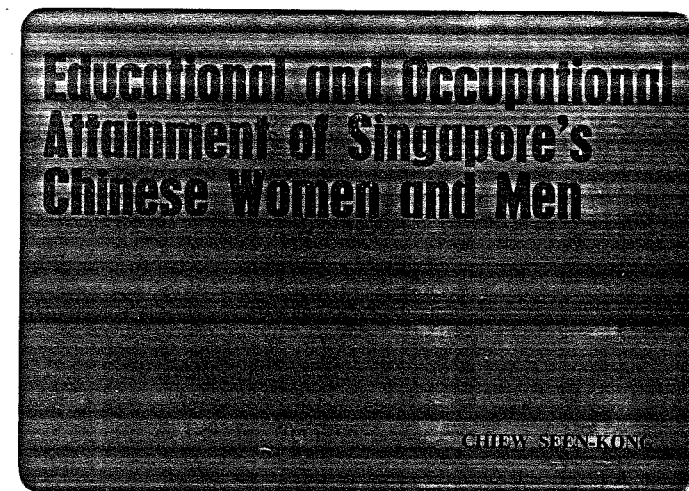


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Educational and Occupational Attainment of Singapore's Chinese Women and Men

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EDUCATIONAL AND OCCUPATIONAL ATTAINMENT OF SINGAPORE'S CHINESE WOMEN AND MEN*

I. INTRODUCTION

There is a considerable body of knowledge on the educational and occupational attainment of men in industrialized nations, especially the United States. However, little has been known about status attainment of women. Treiman and Terrell's paper¹ in 1975 was the first national sample study on female status attainment. McClendon's paper² on the same subject appeared in the following year. Both studies focussed on American women in comparison with men.

Treiman and Terrell compare the educational and occupational attainment of white females with white males, and of black women with black men, in the age group of 30-44 years. McClendon reports only on whites, aged 18 years and over. Treiman and Terrell find that the mean levels of education and occupational prestige attained by white women and men are almost identical but the attainment processes are somewhat different between the sexes. McClendon reports a similar pattern. However, Treiman and Terrell report that black females have a slight advantage over black males in education but not in occupation, and the attainment processes are substantially different between the sexes.

The present study on Chinese women and men in Singapore is an attempt to add a little information to this meagre body of knowledge about women, as well as to extend the models of status attainment developed by American scholars. This paper will discuss three general topics. First, I will compare Chinese women and men according to their socioeconomic backgrounds, and education and occupational attainment. Second, I will estimate the gross and net effects of background variables on educational attainment, and of background variables and education on occupational attainment. Third, I will estimate the effects of background variables on the attainment of English education in multilingual Singapore, as well as the effects of English education on occupation.

II. DATA AND MEASURES

The data are from the Singapore National Identity Survey (SNIS) carried out in 1969/70. The sample is a representative, stratified, proportional, random sample drawn from the 1969 electoral register of Singapore.³ The respondents were aged 21 years and older. A total of 990 interviews were completed. In this paper,

* The data of this study are drawn from the Singapore National Identity Survey carried out in 1969/70 which was jointly funded by the Asia and Lee Foundations, granted jointly to the author and Dr John MacDougall. I wish to thank Professors William Sewell, Archibald Haller, H. Kent Geiger and Warren Hagstrom, and Drs Frederic Deyo, Michael Walter and Chen-Tung Chang for their helpful comments on earlier drafts of this paper.

1. Donald J. Treiman and Kermit Terrell, "Sex and the Process of Status Attainment: A Comparison of Working Women and Men," *American Sociological Review*, Vol. 40 (April 1975), pp. 174-200.
2. McKee J. McClendon, "The Occupational Status Attainment Processes of Males and Females," *American Sociological Review*, Vol. 41 (Feb. 1976), pp. 52-64.
3. Chiew Seen-Kong, *Singaporean National Identity*, M. Soc. Sci. thesis, Chapter 2, (Singapore: University of Singapore, 1971).

subsamples of 389 Chinese males and 153 Chinese females who have participated in the labour force will be compared.⁴

In this investigation, education is measured in functional levels ranging from 1 to 7, where level 1 denotes no education and level 7 denotes completion of tertiary or post-graduate education.⁵ Occupation is scored according to Duncan's one-digit Decile Scale⁶ ranging from 1 (lowest) to 9 (highest), where 9 combines Duncan's ninth and tenth deciles.

In the basic models of Duncan *et al.*⁷ and McClendon, the sibling variable is used as a surrogate background variable to index demands made upon the family's or household's resources. This surrogate measure has the disadvantage that some of the siblings may be working and hence contribute resources towards the education of non-working siblings. The sibling variable may thus index demand for, as well as supply of, family resources. In this study, supply of family resources is used as one of the background variables. Household size and the number of working members are used to construct an employment ratio to index family resources which may be used for members' education. The employment ratio ranges from 1 to 7, where 1 denotes zero per cent employed, and 7 denotes 100 per cent employed.⁸

III. PROFILES OF SINGAPORE'S CHINESE WOMEN AND MEN

The educational and occupational distribution of American white females and males in both the Treiman and Terrell's and McClendon's studies are nearly identical with respect to the means and standard deviations of the distributions (Table 1). Among blacks, Treiman and Terrell report that females have a slight advantage over males in education attained. However, the mean occupational status is almost identical between black women and men.

In Singapore, the mean educational level attained by Chinese females is only 2.62 compared with 3.18 for males (Table 1). Men have a 21 per cent advantage over women. The mean occupational prestige attained by men is also higher by 27 per cent: 5.27 deciles for men compared with 4.15 for women.

4. Chinese housewives, numbering 237, are excluded from this study. The ratio of Chinese males to females in the subsamples is representative of the Chinese labour force reported in the 1970 Census of Population.

5. 1 = No education
2 = Some primary education, private tuition or self-study
3 = Completed primary education (normally 6 years)
4 = Some secondary education
5 = Completed secondary education (4-6 years)
6 = Some post-secondary education
7 = Completed university education or higher

6. Otis D. Duncan, "A Socioeconomic Index for All Occupations," in Albert J. Reiss *et al.*, *Occupations, and Social Status* (Glencoe: Free Press, 1961), Chapter 6 and Appendix B.

7. Otis D. Duncan, David L. Featherman and Beverly Duncan, *Socioeconomic Background and Achievement* (New York: Seminar, 1972).

8. 1 = 0 per cent employed
2 = 1-19 per cent employed
3 = 20-39 per cent employed
4 = 40-59 per cent employed
5 = 60-79 per cent employed
6 = 80-99 per cent employed
7 = 100 per cent employed

TABLE 1
EDUCATION AND OCCUPATION OF RESPONDENTS AND PARENTS BY SEX AND RACE

Variable	Chiew						McClendon					
	Chinese			Whites			Whites			Blacks		
	Female		Male	Female		Male	Female		Male	Female		Male
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Respondent's Education	2.62*	1.75*	3.18*	1.53*	12.4	2.5	12.5	3.3	10.9	3.0	9.2	3.9
Respondent's Occupation	41.5†	29.7†	52.7†	28.0†	43.9	21.4	42.7	23.9	33.2	13.7	34.0	12.2
Father's Education	2.30*	1.32*	2.09*	1.27*	9.6	3.9	9.1	4.2	6.4	3.8	6.5	3.3
Mother's Education	1.46*	0.93*	1.23*	0.65*	9.9	3.5	9.6	3.7	7.5	3.5	36.8	10.4
Father's Occupation	—	—	—	—	35.6	22.7	33.4	23.0	27.9	7.2	—	—
Number	153			389			778			1,381		
	Treiman and Terrell						Blacks					
	Whites			Blacks			Whites			Blacks		
	Female		Male	Female		Male	Female		Male	Female		Male
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
Respondent's Education	12.3	2.4	11.9	3.3	10.9	3.0	9.2	3.9	10.9	3.0	9.2	3.9
Respondent's Occupation	42.5	11.7	43.8	12.1	33.2	13.7	34.0	12.2	33.2	13.7	34.0	12.2
Father's Education	8.5	3.8	8.3	3.6	6.4	3.8	6.5	3.3	6.4	3.8	6.5	3.3
Mother's Education	9.2	3.4	8.9	3.3	7.5	3.5	36.8	10.4	7.5	3.5	36.8	10.4
Father's Occupation	42.9	10.2	41.1	10.4	38.7	9.8	—	—	38.7	9.8	—	—
Mother's Occupation	35.6	6.5	—	—	27.9	7.2	—	—	27.9	7.2	—	—
Number	994			5,912			355			396		

Notes:

* Measured in gross functional levels, ranging from 1 to 7. One unit is approximately equal to 3 years.

† Expressed here in percentiles.

In both American studies, the socioeconomic backgrounds of white females and males are also very similar with respect to the means and standard deviations. Among blacks, the mean education of father is similar between the sexes but the mean occupational status attained by women's fathers is slightly higher than that attained by men's fathers.

In Singapore, Chinese women come from a higher socioeconomic background than men. Table 2 shows that the mean education attained by women's parents are higher than that of men's parents.

TABLE 2

MEANS AND STANDARD DEVIATIONS OF SES VARIABLES FOR CHINESE WOMEN AND MEN AGED 21 YEARS AND ABOVE IN SINGAPORE, 1969/70.

Variable	Women		Men	
	Mean	S.D.	Mean	S.D.
Household Size	5.65	2.69	6.52	2.32
Employment Ratio	3.75	1.48	3.44	1.25
Father's Education	2.30	1.32	2.09	1.27
Mother's Education	1.46	0.93	1.23	0.65
Father's English Education	11.1%	—	8.0%	—
Respondent's Education	2.62	1.75	3.18	1.53
Respondent's English Education	20.9%	—	25.7%	—
Respondent's Occupation*	41.5	29.7	52.7	28.0
Number	153		389	

Note:

* Expressed in percentiles.

In McClendon's study, the number of siblings is identical for both white females and males. Table 2 shows that Chinese women come from smaller households than men. Women also come from households with a higher proportion of employed members.

These profiles show that Singapore's Chinese females come from higher SES backgrounds but have lower mean education and occupation than men. The next section examines the processes of educational and occupational attainment of females and males.

IV. BASIC MODEL OF EDUCATIONAL ATTAINMENT

The basic model used here to compare Chinese females and males is similar to the basic model of Treiman and Terrell.⁹ In the Treiman and Terrell model,

9. In the study by Treiman and Terrell, two models are used. Model I includes four background variables, viz., education and occupation of both parents. Model II for females includes only three background variables because data on mother's occupation were not available for male respondents. For white females and males, Model II includes father's and mother's education and father's occupation. For black females and males, Model II includes only father's occupation and same-sexed parent's education. The analysis in this paper refers to Model II for both whites and blacks.

SES background is posited to determine education. Both SES background and education in turn are posited to determine occupational attainment. SES background is measured by three variables — father's education, mother's education and father's occupation.

The present model also comprises three background variables — father's education, mother's education and employment ratio of the household. The determinants of education of Chinese women and men will be investigated first before proceeding to investigate their occupational attainment.

Treiman and Terrell report that among the three background variables, mother's education has the strongest direct effect on white females' educational attainment, while father's education has the strongest direct effect on white males' education. They suggest that this pattern is probably due to same-sex role modelling. McClendon's data show a second pattern. Mother's education has a stronger net effect than father's education on both white females' and males' education. However he offers no explanation.

The Singapore data show a third pattern. Father's education is the strongest determinant of education attained by both Chinese females and males (Table 4). Mother's education has nearly as strong an effect as father's education. In Singapore, age-grading in favour of the older and sex stratification in favour of the male are prevalent among Chinese in general. The father is an authoritative figure because of his older age and male sex among other things (such as his role as the chief bread winner of the household). He is the role model for both sons and working daughters, while the mother — according to Chinese norms — is the role model for non-working daughters or housewives. The strong direct effect of father's education on both Chinese males and females who have participated in the labour force reflects role modelling after the father.

In McClendon's study, the sibling variable has net negative effects on education for both white females and males. It is the strongest but negative determinant for males, but it ranks only third place among four background variables for females. McClendon explains: 'Sons are more likely than daughters to drop out of school early to supplement family income in case of need, and need tends to be greater as the size of the family increases.'¹⁰

Table 4 shows that the net effect of employment ratio is significant and positive for Chinese women ($r = .208$) but not significant for men ($r = .080$). The zero-order correlation coefficients follow the same pattern: it is significant for females ($R = .237$) but not for males ($R = .102$) as Table 3 shows. The educational level attained by Chinese females is more dependent on family resources than that for men.

Looking at the combined effect of the background variables on educational attainment, both American studies show that SES background has a slightly stronger

10. McClendon, p. 59.

TABLE 3
ZERO-ORDER CORRELATION COEFFICIENTS OF SES VARIABLES FOR CHINESE WOMEN AND MEN, SINGAPORE

Variable	Chinese Women						Chinese Men					
	Household Size	Employment Ratio	Father's Educ.	Mother's Educ.	Father's English	Respondent's English Education	Household Size	Employment Ratio	Father's Educ.	Mother's Educ.	Father's English	Respondent's English Education
Employment Ratio	-.205	.098										
Father's Education	.022	.015	.450*									
Mother's Education	.027	-.052	.358*	.155								
Father's English Education	-.001	.133	.384*	.374*	.432*							
Respondent's English Educ.	.007	.237†	.384*	.356*	.184†	.598*						
Respondent's Education	.151	.147	.314*	.346*	.193†	.565*						.731*
Respondent's Occupation	.096											
Employment Ratio	-.318*	.006										
Father's Education	-.198*	.095	.419*									
Mother's Education	-.086	-.019	.401*	.114†								
Father's English Education	-.071	.147†	.258*	.321*	.392*							
Respondent's English Educ.	-.156†	.102	.340*	.332*	.251*	.532*						
Respondent's Education	-.046	.051	.271*	.218*	.189*	.432*						.537*
Respondent's Occupation	-.065											

Note:

† $p \leq .05$ †† $p \leq .01$ * $p \leq .001$

TABLE 4
 MULTIPLE REGRESSION COEFFICIENTS OF BASIC MODELS OF EDUCATIONAL
 AND OCCUPATIONAL ATTAINMENT FOR CHINESE WOMEN AND MEN,
 SINGAPORE (STANDARD ERRORS IN PARENTHESES)

Independent Variables	Chinese Women		Chinese Men	
	Education	Occupation	Education	Occupation
Metric Coefficients				
Employment Ratio	.248 (.086)	-.042 (.116)	.097 (.057)	-.005 (.096)
Father's Education	.368 (.116)	.010 (.157)	.317 (.066)	.226 (.114)
Mother's Education	.469 (.158)	.317 (.214)	.540 (.126)	.051 (.217)
Respondent's Educ.	—	1.187 (.107)	—	.917 (.086)
Standardized Coefficients				
Employment Ratio	.208¶	-.021	.080	-.002
Father's Education	.257¶	.004	.247*	.096†
Mother's Education	.238¶	.095	.221*	.011
Respondent's Educ.	—	.701*	—	.501*
Intercept	.164	.712	1.525	1.834
R	.482	.737	.407	.545
R ²	.233	.543	.165	.297
$\sqrt{1 - R^2}$	.876	.676	.914	.839

Notes:

- † $p \leq .05$
- ¶ $p \leq .01$
- * $p \leq .001$

effect on females than males. The coefficient of determination (R^2) for white females in the Treiman and Terrell study is .237 compared with .212 for white males. Among blacks, it is .200 for females and .134 for males. In the McClendon study, it is .31 for white females and .28 for males. The Singapore data show a similar pattern. Table 4 shows that the coefficient of determination is .233 for Chinese women compared with .165 for men. These findings show that the explained variance is less than one-third: educational attainment is highly indeterminate with respect to these models.

V. OCCUPATIONAL ATTAINMENT

Multivariate regression models of occupational attainment of white males have repeatedly shown that education is the main determinant of occupational

attainment. The background variables affect occupational attainment mostly indirectly through education.

In the Treiman and Terrell study, the net effect of education on occupation is high for both sexes and races. It is lower for white females than for white males. The standardized path coefficient is .510 for females compared with .546 for males. McClendon reports a similar pattern: .52 for white females but .56 for males. The pattern is reversed for blacks. Treiman and Terrell report a standardized path coefficient of .652 for black women but only .458 for black men.

The Singapore data are congruent with the black data. The coefficient is a high .701 for Chinese females compared with .501 for Chinese males (Table 4). The path coefficient for Chinese women is higher than that for black females.

The lower coefficients for white females compared with white males, and black males compared with white males, on the one hand, and the higher coefficients for black females compared with black males, and Chinese women compared with Chinese men, on the other hand, need to be explained. Treiman and Terrell and McClendon attribute the differential coefficients to discrimination against women and blacks.¹¹ The effects of sex and racial discrimination are better expressed and understood by examining the three figures below.

Treiman and Terrell's data on white and black females closely approximate Figure 1, which shows a higher intercept for whites but identical coefficients for both whites and blacks. For the same education, whites are placed Y percentiles higher than blacks on the occupational scale. Alternatively speaking, for blacks to attain the same occupation they need X years more education than whites.

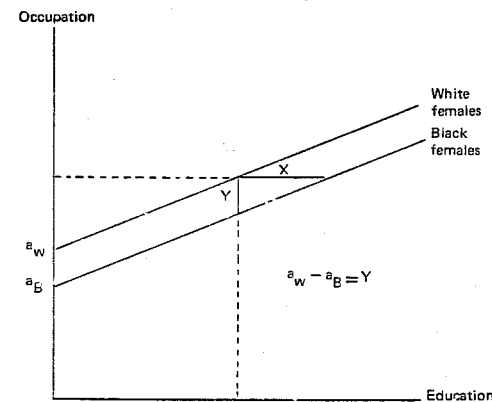


Figure 1. Identical Occupational Returns to Education for White and Black Females, Net of Parental Status (Source: Treiman and Terrell, 1975).

11. Treiman and Terrell, *Op. cit.*, pp. 182-183; McClendon, *Op. cit.*, p. 60.

The difference between the intercepts thus indexes racial discrimination among females. The intercepts are 8.94 percentiles for white females and -3.13 for black females, showing a difference of 12 percentiles.

Treiman and Terrell report almost identical intercepts but different regression coefficients between white and black males (see Figure 2). The difference between their intercepts is a mere 1.5 percentiles. However, the occupational returns to an additional year of education are 2.0 percentiles for whites and 1.4 for blacks. Figure 2 shows that the discrepancy in occupational attainment increases with each increment in education. The difference in coefficients thus indexes racial discrimination among males.

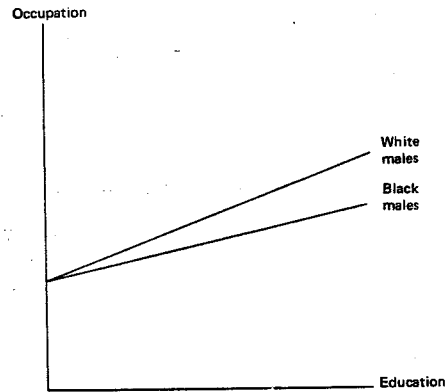


Figure 2. Occupational Returns to Education for White and Black Males, Net of Parental Status (Source: Treiman and Terrell, 1975)

Figure 3 shows a third pattern. Both intercepts and coefficients differ between Chinese females and males. The same pattern is found between the sexes of both whites and blacks, reported by Treiman and Terrell. The intercepts are 18.3 percentiles for Chinese males and 7.1 for females, showing a difference of 11.2 percentiles in favour of males. The occupational returns for an additional level of education are 9.2 percentiles for males and 11.9 percentiles for females. The two regression lines intersect at slightly beyond level 5, or about 11 years of education. That is, Chinese females with Secondary Four education or lower are placed in lower occupations compared with males with the same education, with sex discrimination against females being more severe at the lower levels of education. But beyond Secondary Four, Chinese females are placed more favourably on the occupational scale than males.

Between black females and males in Treiman and Terrell's study, the intersection point is at about 11 years of education, similar to the Chinese data. However, the difference between their intercepts is larger, 17.2 percentiles among

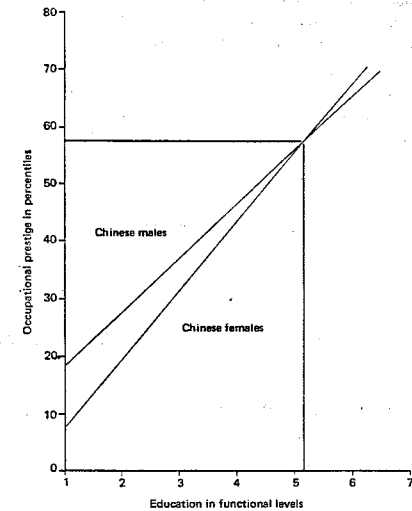


Figure 3. Occupational Returns to Education for Singapore's Chinese Females and Males, Net of SES Background (Source: Table 4)

blacks compared with 11.2 among Chinese. The differential occupational returns to education among blacks are substantial: 2.96 percentiles for an additional year of education for females compared with 1.44 for males.

Between white females and males reported by Treiman and Terrell, the intersection point is slightly higher than the above, at about 13 years of education. The difference between the intercepts is only 7.7 percentiles. The differential occupational returns are also smaller than any of the above groups: 2.54 percentiles for females compared with 2.03 for males.

While racial discrimination against blacks among females is indicated by a lower intercept (Figure 1) and among males by a lower coefficient (Figure 2), sex discrimination against females is not indicated by either a lower intercept or a lower coefficient alone. Females have a lower intercept but a higher coefficient compared with males. Among Chinese and blacks, at about 11 years of education there is occupational parity between the sexes (Figure 3). Chinese and black females with less than 11 years of education have occupations lower than males with the same level of education. However, beyond 11 years of education females have higher occupations than males. For whites, the sexes attain occupational parity at about 13 years of education. Thus, a lower intercept indicates discrimination against females up to a certain point on the educational scale. However, the higher coefficient for females requires further exploration.

The higher coefficient means that occupational attainment is more dependent on female's achievement in education. Ascription is less important as a determinant. The lower coefficient for males means that exogenous variables to the basic model play more important roles as determinants for males than females. Exogenous variables may be ascribed and/or achieved variables. Examples of ascriptive determinants are family and school ties, and favourable attitudes of employers towards male employees; and examples of achieved determinants are work experience, salesmanship and performance at job interviews. The lower coefficient for males points to a need for further model specification, i.e., searching and locating ascriptive and achieved determinants such as the above which have different effects on occupation between the sexes.

Having discussed the net effect of education on occupation and the problems of sexual and racial discrimination at some length, I now assess the net effects of the background variables. In Treiman and Terrell's study the background variables have little net effects for both sexes of whites and blacks. Statistically significant are the net effects of mother's education for white females ($r=.062$) and of father's occupation for white males ($r=.079$), indicating same-sex role modelling. For black males the net effect of father's occupation is larger ($r=.129$). For black females the net effects of parents' SES are not significant. In McClendon's study, the net effect of father's occupation is significant and almost identical in size between the sexes (females' $r = .12$; males' $r = .11$). The net effects of both mother's and father's education are negligible for both sexes.

In this study, the net effects of both parents' education are not significant for Chinese women. The direct effect of father's education is small but statistically significant for Chinese men ($r=.096$), while mother's education has near zero effect. The Singapore pattern is similar to that of blacks reported by Treiman and Terrell. In McClendon's study, the net effect of siblings is significant but negative ($r = -.12$) for white males but not significant for females. The Singapore data show that employment ratio has near zero effect on occupation for both Chinese women and men (Table 4).

All in all, the direct effects of the background variables are small or negligible. The Treiman and Terrell study indicates a tendency towards same-sex role modelling for whites of both sexes, while father's occupation is equally important to both sexes in the McClendon study. Father's occupation and education are important for black and Chinese males respectively. Parental status has negligible effect on black and Chinese females' occupational attainment.

Looking at the combined effects of SES background and respondents' education on occupational attainment, two patterns emerge — one for whites and one for blacks and Chinese. Among whites in both American studies, the explained variance (R^2) for females is higher. Treiman and Terrell report an explained variance of 33.5 per cent for males compared with 29.4 per cent for females, while McClendon reports 38 per cent for males and 35 per cent for females. Among blacks and Singapore's Chinese, the coefficient of determination for females is almost twice that for males. Treiman and Terrell report a coefficient of 46.0

per cent for females but only 24.4 per cent for males while the corresponding figures for Chinese are 54.3 per cent for females and 29.7 per cent for males. All in all, for whites of both sexes and black and Chinese men, occupational attainment is highly indeterminate with explained variance ranging from 24 per cent to 38 per cent. Occupational attainment for black and Chinese women is more determinate; the coefficient for Chinese women in Singapore is the highest reported figure in the literature. The high explained variance for Chinese and black females is largely due to the substantial net effect of their education on their occupation.

VI. EXTENDED MODELS OF EDUCATIONAL AND OCCUPATIONAL ATTAINMENT

The basic models discussed above include only a small number of predictors. The addition of more variables like intelligence scores, occupational aspiration, work experience, marital status, age and children at home is known to increase significantly the explained variance.¹²

This study incorporates a new variable which has not appeared in the literature on status attainment. It is education in a language of wider communication (LWC). In societies with a colonial history, a LWC such as English, French, or Dutch is often used as the language of public administration and business transactions, especially in multinational corporations. An English education, for instance, means access to employment in the civil service and multinational corporations which provide higher salaries, more secured employment and better working conditions than indigenous firms and family businesses. In short, an English education has greater market value than, say, a Chinese or Tamil education in Singapore and Malaysia.

In Singapore the LWC is English. English was and is the language of public administration and big business. Clark and Pang¹³ have estimated the lifetime financial returns to education by language stream and level in Singapore. They report that male employees who have some English secondary education have a mean lifetime earnings of S\$58,343 while those with some Chinese secondary education earned S\$4,518, favouring the former by a factor of 11.4 times. Men educated in Malay or Tamil earned even less than the Chinese educated. The difference between the English and Chinese educated who have completed secondary schooling is almost 3:1 (S\$121,557 and S\$43,715 respectively). Among female employees with some secondary education, those educated in English have 8.4 times the lifetime earnings of the Chinese educated. Among females who have

12. William H. Sewell *et al.*, "The educational and early occupational status attainment process: replication and revision," *American Sociological Review*, Vol. 35 (1970), pp. 1014-27; Christopher Jencks *et al.*, *Inequality* (New York: Basic Books, 1972); Otis D. Duncan *et al.*, *Socioeconomic Background and Achievement* (New York: Seminar, 1972); David L. Featherman, "Achievement orientations and socioeconomic career attainments," *American Sociological Review*, Vol. 37 (1972), pp. 131-43; Treiman and Terrell, *Op. cit.*; and McClendon, *Op. cit.*
13. David H. Clark and Pang Eng-Fong, "Returns to Schooling and training in Singapore," *The Malayan Economic Review*, Vol. XV (1970), pp. 79-103. The earnings reported here refer to earnings before tax and at zero per cent discount rate for employees without job training.

completed their secondary education, the English educated earned almost twice as much as the Chinese educated. Thus for the same sex and level, English education gives a higher financial return than Chinese education in Singapore.

Clark and Pang also report earning differences between the sexes. Among those with some English secondary education, males earned 5.3 times as much as females. The ratio was almost 3:1 between males and females who have completed their secondary schooling in English. Thus for the same stream and level, females earned less than males in Singapore.

ATTAINMENT OF ENGLISH EDUCATION

The Clark and Pang study shows that English education benefits men more than women by a factor of 3 to 5. This differential financial return between the sexes could be expected to motivate parents to send sons more than daughters to English schools. Table 2 supports this hypothesis. Of the 389 Chinese men, 25.7 per cent had an English education, compared with 20.9 per cent of the 153 Chinese women. More sons, relatively and absolutely, were sent to English schools.

Table 3 shows that those in English schools tend to have received more years of education. The correlation is somewhat stronger for Chinese women ($R = .598$) than for men ($R = .532$).

In this study, English education is coded as a dummy variable where English education is coded as 1 and other as 0. Table 5 shows that English-educated fathers tend to send their sons and daughters to English schools. The path coefficients are fairly large and similar in size for both Chinese women and men (.353 and .364 respectively). The net effect of mother's education is also significant and similar in size for both sexes: $r = .260$ for women and $r = .268$ for men. Employment ratio contributes positively only towards Chinese males' English education ($r = .129$).

Looking at the combined effects of the background variables on English educational attainment, the explained variance for Chinese women is higher than that for men: $R^2 = .316$ for women; $R^2 = .247$ for men (Table 5). English educational attainment for both sexes is largely indeterminate. It is more indeterminate for men than for women.

EDUCATIONAL ATTAINMENT

The extended model differs from the basic model by the inclusion of two more variables, viz., father's and respondent's English education. Table 5 shows that the net effect of father's English education on the respondent's level of education is positive and significant only for Chinese males. With the inclusion of father's English education in the extended model, mother's education is now the best predictor among the background variables for both sexes. The net effect of father's education has diminished for both sexes. It decreases from .257 to .229 for Chinese women, and from .181 to .181 for men. The positive correlation between father's English and level of education for both sexes as shown by

TABLE 5

MULTIPLE REGRESSION COEFFICIENTS OF EXTENDED MODELS OF EDUCATIONAL AND OCCUPATIONAL ATTAINMENT FOR CHINESE WOMEN AND MEN, SINGAPORE (STANDARD ERRORS IN PARENTHESES)

Independent Variables	Chinese Women			Chinese Men		
	Education	English	Occupation	Education	English	Occupation
Metric Coefficients						
Employment Ratio	.256 (.086)	.037 (.019)	-.043 (.115)	.100 (.057)	.045 (.016)	-.048 (.095)
Father's Education	.328 (.123)	.043 (.027)	-.045 (.162)	.232 (.071)	-.000 (.020)	.237 (.120)
Mother's Education	.470 (.158)	.119 (.035)	.230 (.214)	.565 (.125)	.188 (.034)	-.101 (.218)
Father's English	.423 (.430)	.456 (.095)	-.051 (.601)	.866 (.284)	.587 (.078)	-.363 (.508)
Respondent's Education	—	—	1.029 (.122)	—	—	.747 (.095)
Respondent's English	—	—	1.372 (.556)	—	—	1.363 (.343)
Standardized Coefficients						
Employment Ratio	.215¶	.135	-.022	.082	.129¶	-.022
Father's Education	.229¶	.128	-.019	.181¶	-.001	.101†
Mother's Education	.239¶	.260*	.069	.231*	.268*	-.023
Father's English	.076	.353*	-.005	.154¶	.364*	-.035
Respondent's Education	—	—	.607*	—	—	.408*
Respondent's English	—	—	.188†	—	—	.213*
Intercept	.178	-.253	1.103	1.592	-.174	2.365
R	.488	.563	.751	.430	.497	.571
R ²	.238	.316	.564	.185	.247	.326
$\sqrt{1 - R^2}$	.873	.827	.660	.903	.868	.821

Note: † $p \leq .05$ ¶ $p \leq .01$ * $p \leq .001$

Table 3 ($R=.358$ for women; $R=.401$ for men) indicates that part of the effect of father's education is indirect, through father's English education.

With the inclusion of father's English education as a background variable, the combined effects of the four background variables on educational attainment increased by no more than two per cent. Table 7 shows that the explained variance increases from 23.3 per cent accounted for by the basic model to 23.8 per cent accounted for by the extended model for Chinese women, and from 16.5 per cent to 18.5 per cent for men.

TABLE 6
COMPARING THE COEFFICIENTS OF DETERMINATION FOR CHINESE WORKING WOMEN AND MEN AGED 21 YEARS AND ABOVE, SINGAPORE, 1969/70.

Basic Models	Chinese Women (R^2_w)	Chinese Men (R^2_m)	$R^2_w - R^2_m$
Education	.233	.165	+.068
Occupation	.543	.297	+.246
Extended Models			
Education	.238	.185	+.053
Occupation	.564	.326	+.238
English Education	.316	.247	+.069

TABLE 7
INCREASES IN THE COEFFICIENTS OF DETERMINATION BETWEEN EXTENDED AND BASIC MODELS OF EDUCATIONAL AND OCCUPATIONAL ATTAINMENT FOR CHINESE WORKING WOMEN AND MEN AGED 21 YEARS AND ABOVE, SINGAPORE, 1969/70.

Coefficients of Determination of	Chinese Women		Chinese Men	
	Education	Occupation	Education	Occupation
Extended Model	.238	.564	.185	.326
Basic Model	.233	.543	.165	.297
Increase	.005	.021	.020	.029

Educational attainment is less predictable than English educational attainment. The explained variance for English education is 31.6 per cent compared with 23.8 per cent for educational attainment for women. The corresponding percentages for men are 24.7 and 18.5 respectively.

OCCUPATIONAL ATTAINMENT

Just as father's English education has greater net effect on son's education than on daughter's education, the direct effect of men's English education on their

occupational attainment is greater ($r=.213$) than that of women's English education on occupation ($r=.188$) as Table 5 shows. Consistent with the findings of Clark and Pang, English education is more relevant for men than women. What is intriguing is that the path coefficients are not bigger and that their difference is not larger. The findings justify the inclusion of English education as a determinant of occupational attainment. It is the second-best predictor.

With the inclusion of respondent's English education in the extended model, the path coefficients for education for both females and males decrease. They drop from .701 to .607 for women and from .501 to .408 for men (Tables 4 and 5). Education still remains as the best predictor for occupational attainment for both sexes. The decreased direct effects are due to the high correlation between respondent's English education and educational level. Table 3 shows that the zero-order correlation coefficient is .598 for Chinese women and .532 for men. That is, part of the effect of education on occupation is indirect, through English education.

The background variables have negligible direct effects on occupation for Chinese females. Of the four background variables, only father's education has positive net effect on occupation for men ($r=.101$).

All in all, the inclusion of two English education variables — father's and respondent's — increases the explained variance by just two to three per cent. The coefficient of determination increases from 54.3 per cent to 56.4 per cent for Chinese females, and from 29.7 to 32.6 per cent for males (Table 7).

McClendon's extended model of occupational attainment for white women includes eleven predictors. The explained variance is only 37 per cent. Model II of Treiman and Terrell for both white and black women includes three predictors. The explained variance is a mere 29.4 per cent for whites and 46.0 for blacks. The extended model of this study includes six predictors. The explained variance is 56.4 per cent, which is the highest among these studies.

VII. SUMMARY AND CONCLUSION

Singapore's Chinese females who have participated in the labour force tend to come from higher SES backgrounds than males. But women's mean education and occupation are lower than that of men.

With respect to the basic model, father's education is the most important determinant of education for both females and males. The combined effects of the three background variables are small for both sexes. Educational attainment is highly indeterminate. The explained variance is only 23.3 per cent for females and a mere 16.5 per cent for men.

The extended model of educational attainment incorporates father's English education as a background variable. The inclusion of this variable leads to a drop in the net effect of father's education on respondent's education. This is because part of the effect of father's education is channelled through father's

English education. Mother's education then emerges as the best predictor of respondent's education for both sexes. The inclusion of father's English education increases the explained variance marginally for both sexes. Father's English education has positive net effect on educational attainment for men.

Education is the best predictor for occupational attainment in both the basic and extended models for both females and males. The path coefficient for women is very high (.701) and is higher than any reported in the literature. With respect to the basic model, the background variables have negligible effects on occupational attainment. Their effects are channelled through education. Largely due to the net effect of education on occupation, the explained variance exceeds one-half for Chinese women but is less than one-third for men. With the inclusion of father's and respondent's English education in the extended model of occupational attainment, the explained variance increased by two per cent for women and by three per cent for men. The net effect of respondent's English education on occupation is positive and significant for both sexes. The empirical evidence justifies the inclusion of the LWC variable in future investigations of occupational attainment. The background variables have near zero direct effects for both sexes, with only one exception. Father's education has positive and direct effect on occupation for men.

English-education attainment is more determinate than educational attainment for both sexes; however it is more determinate for females. Father's English education is the best predictor for both sexes, followed by mother's education. Employment ratio has positive direct effect on English education for both sexes but is statistically significant for males only. All in all, the findings of this study show that there are: (1) some degree of inheritance of English education from father to son and daughter; (2) high and significant zero-order correlation between father's English education and respondent's level of education as well as significant net effect of father's English education on son's but not daughter's level of education; and (3) differential effect of respondent's English education on occupation between the sexes in Singapore.

Three conclusions emerge from this analysis. (1) Models of educational and occupational attainment need further extension since these studies show consistently that the explained variances are small. This is especially serious for models of educational attainment. (2) The differences in the intercepts and path coefficients of education on occupation between the sexes and races are intriguing and have so far received scant theoretical illumination. For instance, why are the coefficients lower for white females but higher for black females compared with males of the same race? (3) Education in a LWC in multilingual societies with a colonial past needs further investigation with respect to both educational and occupational attainment.

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