility decline will facilitate the further collaboration of social science researchers. In particular, I hope that this work provides a model for the conduct of anthropological demography research. Anthropologists have much to offer an interdisciplinary science of fertility and I hope that this work plays some small role in the improvement of research in anthropological demography.

APPENDIX A  
THE CHILDBEARING QUESTIONNAIRE (CBQ)

The following list was originally printed in Miller (1999, pp. 100-102). It contains the items from Positive Childbearing Motivation (PCM) and Negative Childbearing Motivation (NCM) questionnaires. The items consist of those making up the five PCM subscales, the four NCM subscales, as well as un-scaled items. The list also contains the items I added during this study. The wording of the items is for women respondents, with the male respondents in parentheses.

The variable names used in the analysis of the CBQ data are shown in front of each item in bold. The items marked with a \* were used during phase one only.

**PCM: Joys of Pregnancy, Birth and Infancy**

- MOVER** Feeling a baby move and kick inside me (your wife's body)
- SATIS** Giving my husband (wife) the satisfaction of being a father (mother)
- DARLUZ** Giving birth to a baby (Helping your wife give birth to a baby)
- PEPE** Breast (bottle) feeding a baby
- CHINEAR** Holding and cuddling a baby
- TIEMPO** Dedicating myself and much of my time raising children and being a mother (father)

**PCM: Traditional Parenthood**

- CUSTUMB** Having a child who will carry on my family traditions
- JEFE** Being the center of a large, active family
- FORTAL** Strengthening our marriage through a child
- DEBERES** Fulfilling my religious feelings about family life
- NIETO** Providing my parents with a grandchild
- FUNCION** Fulfilling my potential by having children

**PCM: Satisfactions of child rearing**

<b>EXITO</b>	Having my child be a success in life
<b>JUGAR</b>	Playing with my child
<b>SOCIED</b>	Having my child contribute to society
<b>GUIAR</b>	Guiding and teaching my child
<b>COMPART</b>	Sharing child raising with my husband (wife)
<b>AMOR</b>	Experiencing the special love and closeness that a child provides

**PCM: Feeling needed and connected**

<b>UTIL</b>	Feeling needed and useful through my baby
	Having my child provide me with companionship and support later in life
<b>AYUDAV</b>	life
<b>DEPEND</b>	Having a helpless baby to love and protect
<b>COMPLET</b>	Feeling more complete as a woman (man) through my baby
<b>VIDA</b>	Living a fuller, more enriched life through my baby

**PCM: Instrumental values of children**

<b>FERTIL</b>	Knowing that I am fertile
<b>ADMIA</b>	Having my family and friends admire me with my baby
<b>VARON</b>	Having a son
<b>MUJER</b>	Having a daughter

**PCM: Unscaled**

<b>HERMAN</b>	Giving our first child a brother or sister
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**PCM: Additional items on modified CBQ**

<b>TRABAJE</b>	Having children that work for the family
<b>APELLID</b>	*Having children to continue your family name (the family name of your spouse)
<b>HEREDAR</b>	*Having children to inherit your things
<b>DIOS</b>	Having all the children that God sends

**NCM: Discomforts of pregnancy and childbirth**

	Experiencing (Seeing my wife experience) the discomforts of pregnancy
<b>SUFRIR</b>	pregnancy
<b>DOLOR</b>	Experiencing (Seeing my wife experience) the pain of childbirth

**NCM: Fears and worried of parenthood**

<b>FELIZ</b>	Having an unhappy and poorly adjusted child
<b>SEGURIDAD</b>	Worrying about the health and safety of my child
<b>IMPEDIDO</b>	Having a baby who is born deformed
<b>CRIANDO</b>	Worrying whether I am raising my child the right way
	Having a child who embarrasses or disgraces the rest of the family
<b>AVERGU</b>	family
<b>INCAPAZ</b>	Feeling guilty or inadequate as a mother (father)

**NCM: Negatives of Childcare**

<b>CARRERA</b>	Being kept from my (having my wife being kept from her) career or job by a baby
<b>EXIGENTE</b>	Being responsible for a needy and demanding baby
<b>ENERGIA</b>	Spending time and energy involved in childcare
<b>RUIDO</b>	Having to put up with the mess and noise that children make
<b>ECONOMIC</b>	Burdening our family finances with a child
<b>DESAGRA</b>	Taking care of a baby who is disagreeable and irritating
<b>ENFERMO</b>	Taking care of a sick child
<b>LIBERTAD</b>	Having a baby who takes away my freedom to do other things

**NCM: Parental stress**

<b>DESCUIDAR</b>	Straining our marriage with a baby
<b>SALUD</b>	Having a baby who strains my (wife's) health
<b>CARGA</b>	Having a baby who is a burden to my husband (wife) Having a child who makes it necessary for me (my wife) to have a job
<b>DINERO</b>	

**NCM: Unscaled**

<b>OTRONIN</b>	Having a baby who takes away from how much I can give my other child
----------------	--

**NCM: Additional Items on Modified CBQ**

<b>CASA</b>	*Having a child that makes it necessary to have a larger house?
<b>VEJEZ</b>	Being a burden on my children in my old age?

APPENDIX B  
SPANISH VERSION OF QUESTIONNAIRE FOR PHASE ONE

Lugar \_\_\_\_\_

Fecha: \_\_\_\_\_

Hora: \_\_\_\_\_

Entrevistador: \_\_\_\_\_

# Hoy: \_\_\_\_\_

**Consentimiento**

Buenos días (tardes), mi nombre es \_\_\_\_\_, soy investigador trabajando en un estudio de la Universidad de Florida y PREDISAN. Me gustaría hablar con Ud. sobre cosas positivas y negativas sobre tener hijos. Intentamos aprender porque algunas familias tienen muchos hijos y otras tienen pocos hijos aquí en Catacamas.

Yo lo seleccioné a usted entre personas que viven cerca o alrededor de Catacamas. Esta entrevista durará aproximadamente 30 minutos.

Su participación es completamente voluntaria. A usted le haré una serie de preguntas que puede interrumpir en cualquier momento sin consecuencia alguna.

Sus comentarios quedarán anónimos. Por lo que no hay riesgos de que participe, aunque tampoco hay beneficios directos por su colaboración.

Si posteriormente tiene alguna duda Ud. puede contactarnos en PREDISAN. PREDISAN tiene todos los datos de este estudio y la información sobre sus derechos como participante.

**[Solamente en casos de grabación de la entrevista:]**

(Con su permiso, me gustaría grabar nuestra conversación. Si Ud. no desea que se grabe la entrevista, todavía me gustaría charlar y anotar sus respuestas. Las cintas son para uso exclusivo de la investigación y servirán para darnos una idea precisa de que nos ha dicho la gente. No pondré su nombre adjunto; con la entrevista grabada se utilizará un código para que nadie pueda reconocerlo. Guardaré las cintas en armario cerrado con llave en la Universidad de Florida hasta que se complete la transcripción, y después las borraré.)

¿Puedo seguir y hacerle las preguntas?"

Si

No

## ( PARA MUJERES )

## CUESTIONARIO SOBRE MOTIVACIÓN DE MATERNIDAD

Por favor valore cuanto le gusta lo siguiente.

- 0. No le gusta
- 1. Le gusta mas o menos
- 2. Le gusta bastante

- \_\_\_\_\_ a. ¿Cuánto le gusta...Sentir un niño moverse o patear dentro de su cuerpo?
- \_\_\_\_\_ b. ¿Cuánto le gusta...Darle a su esposo la satisfacción ser padre?
- \_\_\_\_\_ c. ¿Cuánto le gusta...Dar a luz un niño?
- \_\_\_\_\_ d. ¿Cuánto le gusta...Dar pecho a un niño?
- \_\_\_\_\_ e. ¿Cuánto le gusta...Chinear y abrazar un niño?
- \_\_\_\_\_ f. ¿Cuánto le gusta...Dedicarse mucho tiempo a criar hijos y ser madre?
- \_\_\_\_\_ g. ¿Cuánto le gusta...Tener un hijo que continúe sus costumbres familiares? (Por ejemplo...celebrar navidad, cumpleaños, dia de madre, dia de finados)
- \_\_\_\_\_ h. ¿Cuánto le gusta...Ser el centro de una familia grande y activa?
- \_\_\_\_\_ i. ¿Cuánto le gusta...Fortalecer su matrimonio a través de un hijo?
- \_\_\_\_\_ j. ¿Cuánto le gusta...Cumplir sus deberes religiosos sobre la vida familiar?
- \_\_\_\_\_ k. ¿Cuánto le gusta...Darle un nieto a sus padres? (que sus padres puedan conocer sus nietos )
- \_\_\_\_\_ l. ¿Cuánto le gusta...Desarrollar su capacidad como persona teniendo hijos?
- \_\_\_\_\_ m. ¿Cuánto le gusta...Tener un hijo que tenga éxito en la vida?
- \_\_\_\_\_ n. ¿Cuánto le gusta...Jugar con su hijo?

- \_\_\_\_o. ¿Cuánto le gusta...Contribuir a la sociedad a través de tener un hijo?
- \_\_\_\_p. ¿Cuánto le gusta...Guiar y enseñar a su hijo?
- \_\_\_\_q. *¿Cuánto le gusta...Compartir la crianza de sus hijos con su esposo?*
- \_\_\_\_r. ¿Cuánto le gusta...Experimentar el amor especial y la cercanía que un hijo provee?
- \_\_\_\_s. ¿Cuánto le gusta...Sentirse necesitada y útil a través de su hijo?
- \_\_\_\_t. ¿Cuánto le gusta...Disfrutar la compañía y ayuda de sus hijos en su vejez?
- \_\_\_\_u. ¿Cuánto le gusta...Tener un niño que dependa de usted para su cuidado y protección?
- \_\_\_\_v. ¿Cuánto le gusta...Sentirse mas completa como mujer a través de sus hijos?
- \_\_\_\_w. ¿Cuánto le gusta...Vivir una vida mas satisfactoria a través de su hijo?
- \_\_\_\_x. ¿Cuánto le gusta...Saber que usted es fértil?
- \_\_\_\_y. ¿Cuánto le gusta...Tener la admiración de su familia y amistades por medio de su hijo?
- \_\_\_\_z. ¿Cuánto le gusta...Tener un hijo varón?
- \_\_\_\_aa. ¿Cuánto le gusta...Tener una hija mujer?
- \_\_\_\_bb. \*\*¿Cuánto le gusta...Darle a su primer hijo un hermano o una hermana?
- \_\_\_\_cc. ¿Cuánto le gusta...Tener hijos que trabajen para usted?
- \_\_\_\_dd. *¿Cuánto le gusta...Tener hijos que siguen el apellido de su esposo?*
- \_\_\_\_ee. ¿Cuánto le gusta...Tener hijos para heredar sus cosas?
- \_\_\_\_ff. ¿Cuánto le gusta...Tener todos los hijos que Dios le mande?

**( PARA MUJERES )**

Por favor valore cuanto le molesta lo siguiente.

- 0. No le molesta
- 1. Le molesta mas o menos
- 2. Le molesta bastante

- \_\_\_\_\_ a. ¿Cuánto le molesta...Sufrir las molestias del embarazo?
- \_\_\_\_\_ b. ¿Cuánto le molesta...Sufrir con los dolores del parto?
- \_\_\_\_\_ c. ¿Cuánto le molesta...Tener un hijo que no es feliz y no muy contento en la vida?
- \_\_\_\_\_ d. ¿Cuánto le molesta...Estar preocupada por la salud y seguridad de sus hijos?
- \_\_\_\_\_ e. ¿Cuánto le molesta...Tener un hijo que nazca impedido o retrasado?
- \_\_\_\_\_ f. ¿Cuánto le molesta...Estar preocupada de si está criando a su hijo de la manera correcta?
- \_\_\_\_\_ g. ¿Cuánto le molesta...Tener un hijo que avergüence o deshonne a la familia?
- \_\_\_\_\_ h. ¿Cuánto le molesta...Sentirse incapaz o inadecuada como Madre?
- \_\_\_\_\_ i. ¿Cuánto le molesta...Tener que interrumpir su carrera o su trabajo a causa de un hijo?
- \_\_\_\_\_ j. ¿Cuánto le molesta...Ser responsable por un niño dependiente y exigente que necesita de su cuidado?
- \_\_\_\_\_ k. ¿Cuánto le molesta...Gastar tiempo y energía en criar niños?
- \_\_\_\_\_ l. ¿Cuánto le molesta...Tener que aguantar el desorden y el ruido que hacen los niños?
- \_\_\_\_\_ m. ¿Cuánto le molesta...Soportar la carga económica de la familia con niños?
- \_\_\_\_\_ n. ¿Cuánto le molesta...Cuidar niños que son desagradables e irritantes? (molestón)
- \_\_\_\_\_ o. ¿Cuánto le molesta...Tener que cuidar un niño enfermo?

- \_\_\_\_\_p. ¿Cuánto le molesta...Tener niños que quita su libertad para hacer otras cosas?
- \_\_\_\_\_q. ¿Cuánto le molesta...Descuidar su matrimonio por cuidar niños?
- \_\_\_\_\_r. ¿Cuánto le molesta...Tener niños que afecta negativamente su salud?
- \_\_\_\_\_s. ¿Cuánto le molesta...Tener niños que sean carga para su esposo?
- \_\_\_\_\_t. ¿Cuánto le molesta...Tener niños que le obliguen a trabajar afuera la casa o ganar dinero con trabajo adentro la casa?
- \_\_\_\_\_u. ¿Cuánto le molesta...Tener un niño que quita de lo que usted puede dar a sus otros niños?
- \_\_\_\_\_v. ¿Cuánto le molesta...Tener niños que le obliguen a tener una casa más grande?
- \_\_\_\_\_w. ¿Cuánto le molesta...Ser una carga para sus hijos en su vejez?

## ( PARA HOMBRES )

## CUESTIONARIO SOBRE MOTIVACIÓN DE PATERNIDAD

Por favor valore cuanto le gusta lo siguiente.

- 0. No le gusta
- 1. Le gusta mas o menos
- 2. Le gusta bastante

- \_\_\_ a. ¿Cuánto le gusta...Sentir un niño moverse o patear dentro de su esposa?
- \_\_\_ b. ¿Cuánto le gusta...Darle a su esposa la satisfacción de ser madre?
- \_\_\_ c. ¿Cuánto le gusta...Ayudar a su esposa dar a luz un niño?
- \_\_\_ d. ¿Cuánto le gusta...Criar con un pepe a un niño?
- \_\_\_ e. ¿Cuánto le gusta...Chinear y abrazar un niño?
- \_\_\_ f. ¿Cuánto le gusta...Dedicarse mucho tiempo a criar hijos y ser padre?
- \_\_\_ g. ¿Cuánto le gusta...Tener un hijo que continúe sus custumbres familiares? (Por ejemplo...celebrar navidad, cumpleaños, dia de madre, dia de finados)
- \_\_\_ h. ¿Cuánto le gusta...Ser el centro de una familia grande y activa?
- \_\_\_ i. ¿Cuánto le gusta...Fortalecer su matrimonio a través de sus hijos?
- \_\_\_ j. ¿Cuánto le gusta...Cumplir sus deberes religiosos sobre la vida familiar?
- \_\_\_ k. ¿Cuánto le gusta...Darle un nieto a sus padres(que sus padres puedan conocer sus nietos)
- \_\_\_ l. ¿Cuánto le gusta... Desarrollar su capacidad como persona teniendo hijos?
- \_\_\_ m. ¿Cuánto le gusta...Tener un hijo que tenga éxito en la vida?
- \_\_\_ n. ¿Cuánto le gusta...Jugar con sus hijos?

- \_\_\_o. ¿Cuánto le gusta...Contribuir a la sociedad a través de tener un hijo?
- \_\_\_p. ¿Cuánto le gusta...Guiar y enseñar a sus hijos?
- \_\_\_q. ¿Cuánto le gusta...Compartir la crianza de sus hijos con su esposa?
- \_\_\_r. ¿Cuánto le gusta...Experimentar el amor especial y la cercanía que un hijo provee?
- \_\_\_s. ¿Cuánto le gusta...Sentirse necesitado y útil a través de sus hijos?
- \_\_\_t. ¿Cuánto le gusta...Disfrutar la compañía y ayuda de sus hijos en su vejez?
- \_\_\_u. ¿Cuánto le gusta...Tener un niño que dependa de usted para su cuidado y protección?
- \_\_\_v. ¿Cuánto le gusta...Sentirse mas completo como hombre a través de sus hijos?
- \_\_\_w. ¿Cuánto le gusta...Vivir una vida mas satisfactoria a través de sus hijos?
- \_\_\_x. ¿Cuánto le gusta...Saber que usted es fértil?
- \_\_\_y. ¿Cuánto le gusta...Tener la admiración de su familia y amistades por medio de sus hijos?
- \_\_\_z. ¿Cuánto le gusta...Tener un hijo varón?
- \_\_\_aa. ¿Cuánto le gusta...Tener una hija mujer?
- \_\_\_bb. ¿Cuánto le gusta...Darle a su primer hijo un hermano o una hermana?
- \_\_\_cc. ¿Cuánto le gusta...Tener un hijo que trabaje para usted?
- \_\_\_dd. ¿Cuánto le gusta...Tener un hijo que sigue su apellido?
- \_\_\_ee. ¿Cuánto le gusta...Tener un hijo para heredar sus cosas?
- \_\_\_ff. ¿Cuánto le gusta...Tener todos los hijos que Dios le mande?

**( PARA HOMBRES )**

Por favor valore cuanto le molesta lo siguiente.

0. No le molesta
1. Le molesta mas o menos
2. Le molesta bastante

- \_\_\_\_\_ a. ¿Cuánto le molesta...Ver a su esposa sufrir las molestias del embarazo?
- \_\_\_\_\_ b. ¿Cuánto le molesta...Ver a su esposa sufrir con los dolores del parto?
- \_\_\_\_\_ c. ¿Cuánto le molesta...Tener un hijo que no es feliz y no muy contento en la vida?
- \_\_\_\_\_ d. ¿Cuánto le molesta...Estar preocupado por la salud y seguridad de su hijo?
- \_\_\_\_\_ e. ¿Cuánto le molesta...Tener un hijo que nazca impedido o retrasado?
- \_\_\_\_\_ f. ¿Cuánto le molesta...Estar preocupado de si está criando a su hijo de la manera correcta?
- \_\_\_\_\_ g. ¿Cuánto le molesta...Tener un hijo que avergüence o deshonre a la familia?
- \_\_\_\_\_ h. ¿Cuánto le molesta...Sentirse incapaz o inadecuado como Padre?
- \_\_\_\_\_ i. ¿Cuánto le molesta...Tener que interrumpir la carrera o trabajo de su esposa a causa de un hijo?
- \_\_\_\_\_ j. ¿Cuánto le molesta...Ser responsable por un niño dependiente y exigente que necesita de su cuidado?
- \_\_\_\_\_ k. ¿Cuánto le molesta...Gastar tiempo y energía en criar niños?
- \_\_\_\_\_ l. ¿Cuánto le molesta...Tener que aguantar el desorden y el ruido que hacen los niños?
- \_\_\_\_\_ m. ¿Cuánto le molesta...Soportar la carga económica de la familia con niños?
- \_\_\_\_\_ n. ¿Cuánto le molesta...Cuidar un niño que es desagradable e irritante? (molestón)

- \_\_\_\_\_o. ¿Cuánto le molesta...Tener que cuidar un niño enfermo?
- \_\_\_\_\_p. ¿Cuánto le molesta...Tener niños que quita su libertad para hacer otras cosas?
- \_\_\_\_\_q. ¿Cuánto le molesta...Descuidar su matrimonio por cuidar niños?
- \_\_\_\_\_r. ¿Cuánto le molesta...Tener niños que afecte negativamente la salud de su esposa?
- \_\_\_\_\_s. ¿Cuánto le molesta...Tener niños que sean carga para su esposa?
- \_\_\_\_\_t. ¿Cuánto le molesta...Tener niños que obligue a su esposa a trabajar afuera de la casa o ganar dinero con trabajo adentro la casa
- \_\_\_\_\_u. ¿Cuánto le molesta...Tener un niño que quita de lo que usted puede dar a sus otros niños?
- \_\_\_\_\_v. ¿Cuánto le molesta...Tener niños que le obligue a tener una casa más grande?
- \_\_\_\_\_w. ¿Cuánto le molesta...Ser una carga para sus hijos en su vejez?

**Demográfico****ENCUESTA DE HOMBRE / MUJER**

1. ¿Dónde vive? \_\_\_\_\_

- Es un: a. Barrio de Catacamas  
 b. Aldea de Catacamas  
 c. Otro \_\_\_\_\_

2. ¿Qué tipo de agua tiene en su vivienda?

1. Llave dentro de la vivienda
2. Llave fuera de la vivienda pero dentro de la propiedad
3. Llave fuera de la propiedad a menos de 100 metros
4. Llave fuera de la propiedad a 100 metros o más
5. Fuente natural: río, quebrada, naciente, vertiente, lago
6. Pozo malacate (sin bomba)
7. Pozo con bomba (eléctrica o manual)
8. La compran / carro cisterna
9. Fuente de agua protegida
10. Otro \_\_\_\_\_

3. ¿Qué clase de servicio sanitario tiene en su vivienda?

1. Inodoro (lavable)
2. Letrina hidráulica / tasa campesina
3. Letrina / fosa simple
4. No tiene / al aire libre
5. Otro \_\_\_\_\_

4. En su casa hay

- |                   |                                 |
|-------------------|---------------------------------|
| a. Luz eléctrica? | d. Refrigeradora?               |
| b. Radio?         | e. Teléfono?                    |
| c. Televisión?    | f. Vehículo propio? (con motor) |

5. ¿Con que cocinan ustedes?

- |                 |               |
|-----------------|---------------|
| 1. Electricidad | 5. Leña       |
| 2. Gas butano   | 6. No cocina  |
| 3. Carbon       | 7. Otro _____ |
| 4. Gas kerosene |               |

6. ¿Cuántos años cumplidos tiene Ud.?

\_\_\_\_\_ Edad

7. ¿Cual fue el grado o año más alto que Ud. aprobó en la escuela, colegio o universidad?

- |                   |   |   |   |   |   |   |
|-------------------|---|---|---|---|---|---|
| 0. Ninguno        | 0 |   |   |   |   |   |
| 1. Primaria       | 1 | 2 | 3 | 4 | 5 | 6 |
| 2. Secundaria     | 1 | 2 | 3 | 4 | 5 | 6 |
| 3. Universidad    | 1 | 2 | 3 | 4 | 5 | 6 |
| 4. Alfabetización | 1 | 2 | 3 | 4 | 5 | 6 |

8. ¿Cual es su estado civil actual?

- |                        |             |
|------------------------|-------------|
| 1. Casada              | 4. Separada |
| 2. Unida / unión libre | 5. Viuda    |
| 3. Divorciada          | 6. Soltera  |

9. ¿Cuál es su religión?

- \_\_\_\_ a. Católica  
 \_\_\_\_ b. Evangélica  
 \_\_\_\_ c. No tiene  
 \_\_\_\_ d. Otra \_\_\_\_\_

10. ¿Ha tenido algún hijo que nació vivo?

1. Si
2. No

11. ¿Cuántos de sus hijos (varones o mujeres) viven con usted en su casa? \_\_\_\_\_

12. ¿Cuántos de sus hijos (varones o mujeres) viven en otra parte? \_\_\_\_\_

13. ¿Ha tenido algún niño(a) que nació vivo y murió después, incluyendo algún hijo(a) que nació vivo(a) y murió solo minutos y horas después?

1. Si
2. No

14. ¿Cuántos de sus hijos que nacieron vivos se le murieron después? \_\_\_\_\_

15. ¿Cuantos hermanos (varones y mujeres) tiene, incluyendo los que murieron? \_\_\_\_\_

16. ¿Cuantos hermanos menores de Ud. ? \_\_\_\_\_

17. ¿Realiza o hace usted algún trabajo o actividad por el cual recibe pago en dinero ó en otra forma?

1. Si (anote actividad: \_\_\_\_\_)
2. No

17b. ¿Cuántos, mas o menos, gana en dinero en un mes?

1. Menos que 3,000 Lempiras
2. 3,000–9,999 Lempiras
3. 10,000 Lempiras o mas
- No Sé
- No responde

18. ¿Realiza o hace su esposo(a) algún trabajo o actividad por el cual recibe pago en dinero ó en otra forma?

1. Si (anote actividad: \_\_\_\_\_)
2. No

18b. ¿Cuántos, mas o menos, gana en dinero en un mes?

1. Menos que 3,000 Lempiras
  2. 3,000–9,999 Lempiras
  3. 10,000 Lempiras o mas
- No Sé  
No responde

18c. (SI LOS DOS TRABAJEN) ¿Cuántos, mas o menos, ganan ustedes en dinero en un mes?

1. Menos que 3,000 Lempiras
  2. 3,000–9,999 Lempiras
  3. 10,000 Lempiras o mas
- No Sé  
No responde

19. ¿Si pudiera elegir exactamente el número de hijos que tendría en todo su vida, cuántos serían?

\_\_\_ \_\_\_ hijos  
Los que Dios me mande  
Los que tengo  
No sé

20. ¿Cuántos hijos cree usted que deberían de tener las parejas que estan empezando a formar una familia ahora?

\_\_\_ \_\_\_ hijos  
Los que Dios les mande  
No sé

21. ¿Si tenemos más preguntas en el futuro, podemos contactarle para hablar más?

1. Si
2. No

22. ¿Cómo se llama, usted?

---

23. ¿Donde podemos contactarle?

DIRECCIÓN CON PUNTO DE REFERENCIA:

---

APPENDIX C  
ENGLISH VERSION OF QUESTIONNAIRE FOR PHASE ONE

**Informed Consent**

Good morning (afternoon), my name is \_\_\_\_\_, I'm an investigator working in a study for the University of Florida and PREDISAN. I would like to speak with you about positive and negative aspects of having children.. We intend to learn why some families have many children and why other have few children here in Catacamas..

You were selected at random from people who live here in Catacamas and around Catacamas. The interview will last approximately 30 minutes.

Your participation is completely voluntary. I will ask you a series of questions that you can interrupt en whatever moment with no negative consequences.

Your comments will be anonymous. We will use a code number for each interview and your name will never appear associated with any of the data. There are no positive benefits and no negative risks associated with your collaboration.

If, after the interview, you have any doubt or question, you can contact us at PREDISAN. PREDISAN has all the information about this study and they have information about how you can find out about your rights as a research participant.

**[Only in cases of tape recorded interviews:]**

(With your permission, I would like to tape record our conversation. If you would not like to have the interview taped, I would still like to speak with you and write your answers. The tapes are for exclusive use of the investigation and will give us an idea precisely of what is said during interviews. We will not put your name with the tape and we will use a code number for each tape so that no one will recognize it. We will guard

the tapes in a locked box in the University of Florida until a transcription is completed. Afterwards, the tapes will be erased.)

¿Can I begin and ask you questions?”

Yes

No (record why \_\_\_\_\_)

## CHILDBEARING MOTIVATION QUESTIONNAIRE

Please rate how desirable are the following

- 0. Not desirable
- 1. Somewhat desirable
- 2. Very desirable

- \_\_\_\_\_ a.            How desirable is...Feeling a baby move and kick inside your body (your wife's body)?
- \_\_\_\_\_ b.            How desirable is...Giving your spouse the satisfaction of fatherhood (motherhood)?
- \_\_\_\_\_ c.            How desirable is...Giving birth to a baby (Helping your wife give birth to a baby)?
- \_\_\_\_\_ d.            How desirable is...Breast feeding a baby (bottle feeding a baby)?
- \_\_\_\_\_ e.            How desirable is...Holding and cuddling a baby?
- \_\_\_\_\_ f.            How desirable is...Devoting yourself and much of your time to raising children and being a mother (father)?
- \_\_\_\_\_ g.            How desirable is...Having a child who will carry on your family traditions?
- \_\_\_\_\_ h.            How desirable is...Being the center of a large, active family?
- \_\_\_\_\_ i.            How desirable is...Strengthening your marriage through a child?
- \_\_\_\_\_ j.            How desirable is...Fulfilling your religious feelings about family life?
- \_\_\_\_\_ k.            How desirable is...Providing your parents with a grandchild?
- \_\_\_\_\_ l.            How desirable is...Fulfilling your potential by having children?
- \_\_\_\_\_ m.            How desirable is...Having a child be a success in life?
- \_\_\_\_\_ n.            How desirable is...Playing with your child?
- \_\_\_\_\_ o.            How desirable is...Having your child contribute to society?

- \_\_\_\_\_p.           How desirable is...Guiding and teaching your child?
- \_\_\_\_\_q.           How desirable is...Sharing childraising with your spouse?
- \_\_\_\_\_r.           How desirable is...Experiencing the special love and closeness that a child provides?
- \_\_\_\_\_s.           How desirable is...Feeling needed and useful through your child?
- \_\_\_\_\_t.           How desirable is...Having my child provide me with companionship and support later in life?
- \_\_\_\_\_u.           How desirable is...Having a helpless baby to love and protect?
- \_\_\_\_\_v.           How desirable is...Feeling more complete as a woman (man) through my baby?
- \_\_\_\_\_w.           How desirable is...Living a fuller, more enriched life through my child?
- \_\_\_\_\_x.           How desirable is...Knowing that you are fertile?
- \_\_\_\_\_y.           How desirable is...having my family and friends admire me with my baby?
- \_\_\_\_\_z.           How desirable is...Having a son?
- \_\_\_\_\_aa.          How desirable is...Having a daughter?
- \_\_\_\_\_bb.          How desirable is...Giving your first child a brother or sister?
- \_\_\_\_\_cc.          How desirable is...Having children that work for the family?
- \_\_\_\_\_dd.          How desirable is...Having children to continue your family name (the family name of your spouse)?
- \_\_\_\_\_ee.          How desirable is...Having children to inherit your things?
- \_\_\_\_\_ff.          How desirable is...Having all the children that God sends?

Please rate how undesirable are the following.

0. Not undesirable
1. Somewhat undesirable
2. Very undesirable

- \_\_\_\_\_ a. How undesirable is...Experiencing (seeing my wife experience) the discomforts of pregnancy?
- \_\_\_\_\_ b. How undesirable is...Experiencing (seeing my wife experience) the pain of child birth?
- \_\_\_\_\_ c. How undesirable is...Having an unhappy and poorly adjusted child?
- \_\_\_\_\_ d. How undesirable is...Worrying about the health and safety of your child?
- \_\_\_\_\_ e. How undesirable is...Having a baby who is born deformed?
- \_\_\_\_\_ f. How undesirable is... Worrying whether I am raising my child the right way?
- \_\_\_\_\_ g. How undesirable is... Having a child who embarrasses or disgraces the rest of the family?
- \_\_\_\_\_ h. How undesirable is... Feeling guilty or inadequate as a parent?
- \_\_\_\_\_ i. How undesirable is... Being kept from my (having my wife being kept from her) career or job by a baby?
- \_\_\_\_\_ j. How undesirable is... Being responsible for a needy and demanding baby?
- \_\_\_\_\_ k. How undesirable is... Spending time and energy involved in childcare?
- \_\_\_\_\_ l. How undesirable is... Having to put up with the mess and noise that children make?
- \_\_\_\_\_ m. How undesirable is... Burdening our family finances with a child?
- \_\_\_\_\_ n. How undesirable is... Taking care of a baby who is disagreeable and irritating?
- \_\_\_\_\_ o. How undesirable is... Taking care of a sick child?

- \_\_\_\_\_p. How undesirable is...Having a baby who takes away my freedom to do other things?
- \_\_\_\_\_q. How undesirable is...Straining your marriage with a baby?
- \_\_\_\_\_r. How undesirable is...Having a baby who strains my (wife's) health?
- \_\_\_\_\_s. How undesirable is... Having a child who is a burden to my spouse?
- \_\_\_\_\_t. How undesirable is... Having a child who makes it necessary for me (my wife) to have a job?
- \_\_\_\_\_u. How undesirable is... Having a baby who takes away from how much I can give to my other child?
- \_\_\_\_\_v. How undesirable is...Having a child that makes it necessary to have a larger house?
- \_\_\_\_\_w. How undesirable is...Being a burden on my children in my old age?

## Demographics

## Questionnaire of MEN / WOMEN

1. Where do you live? \_\_\_\_\_

- It is a : a. Neighborhood of Catacamas  
 b. Village of Catacamas  
 c. Other \_\_\_\_\_

2. What type of water do you have in your living area?

1. Tap inside
2. Tap outside but close
3. Tap off of the property under 100 meters away
4. Tap off of the property over 100 meters away
5. Natural source
6. Well without pump
7. Well with pump
8. Purchased
9. Protected source of water
10. Other \_\_\_\_\_

3. ¿What type of sanitary services do you have?

1. Indoor
2. Latrine with water
3. Latrine without water
4. Open field
5. Other \_\_\_\_\_

4. In your house there is...

- a. Electricity?
- b. Radio?
- c. Television?
- d. Refrigerator?
- e. Telephone?
- f. Vehicle

5. ¿With what do you cook?

1. Electricity
2. Gas butane
3. Charcoal
4. Kerosene
5. Wood
6. Don't cook
7. Other \_\_\_\_\_

6. ¿How old are you?

— —

7. ¿What was the highest year or grade you finished in school?

0. None	0					
1. Primary	1	2	3	4	5	6
2. Secondary	1	2	3	4	5	6
3. University	1	2	3	4	5	6
4. Reading and Writing	1	2	3	4	5	6

8. ¿What is your marital status?

1. Married
2. Life partners
3. Divorced
4. Separated
5. Widow
6. Single

9. What is your religion?

1. Catholic
2. Evangelical
3. None
4. Other \_\_\_\_\_

10. ¿Have you had a child who was born alive?

1. Yes
2. No

11. ¿How many of your children live with you? \_\_\_\_\_

12. ¿How many live somewhere else? \_\_\_\_\_

13. ¿Have you had a child born alive which died later?

1. Yes
2. No

14. ¿How many? \_\_\_\_\_

15. ¿How many siblings do you have? \_\_\_\_\_

16. How many younger ? \_\_\_\_\_

17. Do you have some type of work or activity for which you receive pay in money or some other form?

- 1. Yes \_\_\_\_\_
- 2. No

17b. How much do you make in one month?

- 1. Less than 3,000 Lempiras
- 2. 3,000–9,999 Lempiras
- Don't know
- Refused

18. Does your spouse have some type of work or activity for which she/he receives pay in money or some other form?

- 1. Yes (specify activity: \_\_\_\_\_)
- 2. No

18b. How much, more or less, does she/he make in one month?

- 1. Less than 3,000 Lempiras
- 2. 3,000–9,999 Lempiras
- Don't know
- Refused

19. ¿If you could decide exactly the number of children to have in your life, how many would it be?

- \_\_\_ children
- As many as God sends
- The number I have
- Don't know

20. ¿If a couple was beginning their family now, how many children should they have?

- \_\_\_ children
- As many as God sends
- Don't know

21. ¿If we have more questions later, can we contact you to speak more?

- 1. Yes
- 2. No

22. What is your name?

\_\_\_\_\_

23. Where can we contact you?

ADDRESS WITH POINT OF REFERENCE:

\_\_\_\_\_

APPENDIX D  
SPANISH VERSION OF QUESTIONNAIRE FOR PHASE TWO

Lugar

---

Barrio: \_\_\_\_\_ Manzana: \_\_\_\_\_ Casa: \_\_\_\_\_

**Fecha:** \_\_\_\_\_ **Hora:** \_\_\_\_\_

Entrevistador: \_\_\_\_\_

# Hoy: \_\_\_\_\_

Encuesta de a. hombre  
b. mujer

Consentimiento

Buenos días (tardes), mi nombre es \_\_\_\_\_, soy investigador trabajando en un estudio de la Universidad de Florida y PREDISAN. Me gustaría hablar con Ud. sobre cosas positivas y negativas sobre tener hijos. Intentamos aprender porque algunas familias tienen muchos hijos y otras tienen pocos hijos aquí en Catacamas.

Yo lo seleccioné a usted entre personas que viven cerca o alrededor de Catacamas. Esta entrevista durará aproximadamente 30 minutos.

Su participación es completamente voluntaria. A usted le haré una serie de preguntas que puede interrumpir en cualquier momento sin consecuencia alguna.

Sus comentarios quedarán anónimos. Por lo que no hay riesgos de que participe, aunque tampoco hay beneficios directos por su colaboración.

Si posteriormente tiene alguna duda Ud. puede contactarnos en PREDISAN.  
PREDISAN tiene todos los datos de este estudio y la información sobre sus derechos  
como participante.

¿Puedo seguir y hacerle las preguntas?”

Si  
No

## ( PARA MUJERES )

## CUESTIONARIO SOBRE MOTIVACIÓN DE MATERNIDAD

Por favor valore cuanto le gusta lo siguiente.

0. No le gusta
  1. Le gusta mas o menos
  2. Le gusta bastante
- 
- \_\_\_ a. ¿Cuánto le gusta...Dedicarse mucho tiempo a criar hijos y ser madre?
  - \_\_\_ b. ¿Cuánto le gusta...Tener hijos que trabajen para usted?
  - \_\_\_ c. ¿Cuánto le gusta...Disfrutar la compañía y ayuda de sus hijos en su vejez?
  - \_\_\_ d. ¿Cuánto le gusta...Vivir una vida mas satisfactoria a través de su hijo?
  - \_\_\_ e. ¿Cuánto le gusta...Tener un niño que dependa de usted para su cuidado y protección?
  - \_\_\_ f. ¿Cuánto le gusta...Compartir la crianza de sus hijos con su esposo?
  - \_\_\_ g. ¿Cuánto le gusta...Guiar y enseñar a su hijo?
  - \_\_\_ h. ¿Cuánto le gusta...Experimentar el amor especial y la cercanía que un hijo provee?
  - \_\_\_ i. ¿Cuánto le gusta...Ser el centro de una familia grande y activa?
  - \_\_\_ j. ¿Cuánto le gusta...Tener todos los hijos que Dios le mande?
  - \_\_\_ k. ¿Cuánto le gusta...Sentirse mas completa como mujer a través de sus hijos?
  - \_\_\_ l. ¿Cuánto le gusta...Jugar con su hijo?
  - \_\_\_ m. ¿Cuánto le gusta...Dar a luz un niño?
  - \_\_\_ n. ¿Cuánto le gusta...Saber que usted es fértil?
  - \_\_\_ o. ¿Cuánto le gusta...Tener un hijo que continúe sus costumbres familiares? (Por ejemplo...celebrar navidad, cumpleaños, día de madre, día de finados)

- \_\_\_\_\_p. ¿Cuánto le gusta...Sentir un niño moverse o patear dentro de su cuerpo?
- \_\_\_\_\_q. ¿Cuánto le gusta...Darle a su esposo la satisfacción ser padre?
- \_\_\_\_\_r. ¿Cuánto le gusta...Dar pecho a un niño?
- \_\_\_\_\_s. ¿Cuánto le gusta...Darle un nieto a sus padres? (que sus padres puedan conocer sus nietos )
- \_\_\_\_\_t. ¿Cuánto le gusta...Fortalecer su matrimonio a través de un hijo?
- \_\_\_\_\_u. ¿Cuánto le gusta...Tener un hijo varón?
- \_\_\_\_\_v. ¿Cuánto le gusta...Tener la admiración de su familia y amistades por medio de su hijo?
- \_\_\_\_\_w. ¿Cuánto le gusta...Chinear y abrazar un niño?
- \_\_\_\_\_x. ¿Cuánto le gusta...Contribuir a la sociedad a través de tener un hijo?
- \_\_\_\_\_y. ¿Cuánto le gusta...Tener una hija mujer?
- \_\_\_\_\_z. ¿Cuánto le gusta...Cumplir sus deberes religiosos sobre la vida familiar?
- \_\_\_\_\_aa. ¿Cuánto le gusta...Desarrollar su capacidad como persona teniendo hijos?
- \_\_\_\_\_bb. ¿Cuánto le gusta...Sentirse necesitada y útil a través de su hijo?

**( PARA MUJERES )**

Por favor valore cuanto le molesta lo siguiente.

0. No le molesta
  1. Le molesta mas o menos
  2. Le molesta bastante
- 
- \_\_\_\_\_ a. ¿Cuánto le molesta...Tener que aguantar el desorden y el ruido que hacen los niños?
  - \_\_\_\_\_ b. ¿Cuánto le molesta...Sentirse incapaz o inadecuada como Madre?
  - \_\_\_\_\_ c. ¿Cuánto le molesta...Soportar la carga económica de la familia con niños?
  - \_\_\_\_\_ d. ¿Cuánto le molesta...Estar preocupada de si está criando a su hijo de la manera correcta?
  - \_\_\_\_\_ e. ¿Cuánto le molesta...Tener niños que quita su libertad para hacer otras cosas?
  - \_\_\_\_\_ f. ¿Cuánto le molesta...Tener niños que sean carga para su esposo?
  - \_\_\_\_\_ g. ¿Cuánto le molesta...Ser responsable por un niño dependiente y exigente que necesita de su cuidado?
  - \_\_\_\_\_ h. ¿Cuánto le molesta...Tener un hijo que no es feliz y no muy contento en la vida?
  - \_\_\_\_\_ i. ¿Cuánto le molesta...Tener un hijo que avergüence o deshonne a la familia?
  - \_\_\_\_\_ j. ¿Cuánto le molesta...Cuidar niños que son desagradables e irritantes?
  - \_\_\_\_\_ k. ¿Cuánto le molesta...Sufrir con los dolores del parto?
  - \_\_\_\_\_ l. ¿Cuánto le molesta...Estar preocupada por la salud y seguridad de sus hijos?
  - \_\_\_\_\_ m. ¿Cuánto le molesta...Ser una carga para sus hijos en su vejez?
  - \_\_\_\_\_ n. ¿Cuánto le molesta...Tener un hijo que nazca impedido o retrasado?

- \_\_\_\_o. ¿Cuánto le molesta...Tener un niño que quita de lo que usted puede dar a sus otros niños?
- \_\_\_\_p. ¿Cuánto le molesta...Tener niños que afecta negativamente su salud?
- \_\_\_\_q. ¿Cuánto le molesta...Tener que interrumpir su carrera o su trabajo a causa de un hijo?
- \_\_\_\_r. ¿Cuánto le molesta...Descuidar su matrimonio por cuidar niños?
- \_\_\_\_s. ¿Cuánto le molesta...Tener niños que le obliguen a trabajar afuera la casa o ganar dinero con trabajo adentro la casa?
- \_\_\_\_t. ¿Cuánto le molesta...Sufrir las molestias del embarazo?
- \_\_\_\_u. ¿Cuánto le molesta...Gastar tiempo y energía en criar niños?
- \_\_\_\_v. ¿Cuánto le molesta...Tener que cuidar un niño enfermo?

## ( PARA HOMBRES )

## CUESTIONARIO SOBRE MOTIVACIÓN DE PATERNIDAD

Por favor valore cuanto le gusta lo siguiente.

- 0. No le gusta
  - 1. Le gusta mas o menos
  - 2. Le gusta bastante
- \_\_\_ a. ¿Cuánto le gusta...Dedicarse mucho tiempo a criar hijos y ser padre?
  - \_\_\_ b. ¿Cuánto le gusta...Tener hijos que trabajen para usted?
  - \_\_\_ c. ¿Cuánto le gusta...Disfrutar la compañía y ayuda de sus hijos en su vejez?
  - \_\_\_ d. ¿Cuánto le gusta...Vivir una vida mas satisfactoria a través de su hijo?
  - \_\_\_ e. ¿Cuánto le gusta...Tener un niño que dependa de usted para su cuidado y protección?
  - \_\_\_ f. ¿Cuánto le gusta...Compartir la crianza de sus hijos con su esposa?
  - \_\_\_ g. ¿Cuánto le gusta...Guiar y enseñar a su hijo?
  - \_\_\_ h. ¿Cuánto le gusta...Experimentar el amor especial y la cercanía que un hijo provee?
  - \_\_\_ i. ¿Cuánto le gusta...Ser el centro de una familia grande y activa?
  - \_\_\_ j. ¿Cuánto le gusta...Tener todos los hijos que Dios le mande?
  - \_\_\_ k. ¿Cuánto le gusta...Sentirse mas completa como hombre a través de sus hijos?
  - \_\_\_ l. ¿Cuánto le gusta...Jugar con su hijo?
  - \_\_\_ m. ¿Cuánto le gusta...Ayudar a su esposa a dar a luz un niño?
  - \_\_\_ n. ¿Cuánto le gusta...Saber que usted es fértil?
  - \_\_\_ o. ¿Cuánto le gusta...Tener un hijo que continúe sus costumbres familiares? (Por ejemplo...celebrar navidad, cumpleaños, día de madre, día de finados)

- \_\_\_\_\_p. ¿Cuánto le gusta...Sentir un niño moverse o patear dentro de su esposa?
- \_\_\_\_\_q. ¿Cuánto le gusta...Darle a su esposa la satisfacción ser madre?
- \_\_\_\_\_r. ¿Cuánto le gusta...Criar con un pepe a un niño?
- \_\_\_\_\_s. ¿Cuánto le gusta...Darle un nieto a sus padres? (que sus padres puedan conocer sus nietos )
- \_\_\_\_\_t. ¿Cuánto le gusta...Fortalecer su matrimonio a través de un hijo?
- \_\_\_\_\_u. ¿Cuánto le gusta...Tener un hijo varón?
- \_\_\_\_\_v. ¿Cuánto le gusta...Tener la admiración de su familia y amistades por medio de su hijo?
- \_\_\_\_\_w. ¿Cuánto le gusta...Chinear y abrazar un niño?
- \_\_\_\_\_x. ¿Cuánto le gusta...Contribuir a la sociedad a través de tener un hijo?
- \_\_\_\_\_y. ¿Cuánto le gusta...Tener una hija mujer?
- \_\_\_\_\_z. ¿Cuánto le gusta...Cumplir sus deberes religiosos sobre la vida familiar?
- \_\_\_\_\_aa. ¿Cuánto le gusta...Desarrollar su capacidad como persona teniendo hijos?
- \_\_\_\_\_bb. ¿Cuánto le gusta...Sentirse necesitada y útil a través de su hijo?

**( PARA HOMBRES )**

Por favor valore cuanto le molesta lo siguiente.

0. No le molesta
1. Le molesta mas o menos
2. Le molesta bastante

- \_\_\_\_\_ a. ¿Cuánto le molesta...Tener que aguantar el desorden y el ruido que hacen los niños?
- \_\_\_\_\_ b. ¿Cuánto le molesta...Sentirse incapaz o inadecuada como Padre?
- \_\_\_\_\_ c. ¿Cuánto le molesta...Soportar la carga económica de la familia con niños?
- \_\_\_\_\_ d. ¿Cuánto le molesta...Estar preocupada de si está criando a su hijo de la manera correcta?
- \_\_\_\_\_ e. ¿Cuánto le molesta...Tener niños que quita su libertad para hacer otras cosas?
- \_\_\_\_\_ f. ¿Cuánto le molesta...Tener niños que sean carga para su esposa?
- \_\_\_\_\_ g. ¿Cuánto le molesta...Ser responsable por un niño dependiente y exigente que necesita de su cuidado?
- \_\_\_\_\_ h. ¿Cuánto le molesta...Tener un hijo que no es feliz y no muy contento en la vida?
- \_\_\_\_\_ i. ¿Cuánto le molesta...Tener un hijo que avergüence o deshonne a la familia?
- \_\_\_\_\_ j. ¿Cuánto le molesta...Cuidar niños que son desagradables e irritantes?
- \_\_\_\_\_ k. ¿Cuánto le molesta...Ver a su esposa sufrir con los dolores del parto?
- \_\_\_\_\_ l. ¿Cuánto le molesta...Estar preocupada por la salud y seguridad de sus hijos?
- \_\_\_\_\_ m. ¿Cuánto le molesta...Ser una carga para sus hijos en su vejez?
- \_\_\_\_\_ n. ¿Cuánto le molesta...Tener un hijo que nazca impedido o retrasado?

- \_\_\_\_\_o. ¿Cuánto le molesta...Tener un niño que quita de lo que usted puede dar a sus otros niños?
- \_\_\_\_\_p. ¿Cuánto le molesta...Tener niños que afecta negativamente la salud de su esposa?
- \_\_\_\_\_q. ¿Cuánto le molesta...Tener que interrumpir la carrera o trabajo de su esposa a causa de un hijo?
- \_\_\_\_\_r. ¿Cuánto le molesta...Descuidar su matrimonio por cuidar niños?
- \_\_\_\_\_s. ¿Cuánto le molesta...Tener niños que obligue a su esposa a trabajar afuera de la casa o ganar dinero con trabajo adentro la casa?
- \_\_\_\_\_t. ¿Cuánto le molesta...Ver a su esposa sufrir las molestias del embarazo?
- \_\_\_\_\_u. ¿Cuánto le molesta...Gastar tiempo y energía en criar niños?
- \_\_\_\_\_v. ¿Cuánto le molesta...Tener que cuidar un niño enfermo?

Ahora, quisiera solicitar su opinión sobre algunos temas que nos interesan.

1. ¿Si pudiera elegir exactamente el número de hijos que tendría en todo su vida, cuántos serían?

\_\_ \_\_ hijos  
 Los que Dios me mande  
 Los que tengo  
 No sé

2. ¿Cuántos hijos cree usted que deberían de tener las parejas que están empezando a formar una familia ahora?

\_\_ \_\_ hijos  
 Los que Dios les mande  
 No sé

3. Con cuantos hijos cree usted que una familia es:

Grande: \_\_\_\_\_ en adelante  
 Pequeño: menos que \_\_\_\_\_

4. Ahora, le voy a preguntar sobre obligaciones y actividades de hombres y mujeres en una pareja o en un hogar. ¿Quién debería decidir el número de niños que una pareja debería tener? ¿El hombre, La mujer, los dos, o cualquier otra persona? NO LEER.

1. Esposo/ compañero/ hombre
2. Esposa/ compañera/ mujer
3. Los dos juntos
4. Cualquier de los dos
5. El Médico
6. Lo que pase / lo que mande Dios
7. Otro \_\_\_\_\_
8. Especifique
9. NO SABE

5. ¿Quién debería decidir si una pareja utiliza métodos de planificación familiar? NO LEER

- a) Esposo/ compañero/ hombre
- b) Esposa/ compañera/ mujer
- c) Los dos juntos
- d) Cualquier de los dos
- e) El Médico
- f) Otro \_\_\_\_\_  
 Especifique
- g) NO SABE

## 6. ¿Quién debería soportar la carga económica de la familia?

NO LEER

- a) Esposo/ compañero/ hombre
- b) Esposa/ compañera/ mujer
- c) Los dos juntos---
- SI LOS DOS, LEA: a) ¿Los dos iguales? O...
- b) ¿La mayoría el hombre? O..
- c) ¿La mayoría la mujer?
- d) Cualquier de los dos
- e) Otro \_\_\_\_\_
- Especifique
- f) NO SABE

## 7. ¿Quién debería cuidar la casa de la familia?

NO LEER

- a) Esposo/ compañero/ hombre
- b) Esposa/ compañera/ mujer
- c) Los dos juntos---
- SI LOS DOS, LEA: a) ¿Los dos iguales? O...
- b) ¿La mayoría el hombre? O..
- c) ¿La mayoría la mujer?
- d) Cualquier de los dos
- e) Otro \_\_\_\_\_
- Especifique
- f) NO SABE

## 8. ¿Quién debería cuidar los niños de la familia?

- a) Esposo/ compañero/ hombre
- b) Esposa/ compañera/ mujer
- c) Los dos juntos---
- SI LOS DOS, LEA: a) ¿Los dos iguales? O...
- b) ¿La mayoría el hombre? O..
- c) ¿La mayoría la mujer?
- d) Cualquier de los dos
- e) Otro \_\_\_\_\_
- Especifique
- f) NO SABE

## 9. ¿Ud. Cree que es aceptable para hombres unidos tener relaciones extramaritales?

- a) Nunca
- b) A veces
- c) Siempre
- d) NO SABE

## 10. ¿Ud. Cree que es aceptable para mujeres unidos tener relaciones extramaritales?



Ahora, le voy hacer algunas preguntas acerca de la planificación familiar, es decir de las cosas que usan las parejas para evitar que la mujer quede embarazada.

	10. Ha oído hablar de:		11. Alguna vez ha usado?	
	Si	No	Si	No
a. La píldora o pastillas anticonceptivas	a)	1 2	a)	1 2
b. El DIU ó dispositivo	b)	1 2	b)	1 2
c. El condón	c)	1 2	c)	1 2
d. La inyección	d)	1 2	d)	1 2
e. Los métodos vaginales jaleas, espumas, cremas, óvulos, tabletas.	e)	1 2	e)	1 2
f. La esterilización femenina u operación	f)	1 2	f)	1 2
g. La vasectomía ó esterilización masculina	g)	1 2	g)	1 2
h. Ritmo o calendario	h)	1 2	h)	1 2
i. Billings (moco cervical)	i)	1 2	i)	1 2
j. Retiro (escupir fuera)	j)	1 2	j)	1 2
k. Norplant	k)	1 2	k)	1 2

### Demográfico

1. ¿Dónde nació? \_\_\_\_\_

- Es un:
- a. Barrio de Catacamas
  - b. Aldea de Catacamas
  - c. Otro \_\_\_\_\_

2. ¿Qué tipo de agua tiene en su vivienda?

- 1. Llave dentro de la vivienda
- 2. Llave fuera de la vivienda pero dentro de la propiedad
- 3. Llave fuera de la propiedad a menos de 100 metros
- 4. Llave fuera de la propiedad a 100 metros o más
- 5. Fuente natural: río, quebrada, naciente, vertiente, lago
- 6. Pozo malacate (sin bomba)
- 7. Poso con bomba (eléctrica o manual)
- 8. La compran / carro cisterna
- 9. Fuente de agua protegida
- 10. Otro \_\_\_\_\_

## 3. ¿Qué clase de servicio sanitario tiene en su vivienda?

1. Inodoro (lavable)
2. Letrina hidráulica / tasa campesina
3. Letrina / fosa simple
4. No tiene / al aire libre
5. Otro \_\_\_\_\_

## 4. En su casa hay

- |                               |                                  |
|-------------------------------|----------------------------------|
| a. ¿Luz eléctrica? (o planta) | d. ¿Refrigeradora?               |
| b. ¿Radio?                    | e. ¿Teléfono?                    |
| c. ¿Televisión?               | f. ¿Vehículo propio? (con motor) |

## 5. ¿Con que cocinan ustedes?

- |                 |              |
|-----------------|--------------|
| 1. Electricidad | 5. Leña      |
| 2. Gas butano   | 6. No cocina |
| 3. Carbón       | 7. Otro      |

---

4. Gas kerosene

## 6. ¿Cuántos años cumplidos tiene Ud.? \_\_\_\_\_ años de edad

## 7a. ¿Cuál fue el grado o año más alto que Ud. aprobó en la escuela, colegio o universidad?

0. Ninguno	0					
1. Primaria	1	2	3	4	5	6
2. Secundaria	1	2	3	4	5	6
3. Universidad	1	2	3	4	5	6
4. Alfabetización	1	2	3	4	5	6

## 7b. ¿Cuál fue el grado o año más alto que su ESPOSO(A) aprobó en la escuela, colegio o universidad?

0. Ninguno	0					
1. Primaria	1	2	3	4	5	6
2. Secundaria	1	2	3	4	5	6
3. Universidad	1	2	3	4	5	6
4. Alfabetización	1	2	3	4	5	6

## 7c. ¿Cuál fue el grado o año más alto que su MADRE aprobó en la escuela, colegio o universidad?

0. Ninguno	0					
1. Primaria	1	2	3	4	5	6
2. Secundaria	1	2	3	4	5	6
3. Universidad	1	2	3	4	5	6
4. Alfabetización	1	2	3	4	5	6

## 8. ¿Cuál es su estado civil actual?

- |                        |             |
|------------------------|-------------|
| 1. Casada              | 4. Separada |
| 2. Unida / unión libre | 5. Viuda    |
| 3. Divorciada          | 6. Soltera  |

## 9a. ¿Cuál es su religión?

1. Católica
2. Evangélica
3. No tiene
4. Otra \_\_\_\_\_

## 9b. ¿Usted como se considera? (LEER LAS OPCIONES)

1. Muy religiosa
2. Religiosa
3. Poco religiosa
4. Nada religiosa

## 10. ¿Ha tenido algún hijo que nació vivo?

1. Sí
2. No

## 11. ¿Cuántos de sus hijos (varones o mujeres) viven con usted en su casa? \_\_\_\_\_

## 12. ¿Cuántos de sus hijos (varones o mujeres) viven en otra parte? \_\_\_\_\_

## 13. ¿Ha tenido algún niño(a) que nació vivo y murió después, incluyendo algún hijo(a) que nació vivo(a) y murió solo minutos y horas después?

1. Sí
2. No

## 14. ¿Cuántos de sus hijos que nacieron vivos se le murieron después? \_\_\_\_\_

## 15. ¿Realiza o hace usted algún trabajo o actividad por el cual recibe pago en dinero ó en otra forma?

1. Sí (anote actividad: \_\_\_\_\_)
2. No

## 15b. ¿Cuántos, mas o menos, gana en dinero en un mes?

1. Menos que 3,000 Lempiras

- 2. 3,000-9,999 Lempiras
- 3. 10,000 Lempiras o mas
- 4. No Sé
- 5. No responde

16. **¿Realiza o hace su esposo(a) algún trabajo o actividad por el cual recibe pago en dinero ó en otra forma?**

- 1. Si (anote actividad: \_\_\_\_\_)
- 2. No

16b. **¿Cuántos, mas o menos, gana en dinero en un mes?**

- 1. Menos que 3,000 Lempiras
- 2. 3,000-9,999 Lempiras
- 3. 10,000 Lempiras o más
- 4. No Sé
- 5. No responde

17. (SI LOS DOS TRABAJEN) **¿Cuántos, mas o menos, ganan ustedes en dinero en un mes?**

- 1. Menos que 3,000 Lempiras
- 2. 3,000-9,999 Lempiras
- 3. 10,000 Lempiras o más
- 4. No Sé
- 5. No responde

18. **¿Si tenemos más preguntas en el futuro, podemos contactarle para hablar más?**

- 1. Si
- 2. No

19. **¿Cómo se llama, usted?**

---

20. **¿Donde podemos contactarle?**

DIRECCIÓN CON PUNTO DE REFERENCIA:

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APPENDIX E  
ENGLISH VERSION OF QUESTIONNAIRE FOR PHASE TWO

**Informed Consent**

Good morning (afternoon), my name is \_\_\_\_\_, I'm an investigator working in a study for the University of Florida and PREDISAN. I would like to speak with you about positive and negative aspects of having children.. We intend to learn why some families have many children and why other have few children here in Catacamas..

You were selected at random from people who live here in Catacamas and around Catacamas. The interview will last approximately 30 minutes.

Your participation is completely voluntary. I will ask you a series of questions that you can interrupt en whatever moment with no negative consequences.

Your comments will be anonymous. We will use a code number for each interview and your name will never appear associated with any of the data. There are no positive benefits and no negative risks associated with your collaboration.

If, after the interview, you have any doubt or question, you can contact us at PREDISAN. PREDISAN has all the information about this study and they have information about how you can find out about your rights as a research participant.

**[Only in cases of tape recorded interviews:]**

(With your permission, I would like to tape record our conversation. If you would not like to have the interview taped, I would still like to speak with you and write your answers. The tapes are for exclusive use of the investigation and will give us an idea precisely of what is said during interviews. We will not put your name with the tape and we will use a code number for each tape so that no one will recognize it. We will guard

the tapes in a locked box in the University of Florida until a transcription is completed.  
Afterwards, the tapes will be erased.)

¿Can I begin and ask you questions?”

Yes

No (record why\_\_\_\_\_)

## CHILDBEARING MOTIVATION QUESTIONNAIRE

Please rate how desirable are the following

- 0. Not desirable
- 1. Somewhat desirable
- 2. Very desirable

- \_\_\_\_\_ a. How desirable is...Devoting yourself and much of your time to raising children and being a mother (father)?
- \_\_\_\_\_ b. How desirable is...Having children that work for the family?
- \_\_\_\_\_ c. How desirable is...Having my child provide me with companionship and support later in life.
- \_\_\_\_\_ d. How desirable is...Living a fuller, more enriched life through your child?
- \_\_\_\_\_ e. How desirable is...Having a helpless baby to love and protect?
- \_\_\_\_\_ f. How desirable is...Sharing childraising with your spouse?
- \_\_\_\_\_ g. How desirable is...Guiding and teaching your child?
- \_\_\_\_\_ h. How desirable is...Experiencing the special love and closeness that a child gives?
- \_\_\_\_\_ i. How desirable is...Being the center of a large, active family?
- \_\_\_\_\_ j. How desirable is...Having all the children that God sends?
- \_\_\_\_\_ k. How desirable is...Feeling more complete as a woman (man) through my baby?
- \_\_\_\_\_ l. How desirable is...Playing with your child?
- \_\_\_\_\_ m. How desirable is...Giving birth to a baby (Helping your wife give birth to a baby)?

- \_\_\_\_\_n. How desirable is...Knowing that you are fertile?
- \_\_\_\_\_o. How desirable is...Having a child who will carry on your family traditions?
- \_\_\_\_\_p. How desirable is...Feeling a baby move and kick inside your body (your wife's body)?
- \_\_\_\_\_q. How desirable is...Giving your spouse the satisfaction of fatherhood (motherhood)?
- \_\_\_\_\_r. How desirable is...Breast feeding a baby (bottle feeding a baby)?
- \_\_\_\_\_s. How desirable is...Providing your parents with a grandchild?
- \_\_\_\_\_t. How desirable is...Strengthening your marriage through a child?
- \_\_\_\_\_u. How desirable is...Having a son?
- \_\_\_\_\_v. How desirable is...having my family and friends admire me with my baby?
- \_\_\_\_\_w. How desirable is...Holding and cuddling a baby?
- \_\_\_\_\_x. How desirable is...Having my child contribute to society?
- \_\_\_\_\_y. How desirable is...Having a daughter?
- \_\_\_\_\_z. How desirable is...Fulfilling your religious feelings about family life?
- \_\_\_\_\_aa. How desirable is...Fulfilling your potential by having children?
- \_\_\_\_\_bb. How desirable is...Feeling needed and useful through your baby?

Please rate how undesirable are the following.

0. Not undesirable
1. Somewhat undesirable
2. Very undesirable

- \_\_\_\_\_ a. How undesirable is...Having to put up with the mess and noise that children make?
- \_\_\_\_\_ b. How undesirable is...Feeling guilty or inadequate as a parent?
- \_\_\_\_\_ c. How undesirable is...Burdening our family finances with a child?
- \_\_\_\_\_ d. How undesirable is...Worrying whether I am raising my child the right way?
- \_\_\_\_\_ e. How undesirable is...Having a baby who takes away my freedom to do other things?
- \_\_\_\_\_ f. How undesirable is...Having a child who is a burden to my spouse?
- \_\_\_\_\_ g. How undesirable is...Being responsible for a needy and demanding baby?
- \_\_\_\_\_ h. How undesirable is...Having an unhappy and poorly adjusted child?
- \_\_\_\_\_ i. How undesirable is...Having a child who embarrasses or disgraces the rest of the family?
- \_\_\_\_\_ j. How undesirable is...Taking care of a baby who is disagreeable and irritating?
- \_\_\_\_\_ k. How undesirable is...Experiencing (seeing my wife experience) the pains of child birth?
- \_\_\_\_\_ l. How undesirable is...Worrying about the health and safety of your child?
- \_\_\_\_\_ m. How undesirable is...Being a burden on my children in my old age?
- \_\_\_\_\_ n. How undesirable is...Having a baby who is born deformed?

- \_\_\_\_\_o. How undesirable is...Having a baby who takes away from how much I can give to my other child?
- \_\_\_\_\_p. How undesirable is...Having a baby who strains my (wife's) health?
- \_\_\_\_\_q. How undesirable is...Being kept from my (having my wife being kept from her) career or job by a baby?
- \_\_\_\_\_r. How undesirable is...Straining your marriage with a baby?
- \_\_\_\_\_s. How undesirable is...Having a child who makes it necessary for me (my wife) to have a job?
- \_\_\_\_\_t. How undesirable is...Experiencing (seeing my wife experience) the discomforts of pregnancy?
- \_\_\_\_\_u. How undesirable is...Spending time and energy involved in childcare?
- \_\_\_\_\_v. How undesirable is...Taking care of a sick child?

Now, we would like to know your opinion of a few subjects we are interested in.

1. If you could decided exactly the number of children that you would have in your whole life, how many would that be?

\_\_ \_\_ children

The number that God sends

The number that I have

Don't know

2. If a couple was beginning their family now, how many children should they have?

\_\_ \_\_ children

The number that God sends

Don't know

3. With how many children do you think that a family is:

Large: \_\_\_\_\_ or more

Small: less than \_\_\_\_\_

4. Now, I'm going to ask about obligations and activities of men and women in a couple or in a home. Who should decide the number of children that a couple should have? The man, the woman, both, or some other person? DON'T READ

1. Husband/ man
2. Wife/ woman
3. Both together
4. Someone else
5. A doctor
6. Whatever happens / however many God sends
7. OTHER: \_\_\_\_\_
8. Specify
9. DON'T KNOW

5. ¿Who should decide if a couple uses family planning methods?

DON'T READ

- a) Husband/ man
- b) Wife/ woman
- c) Both together
- d) One or the other
- e) A doctor
- f) OTHER \_\_\_\_\_
- g) SPECIFY
- h) DON'T KNOW

## 6. Who should support the economic burden of the family?

DON'T READ

- a) Husband/ man
- b) Wife/ woman
- c) Both together---→ IF BOTH, READ:
  - a) Both equally?
  - Or...
  - b) The majority the man, or..
  - c) The majority the woman?
- d) One of the two
- e) Other \_\_\_\_\_ SPECIFY
- f) DON'T KNOW

## 7. Who should take care of the family's house?

DON'T READ

- a) Husband/ man
- b) Wife/ woman
- c) Both together---→ IF BOTH, READ:
  - a) Both equally?
  - Or...
  - b) The majority the man, or..
  - c) The majority the woman?
- d) One of the two
- e) Other \_\_\_\_\_ SPECIFY
- f) DON'T KNOW

## 8. Who should care for the children?

DON'T READ

- a) Husband/ man
- b) Wife/ woman
- c) Both together---→ IF BOTH, READ:
  - a) Both equally?
  - Or...
  - b) The majority the man, or..
  - c) The majority the woman?
- d) One of the two
- e) Other \_\_\_\_\_ SPECIFY
- f) DON'T KNOW

## 9. Do you believe that it is acceptable for married men to have extra-marital sexual relationships?

- a) Never
- b) Sometimes
- c) Always
- d) Don't Know

## 10. Do you believe that it is acceptable for married women to have extra-marital sexual relationships?



Now, I'm going to ask you a few questions about family planning, meaning the things that couples use to avoid a pregnancy.

	10. Have you heard of:		11. Have you ever used:	
	Yes	No	Yes	No
a) Birth control pills	a) 1	2	a) 1	2
b) IUD	b) 1	2	b) 1	2
c) condom	c) 1	2	c) 1	2
d) injection	d) 1	2	d) 1	2
e) vaginal methods (jellies, foams, creams, ovules, tablets).	e) 1	2	e) 1	2
f) Female sterilization or operation	f) 1	2	f) 1	2
g) Vasectomy or male sterilization	g) 1	2	g) 1	2
h) Rhythm or calendar	h) 1	2	h) 1	2
i) Billings (cervical mucus)	i) 1	2	i) 1	2
j) Withdraw	j) 1	2	j) 1	2
k) Norplant	k) 1	2	k) 1	2

### Demographics

1. Where were you born? \_\_\_\_\_

- It's a :
- a. Neighborhood of Catacamas
  - b. Village of Catacamas
  - c. Other \_\_\_\_\_

2. What type of water do you have in your house?

- 1. Tap inside
- 2. Tap outside but close
- 3. Tap off of the property under 100 meters away
- 4. Tap off of the property over 100 meters away
- 5. Natural source
- 6. Well without pump
- 7. Well with pump
- 8. Purchased
- 9. Protected source of water
- 10. Other \_\_\_\_\_

3. ¿What type of sanitary services do you have?

1. Indoor
2. Latrine with water
3. Latrine without water
4. Open field
5. Other \_\_\_\_\_

4. In your house there is...

- a. Electricity?
- b. Radio?
- c. Television?
- d. Refrigerator?
- e. Telephone?
- f. Vehicle

5. ¿With what do you cook?

1. Electricity
2. Gas butane
3. Charcoal
4. Kerosene
5. Wood
6. Don't cook
7. Other \_\_\_\_\_

6. ¿How old are you?

— —

7a. ¿What was the highest year or grade you finished in school?

0. None	0					
1. Primary	1	2	3	4	5	6
2. Secondary	1	2	3	4	5	6
3. University	1	2	3	4	5	6
4. Reading and Writing	1	2	3	4	5	6

7b. ¿What was the highest year or grade your SPOUSE finished in school?

0. None	0					
1. Primary	1	2	3	4	5	6
2. Secondary	1	2	3	4	5	6
3. University	1	2	3	4	5	6
4. Reading and Writing	1	2	3	4	5	6

7c. ¿What was the highest year or grade your MOTHER finished in school?

0. None	0					
1. Primary	1	2	3	4	5	6
2. Secondary	1	2	3	4	5	6
3. University	1	2	3	4	5	6
4. Reading and Writing	1	2	3	4	5	6

8. ¿What is your marital status?

1. Married
2. Life partners
3. Divorced
4. Separated
5. Widow
6. Single

9a. What is your religion?

1. Catholic
2. Evangelical
3. None
4. Other \_\_\_\_\_

9b. ¿Do you consider yourself: (READ THE OPTIONS)

1. Very religious
2. Religious
3. Somewhat religious
4. Not religious

10. ¿Have you had a child who was born alive?

3. Yes
4. No

11. ¿How many of your children live with you? \_\_\_\_\_

12. ¿How many live somewhere else? \_\_\_\_\_

13. ¿Have you had a child born alive which died later?

1. Yes
2. No

14. ¿How many? \_\_\_\_\_

15. Do you have some type of work or activity for which you receive pay in money or some other form?

1. Yes \_\_\_\_\_
2. No

15b. How much do you make in one month?

1. Less than 3,000 Lempiras

- 2. 3,000–9,999 Lempiras
- Don't know
- Refused

16. Does your spouse have some type of work or activity for which she/he receives pay in money or some other form?

- 1. Yes (specify activity: \_\_\_\_\_)
- 2. No

16b. How much, more or less, does she/he make in one month?

- 1. Less than 3,000 Lempiras
- 2. 3,000–9,999 Lempiras
- Don't know
- Refused

17. (IF THEY BOTH WORK) How much, more or less, do you both make in one month

- 1. Less than 3,000 Lempiras
- 2. 3,000–9,999 Lempiras
- Don't know
- Refused

18. ¿If we have more questions later, can we contact you to speak more?

- 1. Yes
- 2. No

19. What is your name?

---

20. Where can we contact you?

ADDRESS WITH POINT OF REFERENCE:

---

APPENDIX F  
PHASE ONE SAMPLE SELECTION

The following chart details the target number of completed questionnaires for the 200 phase one interviews. The 200 interviews are divided equally among four life experience variables: sex, location, economic level (high, middle, low) and age (< 35 years old, 35 years old and older).

		Men 100					
		Urban 50			Rural 50		
Economic Level		Low 16-17	Middle 16-17	High 16-17	Low 16-17	Middle 16-17	High 16-17
Age							
	18-34	7-9	7-9	7-9	7-9	7-9	7-9
	35-50	7-9	7-9	7-9	7-9	7-9	7-9
		Women 100					
		Urban 50			Rural 50		
Economic Level		Low 16-17	Middle 16-17	High 16-17	Low 16-17	Middle 16-17	High 16-17
Age							
	18-34	7-9	7-9	7-9	7-9	7-9	7-9
	35-50	7-9	7-9	7-9	7-9	7-9	7-9

The chart below details the actual distribution of completed interviews for the phase one interviews.

		Men 100					
		Urban 50			Rural 50		
Economic Level		Low 16-17	Middle 16-17	High 16-17	Low 16-17	Middle 16-17	High 16-17
Age							
	18-34	6	9	8	8	9	7
	35-50	7	12	8	9	9	8

		Women 100					
		Urban 50			Rural 50		
Economic Level		Low 16-17	Middle 16-17	High 16-17	Low 16-17	Middle 16-17	High 16-17
Age							
	18-34	9	8	7	9	11	6
	35-50	9	8	9	8	9	7

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## BIOGRAPHICAL SKETCH

David Kennedy was born in the suburbs of Philadelphia, Pennsylvania, in 1969. He received a Bachelor of Arts degree from the University of Notre Dame with a double major in anthropology and computer applications. After receiving his BA in 1992, he worked in South Bend, Indiana, and Austin, Texas, as a computer programmer and systems analyst. In 1996, he began graduate training in anthropology at the University of Florida. While pursuing his graduate degrees, he worked as a field director and programmer for the University of Florida's Survey Research Center. He has taken an interdisciplinary track for his degree in anthropology with a specialization in quantitative methods. He received his Master of Arts degree in 1999.

David has conducted fieldwork in Latin America for several research projects. He conducted master's fieldwork in Oaxaca City, Mexico, during the summer of 1997. He conducted fieldwork in Honduras on several occasions since 1998. In July 1998, he worked on a team that conducted a preliminary investigation of epilepsy in Honduras. From July 2000 until October 2000, he collected data for a study of the nutritional after-effects of hurricane Mitch on children under the age of 5 years old. From July 2000 until June 2001, he collected the data and conducted preliminary analyses for his dissertation in Catacamas, Olancho, Honduras.

David now lives in Durham, North Carolina, with his wife, Marie, and his dogs, Mavis, Mystere, and Milka. He works as a post-doc fellow at the University of North Carolina's Carolina Population Center.