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#### I. INTRODUCTION

Much of the research behind current efforts to control fertility and slow population growth has focused on the relative success of various methods of contraception and on the administrative efficiency of family planning programs. According to Kingsley Davis, family planners evince an "intense preoccupation with contraceptive technology."1 Family planners have placed less emphasis on the longer range solutions which require an investigation of the socio-economic determinants of fertility norms and family size desires. In particular, the role of education as a determinant of fertility norms and behavior has not received the attention it deserves. If we are interested in encouraging couples to limit the size of their families, we should look for characteristics of individuals that are both determinants of fertility behavior and subject to social control. Ronald Freedman has suggested that education might be such a "leading" variable.<sup>2</sup> If basic changes in the attitudes and structure of society may be a necessary antecedent to any major reduction in fertility, as some authors have suggested, then education may be able to stimulate such changes. There is need, therefore, for research to determine what role education might play in contributing to significant declines in fertility.

The research that has been done on the education-fertility relationship suggests that educational attainment has a very powerful influence on fertility and family planning behavior in both industrial and nonindustrial countries. Knodel and Tangoantiang have shown that the link between education and fertility was quite strong during the demographic transition in Europe. They found that neither industrialization nor urbanization were consistently related to the fertility declines in Europe between 1860 and 1920. In fact, the only index examined whose movement was found to parallel that of fertility measures, almost without exception, is illiteracy.<sup>3</sup> In a 1963 United Nations study of 125 countries, the correlation between the gross reproduction rate and the literacy rate of women 15 and over was -.76.4This is one of the highest coefficients revealed in that study.

While there are indications that the educational differentials in fertility are narrowing in some developed countries,<sup>5</sup> the inverse relationship still persists. Notable exceptions to this negative association exist, but they are found mostly in population subgroups such as Catholics in the United States.<sup>6</sup> Inverse relationships between education and fertility have been found in such diverse countries as the United States, Japan, Trinidad, Malaysia, Sweden, Taiwan, England, the USSR, India, Korea, France, Italy, and Panama. In short, nearly all studies to date have concluded that education is one of the principal factors associated with fertility. Most previous studies have used sample survey or census data to document this negative relationship. However, very rarely have researchers gone beyond simple crosstabulations between education and fertility, occasionally standardized for age. Leon Tabah recognized this problem at a recent UNESCO Meeting of Experts on "Education and Family Planning." He

indicated that, "the tables showing the relationship between fertility and education published by those who have undertaken such studies are not usually a satisfactory basis for a thorough analysis of this relationship."<sup>7</sup> This paper attempts to partially remedy this situation by investigating the link between education and fertility in a multivariate framework.

Clyde Kiser has shown that the correlation between education and fertility is particularly high in the demographic transition period.<sup>8</sup> Since Taiwan is currently experiencing its demographic transition, it is an excellent country for an intensive study of the effects of education on fertility.

The mechanism by which increased educational attainment induces lower family size goals is no doubt complex. Education has social, economic, and demographic effects on an individual. In Taiwan, education will, in general, increase one's exposure to mass media, enhance one's opportunities for a better job and higher income, influence age at marriage and the probability of ever getting married, increase aspirations to own modern consumer goods and induce significant changes in traditional views and attitudes. All of these effects have implications for fertility and family planning behavior.

One attitudinal variable that may be affected by the educational process is the aspirations of parents for their children's education. It has been suggested that more highly educated parents will have higher educational aspirations for their children, and that these parents will tend to limit the number of children they bear, in order to be able to fulfill their higher aspirations.<sup>9</sup> This paper will focus on the relationship between education and fertility in Taiwan and the extent to which educational aspirations for children act as an intervening variable in this relationship. It will also investigate the interaction between the education of the husband and that of the wife as it affects their family size decisions.

An island-wide fertility survey conducted in Taiwan in the summer of 1969 provides the source of data for this study. Interviews were conducted with a cross-section of 2,200 currently married Taiwanese husbands whose wives were of childbearing age (less than 42 years old). The husbands were asked questions on a variety of subjects, ranging from their demographic and socio-economic characteristics to their attitudes and behavior with respect to fertility and contraceptive practices. The wives had been interviewed in a previous survey 20 months earlier, so that detailed fertility histories of the couples merely required updating in the more recent survey.

# II. EDUCATIONAL DIFFERENTIALS IN FERTILITY AND FAMILY PLANNING IN TAIWAN

The educational composition of the Taiwanese population has been changing rapidly since the end of the Japanese occupation of the island. The number of primary schools in Taiwan doubled between 1944 and 1969, while the number of secondary schools increased tenfold. The number of universities and junior colleges increased from 5 in 1944 to 74 in 1969. During the same period of time, the

Table 1--Educational Composition of Married Couples, Age 22-42, Taiwan, 1969

Educational Attainment	Husbands	Wives
None	10.6%	36.6%
Primary school, not grad.	10.9	8.9
Primary school grad.	53.7	43.2
Junior high grad.	8.7	6.3
Senior high grad. or higher	14.9	4.7
Other types of schools or NA	1.2	0.3
TOTAL	100.0	100.0
Number of cases	2279	2279

enrollment rate of primary school age children rose from 71.3% to 97.5%. In 1968, the Taiwanese government extended basic elementary education from six years to nine years. The enrollment rate at the public junior middle school level (grades 7-9) increased from 57.6% before this educational reform to 73.7% in 1969.<sup>10</sup>

Table 1 shows the educational composition of respondents and their wives, based on the 1969 Economic Correlates of Fertility Survey in Taiwan. The husbands are, in general, better educated than their wives; however, more than half the wives are primary school graduates, and nearly 2/3 of the women have received some formal education.

The usual inverse relationship between education and fertility is evident in Table 2 for a variety of measures of fertility and both husband's and wife's educational attainment. Women with no formal education have an average of 48% more living children than women who have continued their education beyond junior high school. Similarly, women with no education want, on the average, 36% more children than women in the highest education category. Finally, ideal family size for women in the lowest education group is approximately 1 child greater than for those who went beyond junior high school. Furthermore, more highly educated women marry later in life than those with less education. Thus, educational differentials in fertility might be even greater if we considered all women in their childbearing years rather than only currently married women. For all three fertility measures, the reduction in fertility is most pronounced for women who have gone beyond a primary school education.<sup>11</sup> This threshold is quite important in light of the recent extension of basic education in Taiwan through the junior high school level. Speculation about the effects of the recent educational reform yields some interesting results. If all the women in our sample with less than a junior high school education had the same low level of fertility as actual junior high school graduates of the same age, then the average number of living children in the sample would drop by 19%, from 3.7 children to 3.0 children. Similarly, women over 35 would have 3.7 living children, on the average, instead of 4.7. These calculations are based on the unadjusted means, and, therefore, they do not take into account variables (such as type of area) that are related to both education and fertility, but are not necessarily affected by education. Thus, they should be thought of as an upper limit of the potential reductions in fertility that could result from universal junior high school education.

In the case of husbands, the major drop in fertility does not appear until the senior high

Table 2--Fertility and Family Planning Attitudes and Behavior, by Wife's and Husband's Education

	Aver	age numb	ber	Percent							
	of	children	1*	ever used	No.						
	Liv-			contra-	of						
Education	ing	Wanted	Ideal	ception	cases						
WIFE											
None	4.0	4.5	4.0	48%	822						
<primary< td=""><td>3.8</td><td>4.3</td><td>3.9</td><td>57</td><td>212</td></primary<>	3.8	4.3	3.9	57	212						
Primary grad.	3.6	4.2	3.7	58	949						
Junior high	3.0	3.6	3.3	72	164						
Senior high +	2.7	3.3	3.1	82	114						
HUSBAND											
None	4.1	4.7	4.2	37%	246						
<primary< td=""><td>3.7</td><td>4.3</td><td>3.9</td><td>47</td><td>256</td></primary<>	3.7	4.3	3.9	47	256						
Primary grad.	3.8	4.4	3.9	54	1143						
Junior high	3.7	4.2	3.7	65	275						
Sr. high grad.	3.1	3.6	3.4	73	234						
College	2.9	3.4	3.1	85	107						
TOTAL	3.7	4.2	3.8	56%	2261						

\*Wanted--no. living at interview + no. additional wanted; survey question was: "Let's see now, you have \_\_\_\_\_\_ children. Do you feel that the number you now have is sufficient or would you like to have more?" [IF MORE] "How many additional children would you like to have?" Ideal--survey question was: "If you were just getting married and could have just the number of children you wanted, how many would you like to have had when your wife is through having children, about age 45?"

school level. Nevertheless, husbands with a junior high school education have, on the average, 11% fewer living children than those with no formal education. The final column in Table 2 shows a strong positive relationship between educational attainment and contraceptive use. Additional data (not shown here) indicate that more highly educated couples not only use contraception more frequently, but also begin use at lower parities than those with less education. Among women who have used contraception, those with more than a primary school education began using after 2.6 births on the average, whereas women with no education began after 4.3 births.

Some additional data confirm the inverse relationship between education and fertility and the direct relationship between education and contraceptive use for every five-year age group in our sample. Thus, these associations are not simply a spurious result of the relationship of the couple's age to both education and fertility.

Table 3 shows how husband's and wife's education interact in fertility and family planning decisions. For each of the three measures of fertility, it can be seen that the influence of wife's education supplements, and in most cases dominates that of the husband. This is consistent with the results of an earlier study of family planning in Taiwan in which Ronald Freedman and John Takeshita found wife's education to be "the most consistently useful measure in our wide range of work with the Taiwan data."<sup>12</sup> It is possible that less tradition-oriented husbands choose better educated wives, and that wife's education is partially a proxy for the orientation of the husband toward modern values (including small family size). However, we do not believe that this phenomenon can

Table 3--Fertility and Family Planning Attitudes and Behavior, by Husband's(H) and Wife's(W) Education

	Avera	ge numl	Percent		
	_of c	hildre	1 <b>*</b>	ever used	No.
	Liv-			contra-	of
Education	ing	Wanted	Ideal	ception	cases
H <primary grad.<="" td=""><td>3.9</td><td>4.4</td><td>4.0</td><td>42%</td><td>495</td></primary>	3.9	4.4	4.0	42%	495
W none	4.0	4.6	4.1	38	336
W <prim. grad.<="" td=""><td>4.0</td><td>4.4</td><td>4.0</td><td>58</td><td>62</td></prim.>	4.0	4.4	4.0	58	62
W prim. grad.	3.6	4.1	3.8	43	93
W jr. high +	[2.8]	[3.8]	[4.0]	[50]	4
H PRIMARY GRAD.	3.8	4.4	3.9	54%	1132
W none	4.1	4.6	4.0	54	432
W <prim. grad.<="" td=""><td>3.7</td><td>4.2</td><td>3.9</td><td>55</td><td>126</td></prim.>	3.7	4.2	3.9	55	126
W prim. grad	3.7	4.2	3.8	54	543
W jr. high +	2.8	3.6	3.3	45	31
H JUNIOR HIGH	3.7	4.2	3.7	65%	273
W none	4.0	4.3	3.7	62	45
W <prim. grad.<="" td=""><td>[3.6]</td><td>[4.1]</td><td>[3.6]</td><td>[72]</td><td>17</td></prim.>	[3.6]	[4.1]	[3.6]	[72]	17
W prim. grad.	3.7	4.3	3.8	62	173
W jr. high +	3.4	3.8	3.6	83	38
H SR. HIGH +	3.1	3.6	3.3	76%	337
W none	[3.2]	[3.5]	[3.8]	[25]	4
W <prim. grad.<="" td=""><td>[3.3]</td><td>[3.7]</td><td>[4.0]</td><td>[42]</td><td>7</td></prim.>	[3.3]	[3.7]	[4.0]	[42]	7
W prim. grad.	3.5	3.9	3.5	75	129
W jr. high +	2.8	3.4	3.2	79	197
ALL COUPLES	3.7	4.2	3.8	56%	2237
*See Table 2.	[]=	base 1	ess th	an 25 case	es.

account for all the effect of wife's education on fertility. Therefore, if a reduction in fertility is considered to be a desirable goal in Taiwan, then any educational policy or practice which neglects the education of females may well be misdirected.

Husband's education, on the other hand, is more important than wife's for determining the couple's use of contraception. Contraceptive use is positively related to husband's education for each level of educational attainment of the wife. However, there is no consistent positive relationship between contraceptive use and wife's education, after controlling for husband's education. This finding appears at first to be somewhat anomalous and we can only speculate as to its cause. Perhaps the husband has the predominant influence on the decision to use contraception, whereas the wife determines the effectiveness with which it is used and, thereby, ultimate fertility. This is quite plausible, since the most popular contraceptive methods in Taiwan (the loop, Ota ring, and pill) are female-oriented. However, these interrelationships require further study before we can reach any firm conclusions.

#### III. EDUCATIONAL ASPIRATIONS FOR CHILDREN

One possible mechanism by which increased education becomes translated into smaller family size goals is through the aspirations of the parents for their children's education. More highly educated parents have higher educational aspirations for their children. The realization of these high educational goals may require couples to limit the size of their families. A further reduction in fertility is implied by this mechanism, although it is considerably more long range. If parents with high educational aspirations for their children are able to fulfill these aspirations, then their children, in turn, may be

Table 4--Percent of Respondents Who Plan to Send Their Children to College, by Parents' Education

	Wife's education							
Husband's		< Pr.	Pr.	Jr.				
education	None	grad.	grad.	high+	Total			
			SONS					
< Primary grad.	40	44	53	[75]	43%			
Primary grad.	53	61	74	87	65			
Junior high	• 76	[82]	86	97	86			
Sr. high grad. +	[80]	[100]	97	98	97			
TOTAL	48%	59%	76%	96%	67%			
		]	DAUGHT	ERS				
< Primary grad.	22	28	33	[50]	25%			
Primary grad.	31	38	53	63	43			
Junior high	44	[47]	70	82	66			
Sr. high grad. +	[75]	[86]	85	97	92			
TOTAL	27%	36%	57%	89%	48%			

Survey question was: "We'd like to know what plans you have for the education of your children. What is the highest school which you expect your sons (daughters) to attend?"

[ ] = less than 25 cases.

expected to have low fertility when they reach childbearing age.

Although the Economic Correlates of Fertility Survey interviewed husbands and asked them for their aspirations for their children's education, Table 4 shows quite clearly that both husband's and wife's education have a strong influence on these aspirations. Educational plans for both sons and daughters are strongly affected by the education of both parents. Even in a culture that is so highly educated-oriented, it is striking that 2/3 of the respondents expressed a desire to have their sons attend college and nearly half want their daughters to attend college. However, it is quite likely that some of these aspirations are more "realistic" and more certain of fulfillment than others. For this reason, the survey included a question concerning the respondent's knowledge of the costs of sending a child to college. Presumably, if a respondent had thought about the costs of educating his children and could give an estimate of educational costs, then his plans for sending his children to college may be considered more "realistic."\* In fact, only 25% of all respondents wanted their children to attend college and evinced some knowledge of costs.

The percent of respondents who had such "realistic plans" to send their children to college is shown in Table 5. Husband's educational attainment and total family income are both important determinants of educational aspirations. Data not shown here reveal that income is a somewhat more important determinent of educational aspirations for daughters than sons. In fact, 44% of low income respondents have higher educational aspirations for their sons than for their daughters, while only 15% of high income respondents favor their sons' education.

In order to determine the extent to which educational aspirations for children have an independent effect on fertility and family planning behavior, a multivariate analysis is necessary, and this will be undertaken in the next section. However, some indication of the influence of educational aspirations can be seen in Table 6. Respondents were asked what they considered to be the main advantages of having a small family and

Table 5--Percent of Respondents Who Both Plan to Send Their Children to College and Have Some Knowledge of the Costs of College Education, by Husband's Education and Total Family Income

Husband's	Incor	ne, 000	's NT	\$ per	year
education	<12	12-24	24-48	48+	Total
< Primary grad.	3	10	10	[15]	8%
Primary grad.	9	12	25	34	18
Junior high	[25]	30	38	40	36
Sr. high grad. +	[100]	53	63	68	65
TOTAL	8%	15%	33%	49%	25%

Survey questions for knowledge were: "Do you know or have you ever tried to find out how much it costs to send a child to college?" and "How much do you think it will be, considering all costs?"

the main disadvantages of having a large family. Those who spontaneously mentioned that it is easier to educate children in a small family (or harder in a large family) had lower fertility than others by each of the three fertility measures and were more likely to be using contraception at the time of the interview. Moreover, these differentials in fertility appear for every level of husband's education and the differentials in contraceptive use for all husbands with less than a senior high school education. Thus, it seems that if children's education is a salient factor to a couple, they will tend to limit the size of their family and use contraception more readily. It may be argued that some of the causality runs in the opposite direction, i.e., couples with smaller families are better able to educate their children and, therefore, they have higher aspirations for their education. However, the fact that the negative relationship between educational aspirations and fertility appears for measures of desired and expected fertility as well as actual fertility helps determine the direction of causality.

# IV. MULTIPLE CLASSIFICATION ANALYSIS

In this section, the links between education of parents, educational aspirations for children and fertility and family planning are clarified by means of multiple classification analysis (MCA),<sup>13</sup> an extension of multiple regression using dummy variables. This technique is useful for examining the effect of each of several predictors simultaneously on a dependent variable when the effects of other predictors are held constant. MCA makes no special assumptions about the linearity or ordering of the categories of the independent variables and is equipped to handle independent variables on a nominal scale. The dependent variable is required to be either dichotomous or on an interval scale. The MCA program yields a mean value of the dependent variable for each category of the independent variables and an adjusted mean, controlling simultaneously for all the other independent variables considered.

In Table 7, we have used a dichotomous dependent variable to study the determinants of educational aspirations for children. The first column shows the unadjusted class means of percent of respondents having "realistic" college plans for their children. There is a very strong positive relationship between this variable and either husband's or wife's education. We want to know how much of this relationship is a reflection of other variables such as family income, which are Table 6--Fertility and Family Planning Behavior and Attitudes in Relation to Salience of Children's Education

[M, mentioned children's educ. spontaneously; NM, did not]

								Percent current-		
Husband's	Av	Avg. no. of children								
education	Liv	Living Ideal Wanted			contr.					
	M	NM	M	NM	M	NM	M	NM		
None	4.0	4.2	3.9	4.2	4.3	4.7	34%	30%		
< Primary grad.	3.6	3.8	3.7	3.9	4.1	4.3	47	32		
Primary grad.	3.6	3.9	3.7	3.9	4.1	4.4	46	43		
Jr. high grad.	3.4	3.6	3.5	3.8	4.0	4.3	53	50		
Sr. high grad.	3.1	3.2	3.2	3.5	3.2	3.8	62	62		
College	2.7	3.2	3.1	3.2	2.9	3.6	76	78		
ALL HUSBANDS	3.4	3.8	3.5	3.9	3.9	4.4	52	44		

related to both education and educational aspirations. This can be seen in the remainder of the columns in Table 7, which contain the "adjusted means." These figures show the net relation between education and educational aspirations after various combinations of other independent variables have been held constant. The differentials in educational aspirations by parents' education are diminished somewhat when controlling for total family income and the type of area in which the respondent lives. They are reduced slightly more when controlling for the educational attainment of the other spouse as well. However, wife's age and number of living children have practically no net effect on educational aspirations. Parents' educational attainment, particularly that of the husband, retains a strong positive net effect after controlling for all the other independent variables considered.

A multiple classification analysis of the relation between education and educational aspirations as determinants of fertility is shown in Table 8. In this table, the number of living children is related to education of the parents and their plans for children's education. Differentials by husband's education are diminished when controlling for the effects of either wife's education or educational aspirations for sons. In fact, the inverse relationship disappears when the effects of wife's education and educational aspirations for sons and daughters are taken into account (next to the last column). This finding lends support to the hypothesis that educational aspirations for children act as an intervening variable between parents' educational attainment and their fertility. Differentials by wife's education are also reduced when other independent variables are controlled for. However, the net inverse relationship between number of living children and wife's education persists in every case.

The great importance of parents' education as determinants of fertility and family planning is further demonstrated in Table 9, which shows the values of the partial beta coefficients for predictors in 5 different MCAs. These betas indicate the relative importance of the various predictors in their joint explanation of the dependent variable.<sup>†</sup> In nearly every case, duration of marriage emerges as the principal determinant of fertility and family planning. While the largest part of the variance in the dependent variables is explained by

Table 7--Relation between Socioeconomic Characteristics and Educational Aspirations for Children. Percent Planning to Send Children to College and Stating Knowledge of Costs, by Husband's Education(H), Wife's Education(W), and Total Family Income(I)

	No.	Un-	Mean	n adj	. for
	of	adj.	typ	e of	area
	cases	mean	and		
H'S EDUCATION			I	I,W	I,W,G,N
< Primary grad.	483	8%	12%	15%	15%
Primary grad.	1096	18	19	20	20
Jr. high	266	36	32	31	32
Sr. high grad. +	332	65	58	52	53
W'S EDUCATION			I	I,H	I,H,G,N
None	792	10%	15%	20%	20%
< Primary grad.	207	14	17	20	21
Primary grad.	914	30	28	27	28
Jr. high +	264	61	53	37	37
INCOME, NT\$			н	H,W	H,W,G,N
<12,000	399	8%	17%	18%	18%
12,000-23,999	697	15	20	21	21
24,000-47,999	720	33	29	29	29
48,000 +	361	49	36	34	34
GRAND MEAN = $25\%$					

G = Wife's age, N = No. of living children.

demographic factors, socio-economic variables are also quite important. The betas for combined educational attainment of the parents are much higher than the betas for any other socio-economic variable included in the analysis. Thus, parents' education seems to be a major determinant of decisions about fertility and family planning in Taiwan. Wife's education appears to be decidedly more important than husband's education in its influence on fertility, whereas husband's education is considerably more important than wife's as a determinant of contraceptive use.

The net influence of educational aspirations for children on the fertility variables, while considerably smaller than the influence of parents' education, is at least as large as the effects of income per adult or type of area, variables which have conventionally been considered to be important determinants of fertility. Moreover, in this analysis we have used a fairly crude measure of educational aspirations for children. Perhaps educational aspirations would have shown up as a stronger determinant of fertility if we had an improved measure for it. Future surveys that include educational aspirations would do well to expand the questioning on this topic.

# V. SUMMARY AND CONCLUDING REMARKS

Parents' educational attainment has a very important bearing on fertility and family planning in Taiwan. More highly educated couples have a smaller number of living children and lower family size goals than couples with less education. Moreover, the higher the education of the parents, the more receptive they are to the use of contraceptives to limit the size of their families. Thus, education facilititates the process of economic development not only by making the populace more literate and enhancing worker productivity, but also by inducing reductions in fertility. Therefore, if slower population growth is considered to be a desirable goal in Taiwan, increased government expenditures on education should be favorable

Table 8--Multiple Classification Analysis of Number of Living Children

	Un-								
	adj.		Me	eans	adju	isted	l for	r	
H's Education	mean	WE	AS	DM	IN	AR	EP	A	B
< Prim. grad.	3.9	3.7	3.8	3.8	3.9	3.9	3.8	3.6	3.7
Prim. grad.	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.7
Jr. high	3.7	3.8	3.8	3.8	3.7	3.7	3.7	3.9	3.8
Sr. high +	3.1	3.5	3.2	3.3	3.2	3.1	3.1	3.6	3.6
W's Education		HE							
None	4.1	4.0	4.0	3.9	4.0	4.0	4.0	4.0	3.8
< Prim. grad.	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
Prim. grad.	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.7
> Prim. grad	2.9	3.0	3.0	3.3	3.0	2.9	2.9	3.1	3.4
Ed. Plans and									
Kn. of Costs		HE	WE					(	2
< Sr. high	4.2	4.1	4.0					3.	.9
Srno costs	3.8	3.7	3.7					3.	.8
Srcosts	4.2	4.2	4.2					3.	.8
Colno costs	3.5	3.5	3.5					3.	.7
Colcosts	3.5	3.7	3.8					3.	.6
GR. MEAN = $3.7$	_								
HE = Husband's	educ	atio	on, V	/E =	Wife	e's e	educa	ition	ו

AS = Educational aspirations for sons

IN = Income per adult, AR = Type of area

DM = Duration of marriage

EP = Educational plans and knowledge of costs

HN = Husband's employment status

A = Spouse's ed., ed. asp. sons, ed. asp. dtrs.

B = Spouse's ed., AS, IN, AR, DM, HN

C = HE, WE, IN, AR, DM, HN

to a continuing fertility decline in that country. Moreover, since the educational attainment of the wife seems to be more decisive than that of the husband as a determinant of actual and desired family size, educational policies should not neglect the education of women. We expect that the educational reform instituted in 1968 will significantly affect the ultimate fertility of those now in school. Further efforts in the educational sphere should provide even greater dividends and shoud be well-received by parents who have such high aspirations for their children's education.

Educational aspirations for children seem to have a role as an intervening variable between parents' education and fertility. Parents with higher educational attainment have higher aspirations for their children's education. They also appear to have more "realistic" plans to give their children a college education since they are more aware of the costs of such an education. These high aspirations, in turn, induce them to limit the size of their families because of the high expected costs of their children's education. Although this is the primary role of educational aspirations, they also exert some influence on fertility independently of parents' education. Thus, the possibility of independently stimulating educational aspirations and cost consciousness with respect to children's education should not be overlooked.

Future studies in this area will examine the importance of other intervening variables such as age at marriage, income, occupation, and attitudinal factors. Hopefully, we will be able to sort out the strongest paths and, thus, gain a better understanding of the link between education and fertility. Table 9--Betas for Multiple Classification Analyses of Fertility and Family Planning--Five MCAs with Various Combinations of Independent Variables for Each of Four Dependent Variables

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Dep.	Vars.	HE	WE	DM	AS	EP	HW	AR	HN	IN	R <sup>2</sup>
No. living											
children											
()	L)	.06	.20								.05
(2	2)				.12		.18				.06
(3	3)					.15	.22				.06
(4	•)	.05	.08	.64		.05		.03	.03	.03	.47
(5	5)			.64		.05	.11	.03	.02	.03	.47
No. v	vanted	ł									
child	lren	_									
()	L)	.09	.20								.07
(2	2)				.10		.21				.06
(3	3)					.09	.23				.06
(4	•)	.07	.11	.40		.06		.04	.02	.06	.23
(5	5)			.40		.06	.15	.04	.02	.06	.22
No. i	ideal										
child	lren										
(1	L)	.12	.18								.07
(2	2)				.05		.26				.07
(3	3)					.07	.25				.07
(4	i)	.08	.14	.16		.07		.03	.05	.07	.10
(1	5)			.16		.07	.20	.03	.06	.08	.10
% Eve	er use	ed									
conti	cacept	: <b>.</b>									
()	L)	.19	.06								.05
(2	2)				.06		.21				.05
(3	3)					.12	,19				.06
(4	<b>+</b> )	.15	.08	.36		.09		.02	.05	.12	.20
(	5)			.35		.09	.19	.02	.05	.13	.19
111.1 -	Il. al				2-1-			-		d	For

HW = Husband's and wife's education combined. For other abbreviations, see Table 8.

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# NOTES

\*For Taiwanese couples, the options for sending their children to college are varied, including local or away from home colleges, public or private colleges, military colleges, and even study abroad. The costs of higher education, then, depend on the type of institution visualized by the respondent. Consequently, no unique figure can be construed as the "correct" cost of a college education and all estimates were accepted.

These betas should not be confused with the beta coefficients in multiple regressions. In the context of multiple classification analysis, beta is defined to be a positive value. The direction of the relationship is shown by the deviations of the adjusted mean from the grand mean. Although the beta statistic should be used with some caution, it can be useful as a measure of the relative importance of the predictors when it is looked at in conjunction with the adjusted means of the predictors.

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3. Unpublished research by Knodel and Tangoatiang, cited in Freedman, <u>op. cit.</u>, p. 168.

4. United Nations, <u>Population Bulletin No. 7,</u> 1963, with Special Reference to Conditions and Trends of Fertility in the World.

5. Clyde Kiser, Wilson Grabill, and Arthur Campbell, <u>Trends and Variations in Fertility in</u> <u>the United States</u>, Harvard University Press, Cambridge, 1968, p. 151.

6. For differentials in actual and expected fertility among Catholics in the U. S., see C. F. Westoff, R. G. Potter, P. C. Sagi, and E. G. Mishler, <u>Family Growth in Metropolitan America</u>, Princeton, Princeton University Press, 1961, Ch. 13, and Ronald Freedman, David Goldberg, and Doris Slesinger, "Current Fertility Expectations of Married Couples in the U. S.", <u>Population Index</u>, Vol. 32, 1966, pp. 181-197.

7. Léon Tabah, "Relationship between Education and Fertility," United Nations Educational, Scientific, and Cultural Organization, Meeting of Experts on "Education and Family Planning," Paris, 20-24 April 1970.

8. Clyde Kiser, "Educational Differentials in Fertility in Relation to the Demographic Transition," Congress of the International Union for the Scientific Study of Population, London, Aug. 1969.

9. See T. Paul Schultz, <u>A Family Planning Hypothesis: Some Empirical Evidence from Puerto Rico</u>, The Rand Corporation, Santa Monica, Calif., Dec. 1967, p. 8. Also see Ronald Freedman and Lolagene Coombs, "Economic Considerations in Family Growth Decisions," <u>Population Studies</u>, Vol. 20, No. 2, Nov. 1966.

10. China, Taiwan Provincial Government, <u>Essen-</u> tials of the Taiwan Provincial Administration, 1970, p. 3.

11. It is interesting to note that in India the threshold at which number of children ever born per woman begins to drop sharply is also at the junior high school level. See Murari Majumdar, "Some Findings from Family Planning Data of the National Sample Survey," p. 403 in International Union for the Scientific Study of Population, <u>Contributed Papers, Sydney Conference</u>, 1967.

12. Ronald Freedman and John Y. Takeshita, <u>Family</u> <u>Planning in Taiwan: An Experiment in Social Change</u>, Princeton, Princeton University Press, 1969, p. 79n.

13. For a comprehensive discussion of MCA, see Frank Andrews, James Morgan, and John Sonquist, <u>Multiple Classification Analysis</u>, Survey Research Center, Institute for Social Research, University of Michigan, Ann Arbor, Michigan, 1967.