
RESEARCH REPORTS AND NOTES

THE FERTILITY OF MAYA AND LADINO WOMEN *

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Second only to the Quechua-speaking peoples of the Andes, the Maya of southeastern Mexico and Guatemala constitute the “most impressive surviving American culture in the Western Hemisphere” (Vogt 1969a, 21). In Mexico the main division within the Maya falls between the highland population living in the state of Chiapas and the lowland group residing in the Yucatán Peninsula (Vogt 1969b). People of mixed Spanish and Indian ancestry, known locally as *ladinos*, make up most of the remaining population. Inspired by the well-known series of investigations of Indian and mestizo fertility in the Andean region, the present study seeks to describe within Mexico the fertility differences between the highland and lowland Maya and their ladino neighbors and, within the limits of the data, to account for the observed differentials.

THE SETTING

Much more has been written about the Maya than about the ladinos of southeastern Mexico, and much more is known about the

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indigenous population of Chiapas (Vogt 1978) than about that of the Yucatán (Webber 1980). With these shortcomings in mind, the following sketch is offered for the purpose of placing the fertility analysis within a larger social and cultural context.

Chiapas is an isolated, underdeveloped, mountainous rural region with a population in 1970 of one and a half million people (Dirección General de Estadística 1972; Sanders 1974).¹ The oak- and pine-covered central highlands of Chiapas lie one to two thousand meters above sea level and are home to the Tzotzil, Tzeltal, and Tojolabal, three closely related Mayan groups with a combined population in 1970 of two hundred thousand persons aged five and over; of this number, slightly more than half speak only a Maya dialect.

The Tzotzil, Tzeltal, and Tojolabal, who are referred to collectively as the highland Maya, maintain much of their traditional culture and patterns of social organization (Colby 1966; J. Collier 1968; Laughlin 1969; Montagu 1969; Villa Rojas 1969a; Vogt 1969c, 1970; Nash 1970; Cancian 1975; G. Collier 1975). Most highland Maya live in scattered hamlets called *parajes* that surround an administrative-ceremonial center. The main economic activity of the men is growing corn, which they supplement by occasional wage labor with craft specialization in some *municipios* (counties). A strict division of labor defines the sexes: women, who occupy a subordinate position, are responsible for taking care of the house and children. The preferred pattern of courtship is a long, complicated process involving payment of a bride price but little interaction between the prospective bride and groom. Residence is usually patrilocal, and descent is patrilineal. Maya religion represents a syncretism of Catholic and pagan elements, and it centers around the cornfield, festivals for the saints, and curing ceremonies. The Maya are politically and economically subordinate to ladinos and, lacking a national consciousness, identify closely with their own *municipio*.

Anthropologists and other social scientists studying Chiapas have apparently found Indians more interesting than ladinos; what one could learn from the above citations about ladino society would consist of short descriptions juxtaposed against indigenous social features. Briefly, ladinos tend to speak Spanish exclusively, wear Western clothes, live in compact towns, have bilateral kinship systems, practice formal Catholicism, share in the larger Mexican culture, and dominate government, commerce, and manufacturing despite the fact that most are poor peasants. G. Collier has concluded that differences between Indians and ladinos are "more striking in the highlands of Chiapas than in any other region of Mexico" (1975, 9).

The Yucatán Peninsula is a vast, rolling limestone plain that gradually descends to the sea. It is almost entirely comprised of the Mexican states of Campeche, Yucatán, and Quintana Roo, whose com-

bined population in 1970 was over one million (Villa Rojas 1969b; Dirección General de Estadística 1972). The northwestern corner of the peninsula is the region where commercial henequen is produced. Also the most densely populated region, it contains Mérida, the region's largest city by far with some two hundred thousand residents in 1970. The Indian population consists almost exclusively of the Yucatec Maya, some 443,000 individuals five years and older, of which 68,000, or 15 percent, are monolingual.

In his classic work, *The Folk Culture of Yucatán*, Redfield argued that in addition to the region's separation from the rest of Mexico, centuries of interaction between Spanish and Maya have produced a single, distinct, class-based society that has lost its original racial and cultural differences. Nonetheless, he identified a "social gradient" beginning in Mérida and moving southeastward into the forests of Quintana Roo along which modern Spanish features gradually give way to traditional Maya forms. The northwestern area is characterized by compact towns and the less acculturated areas by small, dispersed villages (Villa Rojas 1969b; Press 1975; Elmendorf 1976, 1977; Ryder 1976; Webber 1980). Outside the henequen region, the men make a living growing corn while the women everywhere perform the usual domestic chores. The farther away from Mérida, the more traditional are family and religious institutions, with the custom of the bride price and patrilineal kinship found only in the most remote villages. Compared to the indigenous population of Chiapas, Yucatán Indians lack a civil religious hierarchy, a cargo system, village markets, and village specialty handicrafts.

In Yucatán, the farther one travels from Mérida, the greater the degree of Indianness. But the ethnic gradient is reversed in Chiapas, where the most distinct Indian municipios are located in the central highlands, with ethnicity decreasing at the region's periphery. Yucatán is culturally more homogeneous than Chiapas, with the Maya in the central highlands being much more traditional than the lowland Maya, judging from the retention of cultural traits and the proportion of the population who speak only an indigenous dialect.

FERTILITY STUDIES

The most thorough investigation of ethnic fertility differentials in Latin America is the series of Andean studies that began with Stycos's 1963 report. Stycos found fertility to be lower in Indian regions than in mestizo regions of Peru, and he attributed this difference to the suggestion of certain anthropological accounts that permissive sexual norms among the Indian population delayed the entry of women into cohabiting unions and that such unions were less stable than mestizo unions.

Heer (1964) said that this fertility difference was caused by higher rates of female participation in the labor force in Indian regions, and James (1966) concluded that it was due to physiological effects of the high altitudes at which Indians live. In contrast, Whitehead (1968) and Bradshaw (1969) argued that infant mortality was higher among Indians than mestizos, which made Indian fertility appear to be lower than it really was.

Regarding ethnic fertility studies in Middle America, Early (1982) reported that for all Guatemala, the ladino crude birthrate was slightly lower than the Mayan crude birthrate during the 1970–73 period. This difference was attributed to the greater urbanization of the ladino population because the fertility of the two groups in rural areas was about the same. Glittenberg (1976) also found similar fertility levels in her study comparing a highland Guatemalan ladino village with a Mayan village. In an aggregate analysis, Hicks (1974) obtained a statistically significant negative coefficient between the percentage of the population speaking an indigenous language and the fertility rate for all of Mexico. G. Collier (1975) found that fertility was positively related to the proportion of young brides in the highland Maya municipios immediately surrounding San Lorenzo de las Casas, and Ryder (1976) reported very high fertility levels in a small Yucatec Maya community; but neither study made comparisons with the ladino population. The demographic literature, then, makes it difficult to predict what, if any, fertility differences exist between the Maya and ladinos of southeastern Mexico.

Ethnographic sources contain elaborate descriptions of maize cultivation and religious festivals but little about fertility beyond noting the value of children and the long time that children are breastfed. The previously cited Glittenberg study took as its focus the comparative study of fertility behavior. It concluded that the similarly high Maya and ladino fertility levels derived from opposing forces. While Indian women initiated sexual activity at an earlier age than ladino women, they breastfed their children for longer periods and observed longer postpartum abstentions. The large number of children born to both groups, however, was primarily due to the need of poor peasant families for additional labor.

Ethnic fertility differentials can be analyzed within a theoretical framework of a "socioeconomic" versus a "cultural" explanation. The key factors in a socioeconomic model of fertility for Latin America appear to be urbanization and female education (ECLA 1975; Stycos 1982). Urban residence and higher levels of education affect fertility by lowering the demand for children and reducing the subjective and market costs of birth control (Easterlin 1975; Cochrane 1979). Another socioeconomic variable is female participation in the labor force, but this factor

is important only for the small proportion of women employed in the formal sector, where work interferes with childbearing and childrearing (Davidson 1977).

A cultural explanation refers to a group's shared beliefs and practices that have an intended or unintended effect on family size. Included here are postpartum intercourse taboos, breastfeeding customs, and protracted sexual abstinence because of the wife's health or the number of surviving children (for Aymara Indian customs, see Collins 1983). The drinking of herbal teas to restore menstruation and other folk methods of birth control are also components of a cultural model of fertility behavior (Shedlin and Hollerback 1981; Nick, cited in Early 1982; Browner and Montellano n.d.).

In summary, the Maya and ladino people of southeastern Mexico vary as to socioeconomic status and cultural traits. To the extent that factors such as residence and female education account for fertility differences between Maya and ladino women, one can speak of a socioeconomic explanation of ethnic fertility. To the extent that fertility differentials between Maya and ladino women persist after controlling for socioeconomic characteristics, one can speak, at least tentatively, in terms of a cultural explanation of fertility. Clearly, classifying factors as cultural or socioeconomic is not a simple process, but such a distinction provides a useful point of departure.

DATA AND METHODS

Sample

The data come from a one-in-a-hundred sample of the 1970 Censo General de Población de México.² Native-born women aged fifteen to forty-nine residing in the states of Chiapas, Campeche, Quintana Roo, and Yucatán who speak Spanish, Tzeltal, Tzotzil, Tojolabal, or Yucatec Maya comprised a sample of 5,739 cases, after checking for internal consistency.

Variables

Each woman's record was matched with the record containing information about her household to yield a richer data set. Variables utilized from the female records were language, fertility, age, marital status, education, employment status, footwear, and size of community. The various ethnic groups were defined in terms of the language or languages spoken, with the ability to speak Spanish as well as an indigenous dialect (bilingualism) indicating a degree of acculturation. Women who speak only Spanish were classified as ladino. Women in

Chiapas who speak Tzeltal, Tzotzil, or Tojolabal were classified as highland Maya, and women in Campeche, Quintana Roo, and Yucatán who speak Yucatec Maya were classified as lowland Maya. This approach resulted in six groups: highland ladino, highland bilingual Maya, highland monolingual Maya, lowland ladino, lowland bilingual Maya, and lowland monolingual Maya.

The dependent variable was operationalized as the average number of children ever born (CEB) per woman. These data suffer from a number of limitations. Among the major ones are underreporting due to memory bias (Shryock, Siegel, and Stockwell 1976; Edmonston and Sapoznikow 1976), and omission of some children because of failure to understand the fertility question (Coale 1971). Children most likely to have been omitted were those who died soon after birth and older children who had left home. Women who have had a civil or religious marriage ceremony were classified as in legal unions and were distinguished from those recorded by the census as being in "unión libre" or in consensual unions. The remaining marital status categories are single females and a combined category of separated, divorced, or widowed females. In the multivariate analysis, single years of education are used with a range of zero to seventeen years, and twelve sizes of community intervals ranging from 1–99 inhabitants to 100,000–249,000 inhabitants. Employment status refers to work outside the home, and women were classified as economically active or inactive. One measure of poverty is the footwear variable, which categorized individuals as wearing shoes, sandals, or going barefoot.

Variables selected from the household records are the number of families per household, floor, water, sewer, cooking fuel, electricity, radio or television, meat, eggs, milk, fish, and wheat. Except for the first variable, these variables are essentially indicators of economic or physical well-being. Housing quality is measured by the dwelling having a dirt or a nondirt floor. Piped water means water brought into the building by pipe and includes a small number of households using a public tap; no piped water refers to all other sources such as wells, sink holes, or streams. The sewer and electricity variables were dichotomized in terms of the household's possession of these items. Cooking fuel consists of wood or charcoal or a "modern" kind such as kerosene, gas, or electricity. The radio and television category is divided into household ownership of a television, a radio only, or neither appliance. The diet variables of meat, eggs, milk, fish, and wheat are measured by the number of days during the preceding week that someone in the household, not necessarily the woman, consumed one of these foods.

Statistical Analysis

Cross-tabulations are utilized to describe the ethnic groups in terms of the selected social and economic variables and to compare initially their fertility levels. The independent effect of ethnic status on fertility is assessed through an analysis of covariance that is a version of regression analysis suitable for use with a continuous dependent variable and discrete as well as continuous independent variables.

RESULTS

Background Characteristics

A description of Maya and ladino women by individual and household characteristics may be of interest in itself because the published Mexican census volumes do not contain such cross-tabulations. This information is presented here in order to provide a background for the analysis of fertility differentials. This description is based on the sample of 5,739 women of reproductive age and begins with individual female characteristics (table 1). The data indicate that in Chiapas, highland Maya women constitute a minority of the state's female population and that there are considerably more monolingual (373) than bilingual (224) speakers. In the Yucatán Peninsula, hereafter referred to simply as Yucatán, almost one-half of the female population speak a Mayan dialect, with many more bilingual (1,009) than monolingual (191) speakers. Mean age shows a relationship with Indian language in Yucatán but not in Chiapas.

Considering ladino-bilingual Maya-monolingual Maya as a continuum, the data show a strong positive relationship between the proportion of fifteen-to-nineteen-year-old women in marital unions (legal and consensual) and the degree of Indianness in Chiapas and Yucatán; the proportion of this age group in marital unions can be seen as approximating female "age at marriage." Among females aged twenty to forty-nine, a positive relationship between the proportion in marital unions and Indianness exists in Yucatán, but in Chiapas, monolingual Mayan women are only slightly more likely to be in marital unions than bilingual Mayan or ladino women. Additionally, for all ages from fifteen to forty-nine and for all three ethnic groups, women are much more likely to be consensually mated in Chiapas than in Yucatán.

The term *consensual union* deserves additional comment. The Mexican census category of "unión libre" has been translated as consensual union, but this designation, as the term is commonly understood, may not accurately represent many nonlegal Indian unions, especially in Chiapas. The highly ritualized character of many highland Maya courtships (J. Collier 1968) suggests that many "consensual" In-

TABLE 1 Mean Age and Percentage Distribution of Selected Female Characteristics by Ethnic (Language) Group

Variable	Chiapas			Yucatán Peninsula		
	Ladino	Bilin- gual Maya	Mono- lingual Maya	Ladino	Bilin- gual Maya	Mono- lingual Maya
N of Cases	2,715	224	373	1,227	1,009	191
Mean Age	27.4	26.4	27.5	27.4	28.5	30.1
Total unions (%)						
(ages 15–19)	30.1	32.7	52.1	16.0	30.1	46.9
Legal unions	18.2	15.5	18.3	14.9	26.3	40.6
Consensual unions	11.9	17.2	33.8	1.1	3.8	6.3
Total unions (%)						
(ages 20–49)	78.8	78.3	83.5	75.9	86.2	91.2
Legal unions	50.7	48.2	36.1	66.4	76.5	74.2
Consensual unions	28.1	30.1	47.4	9.5	9.7	17.0
Education (%)						
None	46.9	63.4	100.0	21.3	34.0	100.0
1–3 Yrs. primary	33.8	29.9	0.0	25.8	47.2	0.0
4–6 Yrs. primary	15.1	6.2	0.0	36.8	16.6	0.0
Postprimary	4.3	0.4	0.0	16.2	2.2	0.0
Economically active (%)	12.5	11.6	7.8	17.2	7.9	5.8
Footwear (%)						
Shoes	66.9	20.5	66.2	94.1	72.5	48.2
Sandals	17.5	14.7	4.8	4.7	24.8	44.0
Barefoot	15.6	64.7	89.0	1.2	2.7	7.9
Community size (%)						
1–999	47.9	69.2	80.2	11.1	30.7	57.1
1,000–9,999	28.8	19.2	19.3	22.5	47.1	35.1
10,000 +	23.3	11.5	0.5	66.4	22.3	7.8

dian unions might better be called “traditional unions” but were classified by the census as “uniones libres” because they lacked a civil or religious ceremony.

In terms of socioeconomic characteristics, there is a negative relationship, frequently a strongly negative one, between Indianness and level of education, economic activity, quality of footwear, and size of community, with each language group in Chiapas typically less educated, wearing poorer footwear, and more rural in character than its Yucatán counterpart.

In considering household variables, the data displayed in table 2 reveal a slightly positive relationship between the proportion of women in multi-family households and Indianness in Yucatán but not in Chiapas. For all women, the indicators of household economic wealth show a strong, often markedly strong, negative relationship between Indianness and possession of a nondirt floor, piped water, sewer, modern cooking fuel, electricity, radio or television. Also, each Yucatán language group is typically better off than its Chiapas counterpart (except for piped water). The same pattern exists in the number of days per week that the household consumed any meat, eggs, milk, fish, or wheat bread—foods that are important sources of protein.

Ethnic Fertility Differences

The unadjusted and age-standardized average number of children ever born per woman for the six language groups and four overlapping marital statuses are shown in table 3. Examination of the age-standardized means, which correct for differences in age structure, shows that in Chiapas there is a slightly negative relationship between Indianness and the average number of CEB per woman. This relationship appears to be the case whether the comparison is for all women (single and ever-married), ever-married women (including separated, divorced, and widowed), legally married women, or those in consensual or traditional unions, with the exception of the last marital status where bilingual and monolingual Maya women have about the same number of CEB. The pattern in Yucatán differs in one important respect: while monolingual Maya women also have fewer CEB than bilingual Maya women, ladino women have fewer CEB than either Indian group, a pattern that holds true for all marital statuses except the consensual or traditional category. Ranked from high to low fertility, then, the Chiapas pattern is ladino–bilingual–monolingual and the Yucatán pattern is bilingual–monolingual–ladino. Although these group means are statistically significantly different for all marital status categories shown, the fertility differences are typically small. Finally, comparing fertility levels between regions, it can be noted that in almost every instance, Yucatec bilingual and monolingual women have more CEB than their Chiapas counterparts and that Yucatec ladino women have fewer CEB than their Chiapas counterparts.

Multivariate Analysis

The results presented so far have revealed a social, economic, and fertility pattern among the various language groups inhabiting the Maya regions of Mexico. The next step is to determine whether or not

TABLE 2 Percent Distribution of Selected Household Characteristics with Mean Food Consumption by Ethnic (Language) Group

Variable	Chiapas			Yucatán Peninsula		
	Ladino	Bilingual Maya	Mono- lingual Maya	Ladino	Bilingual Maya	Mono- lingual Maya
Percentage of Women						
Multifamily households	21.3	25.9	19.6	28.2	30.9	31.5
Nondirt floor	38.3	11.6	5.6	73.7	40.6	15.7
Piped water	44.3	33.5	20.4	61.7	31.6	17.8
Sewer	28.8	8.5	5.9	42.8	16.8	10.5
Modern cooking fuel	28.4	4.9	4.8	51.4	16.0	7.9
Electricity	39.7	13.4	5.9	76.1	39.7	15.7
Television	9.7	3.1	2.9	34.0	10.4	4.2
Radio only	57.2	33.9	19.6	50.4	56.8	40.3
Food consumption* (mean days per week)						
Meat	2.6	1.8	1.3	3.0	2.2	1.5
Eggs	3.5	2.4	2.1	3.2	2.7	2.7
Milk	2.7	0.6	0.2	3.6	1.8	0.5
Fish	1.3	0.4	0.4	1.4	0.7	0.3
Wheat	3.9	2.1	1.0	5.4	4.4	2.8

*By some member of the household, not necessarily the woman.

ethnic status has an effect on fertility independently of socioeconomic factors. This task was performed by an analysis of covariance (table 4) where all main effects (ethnic group and marital status), covariates (age, education, and size of community), and the interaction between main effects are assessed simultaneously. Thus each effect is the added contribution to explaining the average number of CEB per woman after controlling for all other effects.

The main finding in table 4 is that ethnic status has a very small independent effect on fertility that is not statistically significant ($p = .09$). All of the other effects are statistically significant,³ but except for age and marital status, the effects are small due to very large within-group variation as measured by the residual sum of squares.⁴ Examination of the beta values (standardized partial regression coefficients) for the covariates reveals that their relation to fertility is in the expected

TABLE 3 *Unadjusted and Age Standardized Average Number of Children Ever Born per Woman by Marital Status and Ethnic (Language) Group*

Marital Status	Chiapas			Yucatán Peninsula			F-ratio Significance
	Ladino	Bilin- gual Maya	Mono- lingual Maya	Ladino	Bilin- gual Maya	Mono- lingual Maya	
Unadjusted							
All women*	3.09	2.77	2.85	2.45	3.44	3.73	.001
Ever married**	4.16	3.78	3.37	3.80	4.46	4.32	.001
Legal unions***	4.25	4.09	3.32	3.77	4.57	4.47	.001
Consensual unions****	4.15	3.10	3.30	4.64	3.91	3.82	.005
Age standardized*****							
All women*	3.15	3.03	2.88	2.51	3.25	3.18	.001
Ever married**	4.24	4.04	3.70	3.58	4.33	4.07	.001
Legal unions***	4.39	4.35	3.78	3.57	4.46	4.15	.001
Consensual unions****	4.18	3.53	3.55	4.08	3.49	3.60	.032

*Includes single and ever married, N = 5,739

**Includes legal and consensual union, separated, divorced and widowed, N = 4,177

***N = 2,776

****N = 1,075

*****Method of direct standardization based on age distribution of all women in designated marital status

direction. Prior analyses (not shown) indicate that none of the other variables described in this report (such as economic activity, footwear, families per household, floor, water, sewer, fuel, electricity, radio, television, or diet) has a statistically significant effect on fertility when it is analyzed simultaneously with ethnic group, marital status, age, education, and size of community.

The data can also be analyzed to show how the significant independent variables affect each ethnic group's average fertility level. Table 5 compares for all women in the various language groups the average number of CEB per woman simultaneously adjusted only for age (first row), for age and marital status (second row), and for age, marital status, education, and size of community (third row). The amount of change in each ethnic group's fertility mean when adjusted for these variables indicates their relative importance.

The ethnic group means in the first row of table 5 are the same as the age-standardized means for all women in table 3. When these CEB means are adjusted for age and marital status (in row 2 of the table), they become practically the same for all groups except monolingual

TABLE 4 Analysis of Covariance for the Average Number of Children Ever Born per Woman by Ethnic (Language) Group, Marital Status, Age, Community Size, Education, and Interaction

Source	Sum of Squares	df	Mean Square	F	Sig. of F
Main effects	1,549.3	8	193.7	31.6	.001
Ethnic group	58.5	5	11.7	1.9	.088
Marital status	734.8	3	244.9	39.9	.001
Covariates	11,475.0	3	3,825.0	623.8	.001
Age	11,026.3	1	11,026.3	1,798.3	.001
Community size	152.9	1	152.9	24.9	.001
Education	150.7	1	150.7	24.6	.001
Interaction					
Ethnic X Marital	208.2	15	13.9	2.3	.004
Explained	29,879.5	26	1,149.2	187.4	.001
Residual	35,024.1	5,712	6.1		
Total	64,903.6	5,738	11.3		
	Covariate	Beta			
	Age	.17			
	Community size	-.06			
	Education	-.07			

Maya in Chiapas. Additional standardizing for education and size of community produces a negative relationship between Indianness and fertility in Yucatán and widens the fertility differentials in Chiapas. In other words, if all women in the sample were identical in terms of age, marital status, education, and size of community, then ladino women would have considerably more children than bilingual Maya women, who in turn would have considerably more children than monolingual Maya women in both regions. In particular, it can now be seen more clearly that the observed low fertility of Yucatec ladino women in table 3 is due to their being disproportionately single, educated, and urban.

Summary of the Findings

A regional and ethnic pattern in a wide variety of social and economic characteristics has been found among ladino, bilingual Maya, and monolingual Maya women of reproductive age in Chiapas and the Yucatán Peninsula. There is a strong, positive relationship between

TABLE 5 *Average Number of Children Ever Born per Woman Adjusted for Age, Marital Status, Education, and Community Size for all Ethnic (Language) Groups*

<i>Adjusted for</i>	<i>Chiapas</i>			<i>Yucatán Peninsula</i>		
	<i>Ladino</i>	<i>Bilin- gual Maya</i>	<i>Mono- lingual Maya</i>	<i>Ladino</i>	<i>Bilin- gual Maya</i>	<i>Mono- lingual Maya</i>
Age only	3.15	3.03	2.88	2.51	3.25	3.18
Age + mar. stat.	3.06	3.03	2.76	2.98	2.99	3.01
Age + MS + Ed + Size	3.04	2.77	2.38	3.30	2.93	2.64

Indianness and “age at marriage” in both regions, with the proportion of all women aged fifteen to forty-nine who are in consensual or traditional unions being much higher in Chiapas than in Yucatán. Conversely, there is a strongly negative relationship between Indianness and a series of highly interrelated individual and household socioeconomic characteristics ranging from education to consumption of protein-rich foods; moreover, each Chiapas ethnic group is typically worse off than its Yucatán counterpart. A slight negative relationship exists between Indianness and age-adjusted fertility in Chiapas; this pattern is partially reversed in Yucatán by the low fertility of ladino women. Overall, ethnic status has a negligible effect on fertility once age, marital status, education, and size of community are taken into account.

DISCUSSION

The rugged central highlands of Chiapas and the hot, humid lowlands of the Yucatán Peninsula have long been inhabited by descendants of the great Maya civilization. Maya language and culture have permeated Yucatán to a much greater extent than Chiapas, although southeastern Mexico as a whole is poor, underdeveloped, and historically isolated from the rest of the country. The safest conclusion arising from the analysis of individual-level census data is that in both regions, socioeconomic differences between Maya and ladino women are much larger than fertility differences. In terms of a theoretical framework for explaining what fertility differences do exist, a socioeconomic model appears to be more relevant than a cultural model, particularly for Yucatán.

The findings suggest that in Yucatán, where Redfield argued that social class is more important than ethnicity, ladino women have fewer children than Maya women because their more urban, educated status delays their entry into marital unions and reduces the advantages of

large families. In Chiapas, where ethnic differences are more pronounced and where a negative relationship between Indianness and fertility has been observed, Indian culture may play a larger role, although the specific relevant cultural factors can only be hypothesized. In contrast to Stycos's (1963) Peruvian findings, Maya women are married at an earlier age than ladino women, and anthropological accounts indicate that there is little female premarital activity in most highland Indian municipios (Villas Rojas 1969a; J. Collier 1968). Thus, in spite of an earlier age at marriage, Maya cumulative fertility appears to be lower than ladino cumulative fertility. This trend may be due to ethnic group differences in maternal health and fecundity, breastfeeding practices, norms of postpartum sexual abstinence, or perhaps even folk methods of population control. The use of contraceptives would not appear to be a factor because in rural areas of Mexico at this time (1969), they were being used by less than 5 percent of currently married women (Tsui 1982).

Of the other factors identified in the Andean fertility studies (altitude and female economic activity not being relevant in the present instance), the role of infant mortality remains to be noted. Because of their poverty and lack of access to modern medicine, the Maya probably have a higher infant mortality rate than ladinos (for Guatemala, see Haines, Avery, and Strong 1983). To what extent this situation translates into differential ethnic underreporting of the number of children ever born, however, is not known; Hicks (1974) did not think that it was responsible for his findings, but the issue should be further explored. Unfortunately, the Mexican census does not contain a question on infant mortality or on the number of surviving children.

Finally, it should be emphasized that due to large within-group variation in the number of children ever born, only age and marital status have been shown to exert a large effect on fertility. For women who spend much of their adult lives bearing and rearing children, an understanding of the factors that influence their fertility is nonetheless important. The centrality of children in defining the female role is symbolized by the burial customs of one highland Maya community where a male corpse is wrapped in his blanket, but a dead woman is covered by her child-carrying shawl (Laughlin 1969).

NOTES

1. Since a 1970 data set (the most recent available) is used in the statistical analysis of fertility, population figures for the same year are cited here in order to provide a contemporaneous description of the region.
2. Unfortunately, a sample tape of the 1980 Mexican census has not yet been made available to researchers, and the 1976 Mexican fertility survey and the recent contraceptive prevalence surveys do not identify respondents by ethnic status.
3. The ethnic X marital interaction is statistically significant but very small (F-ratio =

- 2.3). This finding indicates that the effect of marital status on fertility differs slightly for the various ethnic groups.
4. When main effects are processed before covariates and the interaction variable, the sum of squares attributed to ethnic group increases slightly to 281.5 for a mean square of 56.3, which yields an F-ratio of 9.12 ($p < .001$)—a statistically significant, but still very small, effect. The sum of squares attributed to marital status increases greatly to 17,412, indicating a much greater effect than that obtained in the simultaneous model. The values for the covariates and the interaction term remain practically the same, and the explained, residual, and total sum of squares are identical.

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