

EDUCATION AND INTRAMARITAL FERTILITY IN STOCKHOLM

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WITH the recent growth of interest in demographic studies of human fertility, there has become apparent a distinct trend from the descriptive to the comparative and analytical type of study. In particular, the focus of scientific attention has come to be less on the birth and fertility rates of geographically or politically separate areas and more on the relative fertility of different social classes living together within the same districts. Differences so observed have received the name of social class differentials in fertility.

Of the various types of demographic studies indicating the relation of social status to fertility, perhaps the earliest wide-scale investigations compared the birth rates of different wards or districts of large cities, roughly classifying these districts according to the predominant character of their inhabitants.² Since the time of these early studies, very considerable advances have been made in the technique of investigating social class differentials, notably improvements in the statistical measures of fertility and in the original data employed. In the place of crude birth rates there have been substituted various other measures of fertility which are of considerably greater precision and reliability. Instead of treating political divisions as units, later studies generally have employed more detailed data to provide better indices of social status and to permit a greater homogeneity within the groups compared. It is notable, however, that these refinements of method have brought no change of result. That is, quite regardless of the particular measure of fertility, the index of social status, or the type of data

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² See for example Newsholme and Stevenson: *The Decline in Human Fertility as Shown by Corrected Birth Rates*. *Journal of the Royal Statistical Society*, 1906, 69, pp. 66-67.

used, the fertility rates of the upper social classes have been observed to be consistently less than those of the lower classes, however defined. It has therefore become almost axiomatic that human fertility, at least for those population groups with which we are best acquainted, is inversely related to social status.

Well established as this rule may appear to be, however, there is nevertheless some recent evidence that it is not without its temporary or local exceptions. In fact, there have appeared in recent years a few scattered observations of a reversal of the accepted social differentials of fertility. Among the earliest and most authentic of these observations are those of Karl Arvid Edin in Stockholm.³ On the assumption that these observations in Stockholm are valid, their significance depends on whether the reversal there of the normal fertility differences is a temporary matter, a purely local phenomenon, or a natural consequence of the almost world-wide tendency towards a progressively greater limitation in the size of families. If one is to predict the future course of population, it is hardly adequate merely to project the present downward trend of birth rates or to select some arbitrarily determined line as the lower asymptote of the birth rate curve. The falling birth rates which we are observing undoubtedly reflect important shifts in the relative fertility of different sections of the population; for the prediction of the future course of the birth rate (or of the social differentials in fertility) it is not altogether improbable that the Swedish experience may be of value. Certainly, the voluntary limitation of the number of births has progressed relatively far in Sweden, and it is possible that the Stockholm observations bear witness of a final stage in this development, the spread of rigorous limitation to the lower classes.

In order to make some of this Swedish material available to an

³ Including Almquist and Wicksell: *Vårt moderna Befolkningsproblem, Sexuell Hygien*, Uppsala, 1927, pp. 80-93. Also, PROCEEDINGS OF THE WORLD POPULATION CONFERENCE, 1927. London, Edward Arnold and Company, 1927, pp. 205-207, as well as numerous later reports.

English-reading public, and to reexamine the evidence for the existence of the exceptional fertility differentials in Stockholm, a brief report on some of Karl Arvid Edin's investigations has been prepared recently.⁴ In the report is given, by illustration, a review of available Swedish population data and their possible uses in demographic research, together with an account of the Stockholm situation as revealed by analysis of some of this material. For the benefit of those who have not had access to this book, there is presented here a summary of one section, a discussion of the observed relation of education to intramarital fertility.

CHOICE OF MATERIAL AND METHOD⁵

Preliminary to any study of social class differentials in fertility is a careful selection of the original data and the method of analysis to be employed. The requirements to be met in making this selection are not only for accuracy of material and method but also for their nice adjustment to the problem at hand. In the study to be reviewed below the problem was how best to determine the relative fertility of different social groups in Stockholm. A first restriction of the scope of study was to limit it to intramarital fertility, excluding data for illegitimate births. Three questions of procedure remaining were:

1. What data to assemble.
2. What measure of fertility to apply.
3. What index of social status to employ.

With regard to the original material of fertility studies, two types of official natality data exist, the one obtained by the continuous registration of births and still-births, the other by retrospective census reporting. Data of the former type give a cross-sectional picture of the fertility at a given instant or interval of time, while

⁴ Edin, Karl Arvid and Hutchinson, E. P.: *Studies of Differential Fertility in Sweden*, STOCKHOLM ECONOMIC STUDIES, NO. 4. London, P. S. King and Son, 1935. American distributor, Population Association of America, Washington, D. C.

⁵ For a more detailed description of the material and methods see Edin and Hutchinson, *ibid.*, pp. 17-29, 69-74.

retrospective data of the census type record fertility over the preceding years of marriage. Neither of these sources is without its technical shortcomings, but for the particular study reported here the census type of information was preferred as giving assurance that whatever fertility differentials might be observed were not merely temporary.

A further advantage in using census data is that both natality and population figures are obtained in the same way and are presented together, this assuring uniform classification of births and parents into whatever social categories may be employed. An attendant difficulty, however, is that this classification must be based upon status as reported at the time of the census, and that the reported status of parents may be different from that at the time of birth of their children. As will be seen below, the index of social status used in this report was so chosen as to obviate this difficulty, but in order to obtain income data relative to the early years of marriage a "double census" method was employed. This consisted, in brief, of identifying Stockholm families in both the 1920 and the 1930 census returns, selecting families formed shortly before the 1920 census, obtaining a statement of income from the 1920 report and a record of the number of children born from the 1930 information.

Families meeting the following four conditions were selected:

1. Marriage in the years 1917 to 1920 inclusive.
2. Wife less than 35 years old at marriage.
3. Husband and wife living together in Stockholm in both 1920 and 1930.
4. Family found in the returns of both censuses.

All Stockholm families meeting these specifications were included in the study. Information concerning a total of 6,629 such families was obtained.

As a check on the completeness of the census data a search for record of children born to these families was made in three additional sources:

1. The Stockholm birth and death registers for the years 1917 to 1930, inclusive.
2. The Stockholm family register.
3. Maternity hospital records.

Included in the census returns for each family was a report of the number of children ever born, including those dying before the census date. To check the completeness of this reporting the birth and death registers were particularly valuable. The family register was a useful supplement to the birth registers in the case of families which had moved out of the city and returned between 1920 and 1930. An additional check was provided by the maternity hospital records which listed the previous confinements of the mother. In case of discrepancies a further search was made to establish the facts. Insofar as the natality data were concerned, therefore, they may be considered to have been complete.

The answer to the second question, concerning the measure of fertility to apply, was determined by the form of the material. The careful checking of the natality data having given reliable information about the date of all births and marriages it was decided to choose as the measure of fertility the average number of live births per family in the first decade of marriage. An advantage of this type of measure lies in its relative immunity to disturbance through temporary fluctuations in fertility; for convenience of terminology this type will be referred to as a "longitudinal" measure of fertility. As stated before, the marriages included in the study were those contracted during the four-year period, 1917 to 1920 inclusive, so that the first decade of marriage for all families ended between the first day of 1927 and the end of 1930. Births occurring after the tenth anniversary of marriage, even though before the end of the 1917-1930 study period, were excluded.

The final problem of procedure was that of choosing an index of social status. For each of the Stockholm families included in the study there were to be had three separate items of information

upon which a sociological classification might conceivably be based. These were (1) occupation of the husband as reported in the 1920 and 1930 census records; (2) income of the husband (and of the wife if having separate income) as reported in 1920 and 1930; (3) amount of education of husband and wife as reported in 1930.

No single one of these items was considered to be an adequate index of social status, but, in the original report, analysis of the fertility of the 6,629 Stockholm families was made with division according to all three of these items, separately and in various combinations, in such a way as greatly to reenforce the evidence for the existence of real social status differentials in fertility. An obvious defect of this procedure was that it merely indicated the presence, not the magnitude, of the social status differentials. With the existing lack of any single accepted criterion of social status, however, the procedure as outlined appeared to provide the most secure basis for generalizations concerning the relative fertility of groups differing in social status.

The Stockholm data reviewed below are those showing the relation of intramarital fertility to a single one of the three available bases for social classification, the amount of education. The reason for choosing this particular section of the material is, in part, because considerably less information is to be had concerning education group differentials than about occupation and income group differentials in fertility.⁶ Aside from studies of special groups such as college graduates, comparatively little direct information is available on degree of education in relation to the fertility of marriage. Education, however, is not without its theoretical and practical advantages as an index of social status. On the theoretical side it may be argued that the education of an individual, typically completed before he begins his independent career, is more directly

⁶ See Lorimer and Osborn: *DYNAMICS OF POPULATION*. New York, The Macmillan Company, 1934. Chapter IV.

related to the position into which he is born than is his income or even his occupation in later adult life. In opposition it may be noted that education is often the ladder of social mobility. This, however, is perhaps most true for the United States. For Sweden it may be stated with some confidence that the amount of education of children is more directly a function of the social status of parents. On the practical side, education as an index of social status possesses the very real advantage of remaining constant, barring a very few exceptional cases, throughout adult life, having in this respect a distinct superiority over occupation and income which may vary with age, stage of the business cycle, or change in place of residence.

EDUCATION OF HUSBAND AND INTRAMARITAL FERTILITY

Although the 1930 census records gave the degree of education of both husband and wife, it was found advisable in the analysis of this information to make the education classification with regard for only the husband's education. The reason for this, aside from the complication of using a double basis of classification, was that very few of the wives were to be found in the highest education categories.

Four education groups were employed in analysis, these being defined as follows in the original report:

A. "Folkskolan" or less, the "folkskolan" including the first eight years of education, from about the seventh to the fifteenth year of age.

B. Further education than "folkskolan" but without the matriculation examination.

C. With matriculation examination, usually taken at about age 18 or 19 and required for admission to universities and to the higher civil service positions.

D. Degree from university or higher technical school.

In Table 1 is given the total number of families falling into each of the education categories, the figures being subdivided according to the age of the wife at marriage. It is to be noted that the age distribution of the wives at marriage did not vary greatly from

one education group to another. The age distribution of the husbands, however, may be expected to have been less uniform.

In the same table is given the total number of live births in each subgroup of families during the first ten years of marriage, together with the average number of live births per family in this period. In these latter figures, which are used as a measure of intramarital fertility, a very considerable regularity appeared, there being a consistent decrease in fertility with increase in the age of wife at marriage, and an equally consistent rise in fertility from the lowest to the highest education group. On the average the number of children born per family in the first decade of marriage was nearly fifty per cent greater in education group D than in group A (least education).

The observation is therefore one of higher fertility in the higher education groups, but it remains to be shown whether or not this

Table 1. Average number of live births in the first ten years of marriage, according to education of husband and age of wife at marriage, in 6,629 Stockholm families.¹

AGE OF WIFE AT MARRIAGE		EDUCATION OF HUSBAND ²				
		A	B	C	D	Total
TOTAL	Families	4,528	1,435	225	441	6,629
	Births	5,317	1,947	346	762	8,372
	Average	1.17	1.36	1.54	1.73	1.26
Under 25	Families	1,824	546	91	190	2,651
	Births	2,509	885	152	396	3,942
	Average	1.38	1.62	1.67	2.08	1.49
25-29	Families	1,762	614	91	173	2,640
	Births	1,968	800	146	267	3,181
	Average	1.12	1.30	1.60	1.54	1.20
30-34	Families	942	275	43	78	1,338
	Births	840	262	48	99	1,249
	Average	0.89	0.95	1.12	1.27	0.93

¹ This and the following tables were taken directly, or adapted, from Edin and Hutchinson, *ibid.*, where the original figures and more detailed tabulations may be found.

² Group A had the least schooling and Group D the most. For exact definition, see text page 291.

observation is entirely valid. In view of the nature of the data and the method of tabulation (in Table 1), the observed fertility differentials can not be attributed to inter-group differences in the age distribution of the wives or in the period of marriage being compared. Several other sources of noncomparability, however, remain to be considered before the observed education group differences in fertility may be accepted at face value.

FERTILITY IN THE FIRST THREE YEARS OF MARRIAGE

A limitation of the above observations is that they were for the first decade of marriage only, there being no information as to the number of children born to the 6,629 Stockholm families after 1930. It seems improbable, however, that the direction of the fertility differentials was in any way affected by the restriction of comparison to the first ten years of marriage, the greater part of intramarital fertility coming in this period. Furthermore, as is to be seen, the differences in fertility tended to become greater rather than less with increased duration of marriage (*see* Table 2).

A more serious potential difficulty, however, lay in the fact that at least the first years of the observation period (1917 to 1930) were highly abnormal. It is probably true that the use of a measure of total fertility over a ten-year period of marriage tended to smooth out the effects of temporary stimulants or checks to the birth rate since, for example, a temporary postponement of births in response to threatened insecurity was probably compensated for by an increase in births when the check was removed. Nevertheless, it is by no means inconceivable that conditions in the first years of the marriages were such as to affect the social differentials in fertility quite differently from the total birth rate. At any rate, it seemed advisable to remove any uncertainty as to the course of the fertility differentials in the early part of the study period.

A division of the natality data was accordingly made, separating births occurring in the first three years from those in the following

MARRIAGE PERIOD	AGE OF WIFE AT MARRIAGE	EDUCATION OF HUSBAND				
		A	B	C	D	Total
0-3 years	Under 25	0.83	0.96	0.87	1.16	0.89
	25-29	0.67	0.76	0.88	0.80	0.71
	30-34	0.53	0.53	0.72	0.72	0.55
	Total	0.71	0.79	0.84	0.94	0.75
4-10 years	Under 25	0.54	0.66	0.80	0.93	0.60
	25-29	0.45	0.55	0.73	0.75	0.50
	30-34	0.36	0.42	0.40	0.55	0.39
	Total	0.47	0.57	0.69	0.79	0.52

Table 2. Average number of live births per family in the first three years and in the succeeding seven years of marriage in 6,629 Stockholm families.

seven years of marriage. The division could be made with some accuracy because of the careful cross-checking of the original records to determine the true dates of the births and marriages. The purpose of the division was to demonstrate whether or not the observed differences in fertility between the education groups were products of temporary war period and immediate post-war disturbances in the birth rate.

In Table 2 is given the average fertility of the Stockholm families in the first three years and in the succeeding seven years of marriage, fertility again being expressed as the average number of live births per family in the given period rather than on a per annum basis. This separation of the births into the two groups of course increased the irregularity of the data to some extent, but in spite of subdivision the fertility of the upper education groups remained consistently the highest, both in the first three years and in the next seven years of marriage.

A possible objection to the evidence contained in Table 2 is that the first marriage period (0-3 years) did not refer to any definite calendar interval. In fact, it covered the years from 1917 to 1923 inclusive, the date of marriage being anywhere between the limits of January 1, 1917 and December 31, 1920. It follows then that the natality figures for the first three years of marriage can not be

interpreted directly as an index of the prevailing fertility in the first three years of the study period. In order to meet this possible objection, therefore, and to obtain more direct evidence as to whether or not the unexpected direction of the education group differentials in fertility was a result of temporary changes in relative fertility, a further subdivision of the original material was made to separate the data for the 1917 and 1918 marriages from that for the marriages contracted in 1919 and 1920. The separate tabulation of the number of births in the first three years of marriage was continued.

In spite of this further division of the material the direction of the observed fertility differentials remained as before, the average number of live births per family in the upper education groups being consistently the greatest. Inasmuch as the observation of a direct relation of amount of education to the fertility of marriages was to be made for not only the total Stockholm material but also for the first years of marriage, the later years of the first decade of marriage, the war-period marriages (1917 and 1918), and the immediate post-war marriages, it may be concluded that the greater fertility of the more educated was not a result of temporary changes in relative fertility during the abnormal years around 1920.⁷

ILLEGITIMACY AND THE FERTILITY OF MARRIAGE

In view of the above examination of the natality data and the "longitudinal" measure of fertility employed, it would appear that the greater fertility of the more educated groups was not merely temporary. A possibility which remains, however, is that the high illegitimate birth rate in Stockholm was in some way responsible. At first glance, the use of an index of intramarital fertility would appear to eliminate the factor of illegitimacy from the comparisons. With the comparison of groups presumably differing in social status, however, some direct disturbance may well remain—this

⁷ This conclusion refers only to the *direction* of the difference in fertility; there is no evidence that the observed *amount* of difference remained unaffected.

on the assumption of some association between social status and the frequency of illegitimate births.

If a "longitudinal" measure of fertility is being used, two possible disturbances of opposite effect on the social differentials in intramarital fertility may be noted. In the first place, the average intramarital fertility in the early years of marriage may be expected to be greater, other things being equal, for the group with the greater frequency of premarital conceptions since the "risk" period for births after marriage is considerably longer. In the second place, granting some voluntary limitation of the size of family, the observed fertility of marriage is probably less in families containing one or more children born before the marriage.

In order to remove one of these possible sources of noncomparability between the intramarital fertility rates of the education groups, a selection of the family records was made to remove all cases in which the wife was known to have borne children previous to the observed marriage (regardless of whether the child was illegitimate or the child of an earlier marriage). The information necessary for this selection was obtained from the maternity hospital records which, as noted above, gave report of earlier confinements. This information obviously was to be had for only those wives with at least one child born during the first ten years of marriage, and could not be depended on to be altogether complete. Nevertheless, the fact that by this method a report of one or more previous children was to be found for no less than 1,590 of the 6,629 wives is indication that the source material was not grossly incomplete—and incidentally that the influence of earlier births on the fertility of marriage was probably not a negligible one.

In Table 3 are given the total and average numbers of births for the 5,039 families in which the wife was not known to have borne children before the existing marriage. As we have seen, there was not complete assurance that a record of all the earlier births was found, but the fertility figures of the table do indicate the general

EDUCATION GROUP	NUMBER OF FAMILIES	PER CENT OF TOTAL	NUMBER OF BIRTHS	AVERAGE PER FAMILY
TOTAL	5,039	76.0	6,637	1.32
A	3,169	70.0	3,804	1.20
B	1,246	86.8	1,770	1.42
C+D	624	93.7	1,063	1.70

Table 3. Average number of live births per family in the first decade of marriage; 5,039 Stockholm families in which the wife was not known to have borne children previous to the observed marriage.

effect of the correction. The effect appears to have been slight. It may in fact be seen from comparison with Table 1 that the education group differentials in fertility remained practically unchanged. As was to be expected, removal of the cases with previous births produced some increase in the average fertility of marriage, but this increase occurred in all education groups.

The above procedure of course gave no correction for education-class differences in the proportion of births in the first nine months of marriage. It is by no means clear, however, that such a correction should be made since differences of this sort, if they exist, are an integral part of the social differentials in fertility. The only purpose of making such a correction in the present case would be to demonstrate whether or not the unusual fertility differentials observed for this group of Stockholm families could be attributed to class differences in the frequency of premarital conceptions. To judge by general information and by the percentages in the second column of Table 3, however, a correction for this factor would merely serve to increase the under-fertility of the lower education groups.

EDUCATION, INCOME, AND INTRAMARITAL FERTILITY

From the evidence of the data so far submitted it would appear that a direct relationship of amount of education to fertility of marriage really did exist for this group of 6,629 Stockholm families during the years 1917 to 1930. Insofar as can be discovered from the

data, this relationship was not merely a temporary post-war or war-period phenomenon nor was it a result of the relatively high illegitimate birth rates prevailing in Stockholm. Strictly speaking, however, the above observations do not constitute evidence that the amount of education of the husband was a primary variable directly affecting intramarital fertility. Educational status at best is merely an index of social status; furthermore, a classification according to education may be no more than a concealed classification according to income, occupation, or other sociological factors. The question is therefore whether or not education in itself influences the fertility of marriage.

The question in this form can not be answered, there being no possibility of isolating the single factor, education, from its many concomitants. What can be done, however, is to discover if the education group differentials in fertility persist after control of other sociological factors.

Two other possible indices of social status were to be had from the Stockholm family material—occupation and income of the husband. As has been noted, both of these factors have the disadvantage of being variable rather than constant throughout adult life so that the relative social status of a family, as determined for some particular time by reference to these items, may not be the same as during the years of most active child bearing. In the material dealt with here there was no particular error involved in basing the education status classification upon the 1930 census return for the husband even though his marriage had taken place ten or more years before. This was not true, however, for occupation and income. To meet this problem the solution adopted in the present study was to use the "double census" method whereby the 1920 census report of income and occupation was obtained.

Of these two factors, income and occupation, the former had been found to be the more significant in relation to fertility, analysis having shown that the occupation-group fertility differentials prac-

tically disappeared when allowances were made for differences in the distribution of amount of income. This being the case, the fertility rates of the education groups were analyzed according to

Table 4. Average number of live births per family in the first ten years of marriage, according to education and income of husband in 6,629 Stockholm families.

Income of Husband in Kronor	Education of Husband			
	A	B	C+D	Total
TOTAL	1.17	1.36	1.66	1.26
Under 4,000 per annum	1.15	1.18	1.46	1.16
4-6,000 per annum	1.18	1.34	1.45	1.21
6-10,000 per annum	1.18	1.35	1.46	1.31
10,000 or over per annum	1.56	1.62	1.85	1.74
Under 6,000 per annum	1.17	1.28	1.45	1.19
6,000 or over per annum	1.23	1.45	1.70	1.47

income distribution only. The classification of incomes which was used was based upon the reported income of the husband in 1920. This was not in all cases the income in the first year of marriage, and in theory it might have been better to have had income for all families at approximately equal intervals after marriage. The practical difficulties of finding the income returns for non-census years, however, were prohibitive. Furthermore, in a period of rapidly changing wages and prices, the income figures for different calendar years would not have been at all comparable.

The computed fertility of the various specific income-education groups into which the material was divided is reported in Table 4. Making comparisons in both vertical and horizontal directions, one notices an increase in average fertility from the lower to the higher income categories, from the lower to the higher education groups. There would seem to be no advantage in trying to decide whether or not the income differences in fertility were more strongly marked than those for the education groups, there being no assurance, for example, that the gradation from education group A to group B is equivalent to the interval between the first and the second income categories. In point of view of the consistency of increase in fertility from one subgroup to the next, however, the education factor appears the more significant. In fact,

INCOME OF HUSBAND IN KRONOR	AGE OF WIFE AT MARRIAGE	EDUCATION OF HUSBAND			
		A	B	C+D	Total
Under 6,000 per annum	Under 25	1.37	1.59	1.83 ¹	1.42
	25-29	1.11	1.16	1.33 ¹	1.12
	30-34	0.87	0.88	0.73 ¹	0.87
6,000 or over per annum	Under 25	1.42	1.66	1.97	1.73
	25-29	1.19	1.46	1.61	1.43
	30-34	1.04	1.04	1.28	1.12

¹ Rates based on observations for less than 50 families.

Table 5. Average number of live births per family in the first ten years of marriage, according to education and income of husband and age of wife at marriage, in 6,629 Stockholm families.

as one proceeds from the lower to the higher income subdivisions within a given education group, no marked increase in fertility is noted until the 10,000 *kronor* level is reached. In contrast, a consistent increase in fertility with higher education is to be observed at each income level.

As a final precaution the income-education groups were further subdivided according to the age of the wives at marriage (Table 5). In spite of some necessary consolidation of the groups, the absolute numbers in some of the compartments became rather small but, from the consistency of the evidence alone, it was apparent that the fertility differences observed in the preceding tabulation (Table 4) did not depend on irregularities in the age distribution of the wives at the time of marriage. Insofar as may be established from the statistical evidence at hand, therefore, this factor of education was directly related to the intramarital fertility of the Stockholm families.

SUMMARY

The City of Stockholm appears to be one of the very few places in Western civilization where the "lower" social classes are less fertile than the "upper." The present article is a review of one section of a comprehensive investigation of this direct association of fertility and social status; it discusses the relative advantages of

degree of education as an index of social status and reports the observed relation of the husband's education to the fertility of marriage. The material used relates to a series of 6,629 families, formed in the years 1917 to 1920 inclusive and located in Stockholm both in 1920 and 1930, in which the wife was less than 35 years of age at marriage. The fertility studied is that of the first ten years of marriage, the information being obtained by a "double census" method which consists essentially of combining the fertility data of the 1930 census schedule with the 1920 report of social status in the early years of marriage. The principal findings may be summarized as follows:

1. There was a regular rise in fertility from the lowest to the highest education group in every age-of-wife-at-marriage group.
2. The direct association of education and fertility was not the result of temporary changes in the relative fertility of the groups in the early years of the study period (1917-1930).
3. This unusual relationship of fertility and education appeared to be in no way a result of the high illegitimate birth rate in Stockholm, nor of group differences in the number of children born to the wives in earlier marriages.
4. The greater fertility of the better educated persisted when the comparison was limited to roughly similar income classes; in fact, the differences in the fertility of the education groups appear to be even somewhat more distinctly marked than those of the income classes.
5. All of the available statistical evidence points to the fact that education itself was a primary variable, directly related to the fertility of marriage in Stockholm during the study period.