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AUTHOR Cummings, William K.
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ABSTRACT

In this paper, selected evidence on the effects of Japanese schools is presented. The author believes that Japan is one modern society where the schools have fostered individual and social development. The primary focus is on the effects for individuals in the area of cognitive skills, motivation, educational and occupational attainments, and sociopolitical attitudes and the characteristics of Japanese schools which contribute to their effectiveness. Political conflict over education, the school-job link, and the high esteem Japanese culture and heritage places on education is reported as having a significant bearing on their success. Other suggested indicators of the school's success, discussed in some detail, include: (1) Japanese students' high scores on Science Achievement Tests administered by the International Education Association (IEA); (2) an interest and aspiration of students to achieve; (3) an increase in educational level attainment; and (4) a substantial effect of education on occupation attainment. In summary, individual changes effected by the schools are plausibly linked to some social and economic developments of postwar Japan. In conclusion, however, it is noted that not all school effects are perceived positively. For example, the conservative element in Japan believes that it is not receiving enough from Japan's schools. Although a major program for school reform has been launched, it is difficult to predict what reforms from the current debate over Japanese education will be implemented. (ND)

THE EFFECTS OF JAPANESE SCHOOLS

by

William K. Cummings

Department of Sociology

University of Chicago

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Among educators and policy-makers, a consensus has lately emerged that the schools are not performing the functions traditionally assigned them. To consider this charge, it is useful to categorize these assigned functions or effects in terms of four groupings as follows:

	Individual Effects	Social Effects
Internal Composition	moral character cognitive skills motivation	lack of deviance cultural uplifting societal integration
External Status	social mobility income	full employment productive labor force socioeconomic equality

Underneath the superficial agreement on the ineffectiveness of schools lies considerable dissensus concerning what the school's functions should be--consensus on character-building but not about the specific attributes of character, consensus that students should be taught to question tradition but dissensus concerning the new choices they should make , consensus that the schools should activate student needs but dissensus concerning the value of general over against specialized knowledge. Finally concerning the social impact of schools, there is consensus that the schools should develop good citizens that will perform useful adult roles but dissensus concerning whether good citizenship includes a progressive orientation toward social institutions or not. Possibly the only area where there is agreement is on the need for schools to improve the cognitive skills of students--but even here there is disagreement concerning whether the emphasis should be on the general uplifting of all or the selective uplifting of the most talented. In the

present context of pessimism about the effects of schools, these differences are often unvoiced. But they persist and are firmly rooted in the diverse sociopolitical movements that characterize most modern societies.

Japan is at least one modern society where the schools have effects. In this paper we will present a sample of the evidence on the effects of Japanese schools. The evidence varies in quality, but taken as a whole it should convince the reader that the Japanese schools are an exception to the new pessimism. In this summary, our primary focus will be on the effects for individuals--especially cognitive skills, motivation, educational and occupational attainments and sociopolitical attitudes--and the features of Japanese schools which contribute to these effects. As we will argue, so much in terms of the social effects of schools is interrelated with forces external to the schools that rigorous empirical analysis is impossible.

Our main objective, then, will be to identify some of the special characteristics of Japanese schools and society which are related to their effectiveness. As a by-product of this analysis, we will be forced to consider the concept of effects, for we will discover that school effects are not neutral. Different effects tend to benefit different interested groups outside the schools. Fortunately, in the Japanese case no group receives all of the benefits of the schools. The irony is that the conservative establishment feels it is not receiving enough from Japan's fine schools, and thus recently a major program of reform has been launched.

The Context of the Japanese School

An important ingredient underlying the effectiveness of Japanese schools is their distinctive cultural heritage. Japan is one of the few nations that totally escaped the influence of Western civilization until the mid-nineteenth century. Over the long period of isolation, a unique variant of Chinese

civilization was developed.[1] Central to this tradition was a veneration of learning and men of knowledge, but relative to China Japan valued knowledge that could be applied to practical affairs. As in China, education was widespread and by the eve of the Meiji restoration possibly 40 per cent of all males were literate. A major component of the traditional education was, what, for lack of a better term, might be called indoctrination in civil morality--observing the proper relations with superiors and peers and manifesting loyalty to one's lord. Pre-modern Japan had a feudal structure, but some of the values of this period were incongruous.[2] For example, though families were divided into four hereditary strata, there was a latent and potentially disruptive assumption that all Japanese people belonged to a superior race, all were competent, and all were equal subjects of the emperor. The divisions into strata were sometimes characterized as a mere practical solution to the problem of social order. Within each strata, were explicit hierarchies of social positions. However, those who exerted special effort and acquired needed talents were able to rise far above their original stations; indeed, a few were able to rise out of their hereditary strata. These and other traditional norms were resources which the builders of modern Japan could ignore or draw upon as they pleased.[3] Indeed, much of the traditional heritage was submerged in the modernizing effort, but the themes we have noted above came to exert a subtle influence on modern Japanese education.

Unlike in many Western societies, the modern Japanese school system is scarcely 100 years old. It was begun as a radical departure from traditional education in the early years of the Meiji restoration. The initial goals were to consolidate national morality and to expose all to the program of national transformation; through the schools the talented were to be selected for modern occupations. From the beginning the central government was the architect of a unified national school system based on a comprehensive plan.

The base of the prewar system was a six year compulsory education program which prepared some students for vocations and others for advanced studies in one of several tracks--normal schools, advanced vocational schools, professional schools, and the university track.. Over time and expecially as Japan approached World War II, the curriculum and teaching methods used in most of the educational institutions came under the supervision of the Ministry of Education and were increasingly standardized. A major component of wartime instruction was the inculcation of the traditional civil morality of proper relations, loyalty to the emperor, and the necessity to work hard for the nation--to overcome obstacles through sheer will-power. By World War II six per cent of the male college age cohort and two per cent of the females were attending an institution of higher education. The unified educational system served the interests of big business and the military who dominated wartime Japanese society, but it was not without strains. Growing numbers of students wished more educational opportunities; also some students and teachers rebelled at the oppressive centralization of educational content.

Following World War II, Japanese higher education underwent a massive reform promoted by the American occupation in connection with its broad goals of demilitarization and democratization. In education, the official purpose became the "enrichment of individual Personalities" as opposed to serving corporate interests, and educational opportunities were guaranteed to all according to their ability. The Occupation abolished the old multi-track system, and established in its place a single-track coeducational system designed along the American pattern with a six-year primary school, a three-year lower secondary school, a three-year high school (preferably comprehensive though in large urban systems separate vocational institutions were permitted), and two to four-year colleges. Compulsory education was extended to the first two levels of this new system. Steps were taken to decentralize

control of the schools through the establishment of local boards of education composed of citizens from the local school areas. To further decentralization, local schools were authorized to choose their texts and teaching approaches within the framework of course guidelines established by the Ministry of Education. Another reform, possibly the most important, was the legalization of teachers' unions; after an early flury of union founding, most were consolidated in the Japan Teachers Union (Nikkyoso) which maintains a strong affiliation with the socialist party.[4] Approximately three-fourths of all school teachers are affiliated with this union. The union readily identified with the progressive egalitarian reforms of the Occupation, and since its departure has been quite active in efforts to preserve the reforms.

While the various reforms were imposed by an Occupation government, they were implemented through the Ministry of Education thus preserving the authority of this central institution. Since the departure of the Occupation, the Ministry has exerted its effort to change the school system in directions it has considered desirable. Before considering these, it will be useful to note some of the postwar developments in the larger society.

The miracle of Japanese economic growth has dazzled the world. From a shattered economy with virtually half the labor force employed in agriculture, Japan has become transformed into an advanced society. Over one-third of the labor force is now employed in industry, over two-fifths in the tertiary sector, and less than two-fifths in agriculture. Nearly four-fifths of the population now live in urban areas and enjoy living standards comparable to that in much of Western Europe. The occupational structure has also undergone a radical change with the rapid expansion of clerical, sales, and blue-collar positions. In the prewar period, the economy had a dualistic structure as between large and productive industrial enterprises and government bureaus on the one hand and smaller industrial, commercial and agricultural enterprises on the other

The organizations of the upper strata were more prestigious, paid better wages, and offered the unusual benefits associated with permanent employment.

During the prewar period the upper strata employed only a small proportion of all workers, but over the course of the postwar miracle it has expanded rapidly. The obvious employment benefits have attracted many youth to it, and as a means of selection education has become increasingly important. To obtain a white collar post higher education has become a requisite and for blue collar posts high school graduates are preferred. The attractiveness of the organizational sector has motivated growing proportions of Japanese youth to seek education beyond the compulsory level, and the rising affluence of the typical Japanese family has enabling the financing of advanced education for increasing numbers of children. In 1952, only 30 per cent of middle school graduates went to high school whereas today over 80 perccent attend. And a majority of high school graduates want to go on to higher education--today over 30 per cent actually do. The importance of educational attainment for preferred employment has aroused parental concern with the quality of schools. Thus one of the most impressive developments of the postwar period has been the vigorous growth of PTA's (Parent Teachers Associations) to the point where now they are found at virtually every school.

Parental concern has placed pressure on the government to improve schools. One happy result of the Ministry of Education's response has been to achieve substantially equal conditions for education throughout the nation. Using special subsidies authorized in a series of postwar laws, the Ministry aids those local school systems in poorer and remote areas so that they are able to acquire educational facilities comparable in quality to the best available in urban areas. Salary incentives also operate to draw many excellent teachers to isolated schools. In general, the equalization of facilities is at a high standard as we shall see below.[6]

Distinct from the concern of parents has been the requests of employers for educational products appropriate to their needs. Some employers have opposed the expansion of education out of their preference for less-educated people who presumably would be more cooperative and accept lower wages. Other employers have stressed the need for more practical education and a more thorough inculcation of traditional morality. These employers are major supporters of the conservative Liberal-Democratic Party which has controlled the Japanese Diet over most of the postwar period. In response to these demands, the Mininstry has introduced a new higher technical college distinct from the university and generally promoted the development of technical education useful for industry. It has assured a stronger role in the review of textbooks and the structuring of curriculum--a natable change has been the re-introduction of moral education into the primary school curriculum. Finally the Ministry has supported the replacement of elected school boards with appointed school boards which presumably would be more responsive to the demands of those above who make appointments.

Many of the reforms of the Ministry have been controversial. The Japan Teachers Union originally formed to promote the economic interests of teahhers has opposed most government reforms charging that they sacrifice the interests of students to the demands of big business. The union has become a key force in the Socialist Party. Following union initiative, the Socialist Party has brought up many of the issues for debate in the Diet, thus focusing the attention of the nation on the schools. As a practical matter, the Ministry finds it necessary to achieve some accomodation with union leaders if it expects to see its policies implemented in the classrooms.

Political conflict over education, the school-job link, and the high esteem Japanese culture places on education all contribute to a sense that schools are important. Thus school teaching is a respected occupation and recruits

able and committed teachers. In the recent Study of Science Achievement in Nineteen Countries by the International Education Association, a greater proportion of Japan's middle school science teachers had specialized in science than for any of the other countries, a greater proportion were members of scientific societies and attended annual meetings, and (excepting Italy and Finland) a greater proportion had had several years of teaching experience.[7] As for Japanese students, both those in the primary schools and middle schools tend to score higher in their liking of school than do students in the other societies.[8] These various features of the context of Japanese schools have, in our opinion, significant bearing on their effectiveness.

The Effects of Japanese Schools on Individual Cognitive Ability

Over the past decade, there have been substantial advances in the methods and models available for the study of school effects.[9] As a result, it is now common to conceive of the school experience as one stage in a sequence of causally related variables; the principal groups of these variables in sequential order are (1) background variables or father and mother's status and family stability, (2) hereditary traits including intelligence, (3) childhood experiences such as a culturally enriched home and the influence of others, (4) School and teacher influences, (5) personal development of cognitive ability, specialized skills, and motivation, (6) educational attainment, (7)first job status,(8) present job status, and (9) income. Insofar as we accept the new conventions for analysing school effects, it becomes necessary to control for the effect of each antecedent variable as we examine the effect of a factor of interest such as school characteristics or teacher quality on a subsequent factor such as cognitive ability. To date, in Japan there are no comprehensive studies which have measured all of these variables. Hence in our examination of school effects it will be impossible to observe the new conventions throughout. However, we will

keep them in mind; through assembling several fragments of data, we will develop some approximate conclusions on school effects.

Due to the embattled context of Japanese schools there are no studies of some of the earliest variables in the causal sequence--notably I.Q. In 1963 the Ministry of Education proposed a national study of the educational achievement of Japanese school children roughly equivalent to an I.Q. test, but this was firmly resisted by the Japan Teachers Union. The JTU argued that the results of such a test might be used as a basis for the differential treatment of school children, and that this would violate the constitutional guarantee of equality of educational opportunity. Increasingly in Japan there is opposition to tests of student ability that will be used for administrative purposes or even for research on educational processes.[10] On the other hand, measures of student achievement are permissible in so far as they are not used to discriminate against particular students.

Given this context, it was only possible for Japan to participate in the primary school (Population I) and middle school (Population II) Science Achievement Tests from the large battery of tests recently administered by the IEA. We consider below the results for the the middle school test as those for the primary school are said to test knowledge "not likely to be the result of specific science teaching."

In that the middle school test was administered to students in 18 societies, it is possible to compare average scores. As is well known, Japanese students did exceedingly well. For the subtests on chemistry, physics, and practical science, their average scores were the highest; for biology, they were second. The average total score for Japanese students was highest by several points as is recorded in Appendix A.[11]

Clearly there is something right about the way Japan educates its children. The obvious approach to identify exactly what in Japanese society or Japanese schools acoounts for this superior performance would be to conduct a cross-national

analysis. Partly because the IEA did not wish to stir up national competitive feelings and partly because of the varying quality of the data, it did not attempt an analysis at this level. We present in Appendix A the results of a modest analysis at the cross-national level which suggests that the quality of Japanese schools plays an important role in explaining this performance.

The IEA did present findings on the causes of differences in science achievement by country between schools and between students. The basic model for both these analyses was similar to that in the Coleman report. But whereas the Coleman report was investigating the determinants of general cognitive ability, the IEA research studied the determinants of a specific ability which schools are designed to teach. Before turning to the Japanese case, we will first consider the overall results for the middle school students (14 year olds) computed by averaging the regression coefficients for all the societies. In both the between school and between student regressions, the IEA found that the background variables of family status and sex were the most important explainers of differences in science achievement. However, after these variables had explained all they were capable of, it was found that school variables were also quite important. For the between schools analysis, home background accounted for 37 per cent of the variance in science achievement, sex for six per cent, and conditions of learning in the schools for 15 per cent.[12] For the between students analysis, the background variables of home and sex accounted for 16 per cent of the variance and variables related to learning conditions in the schools for an additional 9 per cent.[13]

The IEA report provides the data for a careful examination of school effects in Japan and at first glance these seem disappointing. Conditions of learning in Japan account for somewhat less than for the average of the 18 countries in the study. For between school differences, learning conditions account for only ten per cent of the variance in Japan compared with a 15 per cent average for the 19 countries, and for between student differences the

respective percentages are four per cent and nine percent. Moreover, two additional measures of school variation--type of school as between metropolitan to rural and type of program as between academic, general, and vocational--do not explain even one per cent of the variation for either analysis in Japan. An initial reaction is to conclude that Japanese schools have relatively less effect than the schools of other societies. In fact, what is responsible for these results is the extraordinary uniformity of programs and learning conditions in Japanese schools. For the Japanese case, there is relatively less variance in the school variables resulting in their relative inability to explain differences in science achievement.

This uniformity is certainly not a situation to be alarmed at, for as we have indicated earlier it is high quality uniformity. Concerning science education, all but two per cent of Japanese middle schools have laboratories and 93 per cent of the science teachers were trained in science at universities --no other country in the IEA study matches Japan in these quality indicators.[14] And our cross-national analysis suggests that the Japanese schools do make substantial contributions to the exceptional performance of Japanese students.

While schools in Japan explain a relatively small per cent of the variance in between student science achievement, it is also important to note that home circumstances have a modest effect. In Japan they explain 15 per cent of the variance compared with an average for all 18 societies of 10 per cent. On the other hand, this is lower than England's 20 per cent, Scotland's 23 per cent, or the U.S.'s 16 per cent. Parent's education, books in the home, and a smaller family size were the most important aspects of home circumstances contributing to the result in Japan whereas in many of the other societies father's occupational status was relatively prominent.[15]

Recent studies in the U.S. on the acquisition of generalized cognitive ability suggest the schools have little effect.[16] However, the results of the IEA study suggest that schools do have effect in developing specific abilities. It is pertinent to note that Japanese schools do not devote an excessively large proportion of their teaching time to science when compared with the schools of other societies.[17] Thus we suspect that the Japanese schools are also relatively effective in raising student ability in other cognitive areas as well. The earlier IEA studies on arithmetic and math certainly support this contention: the average for Japanese students was among the highest for the 12 participating countries.

Interest and Ambition

In the IEA study, the set of variables which stand out most for the Japanese case are the "kindred variables" indicating interest in school and in science as well as ambition. Three of these--science interest (r=.49), expected education (r=.47) and test on understanding science (r=.57)-- have higher zero-order correlations with the science achievement score than do any of the other 26 variables included in the analysis. In addition, like school (r=.20) and hours of reading for pleasure (r=.23) have respectable zero-order correlations. In the regression analysis, even after all the variables relating to background and and schools have been entered, this cluster of variables explains 12 per cent of the variation in science achievement of Japanese middle school students. In comparision, the average for the 18 countries on this cluster was only five per cent. While the IEA report does not supply the necessary information, we can infer that these kindred variables are relatively independent of the background and school variables already discussed.

Apart from the IEA study, we have no other data for examining school effect. However, there is another study by M.J. Bowman of the occupational aspirations of Japanese high school students which deserves notes. As one part of this study, Y. Tomoda found that the average occupational aspirations of students coming from different status backgrounds varied only modestly: the average for students from the highest status category was 7.45 (on a scale from .5 to 9.0) and the score for those from the lowest category was 6.69. A comparable American study (in the state of Washington) showed a range from 7.84 to 5.36 (on a scale from 1 to 10.0). Tomoda observes that parental background apparently has a much smaller effect on occupational aspirations in Japan than in the U.S.[18]

An obvious inference is that the Japanese school has a relatively greater uplifting effect on the aspirations of lower class children than does the American school. There are several features of the the Japanese school which might contribute to this difference. For one, residential areas in Japan tend to be class heterogeneous and hence few Japanese schools are strictly for lower class students--rather they tend to be composed of students from a variety of social backgrounds. While student bodies are diverse, teachers influenced by the progressive ideology of their union attempt to dampen the effect of class background on student interaction. In primary schools, strong home room groups are established composed of students from various backgrounds. Normally, the same teacher stays with the same home room group through the first two years teaching most of the subjects; then a new teacher comes in to move the same group of students through each successive year. Streaming by ability groups is rarely practiced. Lenient grading and extensive remedial work allows all the students to progress together. Teachers, given their progressive leanings, are more likely to discriminate for rather than against students from culturally deprived backgrounds exerting exceptional efforts to

bring them up to the common level. Continuity of the home room group also fosters in students a sense that all are within a common ability range--while some may be exceptionally bright, all can manage. By maintaining the same home room, friendships that often crosscut class lines become quite strong. On the other hand, students have relatively little chance to see what the social backgrounds of their fellows are because in school all wear uniforms and out of school, given a six-day school week and substantial homework, there is very little time for visiting.

These and other features, contribute to a uniformity of aspirations within schools. Given the relative uniformity between schools, it naturally follows that the class effect on aspirations will be modified throughout Japan. Of course, a number of practical considerations do stand in the way of students from lower class families who wish to realize their high occupational aspirations: the most immediate is the need for further education, and it is at this stage that social background takes its toll.

Educational Status

The ultimate outcome of schooling is the acquisition of educational status. Prior to World War II, compulsory education was limited to elementary education; from the late forties it was extended through the ninth grade. And today over 80 per cent of all Japanese youth complete high school. Consequently the current question concerning educational status is whether an individual goes to college or not. There are several studies which measure aspects of social background, ability, and school performance in an effort to answer this question, but none are truly adequate. One reason is the resistance to such research on ideological grounds, both by the right and left.[19] There is a strong tendency to view the school as a setting of opportunity where students are allowed to develop themselves, but that it is wrong to ask the school how well individual students are doing relative

to others. Will and effort are viewed as the appropriate selectors rather than ascribed characteristics or inherently arbitrary measures such as school performance.[20]

University entrance procedures are consistent with this philosophy of effort. The sole criterion for entrance into the major universities is performance on a written entrance exam testing acquired knowledge. Family status, recommendations, and school performance are ignored. Moreover, students are allowed to take an exam for their favored university as many times as they wish: within limits, it is assumed that will can make up for an initial lack of ability. Also the cost of higher education is modest, at least in the national universities and most faculties of the private universities. Loans to cover tuition and a part of monthly living expenses are available to most needy students thus alleviating the economic barriers. These conditions foster a belief that the universities are open, and lead people to question the need for serious research on the issue.

Of course, some recognize the need for research.[21] From the available studies, it is apparent that social background, ability, and school performance play some role in selection; but it appears that none play as strong a role as in the U.S. School performance plays a remarkedly modest role except that those who do exceptionally poorly in school select themselves out of the college competition. Of the background factors, sex is the most important with parent's education next and then income. One study by the Ministry of education of the income groups of the parents of university students suggests a remarkable degree of equality in social origins (see Table 1).

Apart from the general openness of higher education, there is the possibly more important question of the openness of the more elite institutions in that these provide the best opportunities for high status careers. It is at these institutions that the competition is stiffest. Several of these institutions conduct surveys of the attributes of their students, and from these we learn that there is a definite upper middle class bias in their student bodies as indicated in Table I. In part this is because families of this strata have sufficient money to provide for special tutors and other educational aids for their children. In addition, the homes are more culturally enriched. Some may view this upper middle class bias as excessive, but it is less than in most other societies. After all, nearly half the students at Tokyo University are not from families in the top one-third group. In sum, it would appear that social background has relatively modest effects on the acquisition of educational status. We can infer that the effect of the compulsory school in equalizing occupational aspirations has some role in this outcome.

School System Effects

Before we depart from the schools, we should briefly consider the character of school systems, for it is here that the broad policy decisions are made. There are no systematic studies of the variation in policies of different school systems, but the folklore available suggests their importance.

A basic contrast is between the level of development of different prefectures. In Tokyo which is the most developed area, over 95 per cent of all middle school students go on to high school and nearly half the high school students go on to college. In some of the least developed prefectures only 60 per cent go to high school. In 1970 the school board of Toyama prefecture, a relatively underdeveloped place, voted to limit the number of college preparatory places in its high schools to 30 per cent of all placed and to convert the

remainder into terminal technical training places. The board's rationale was that the prefecture needs to industrialize yet under the present system the schools prepare students for college and clerical jobs so they leave Toyama to seek jobs in Tokyo. The new policy was designed to keep the youth within the prefecture even at the expense of their own personal development. This example suggests one contrast between school systems that place the interest of students first and those that place the local economy first.

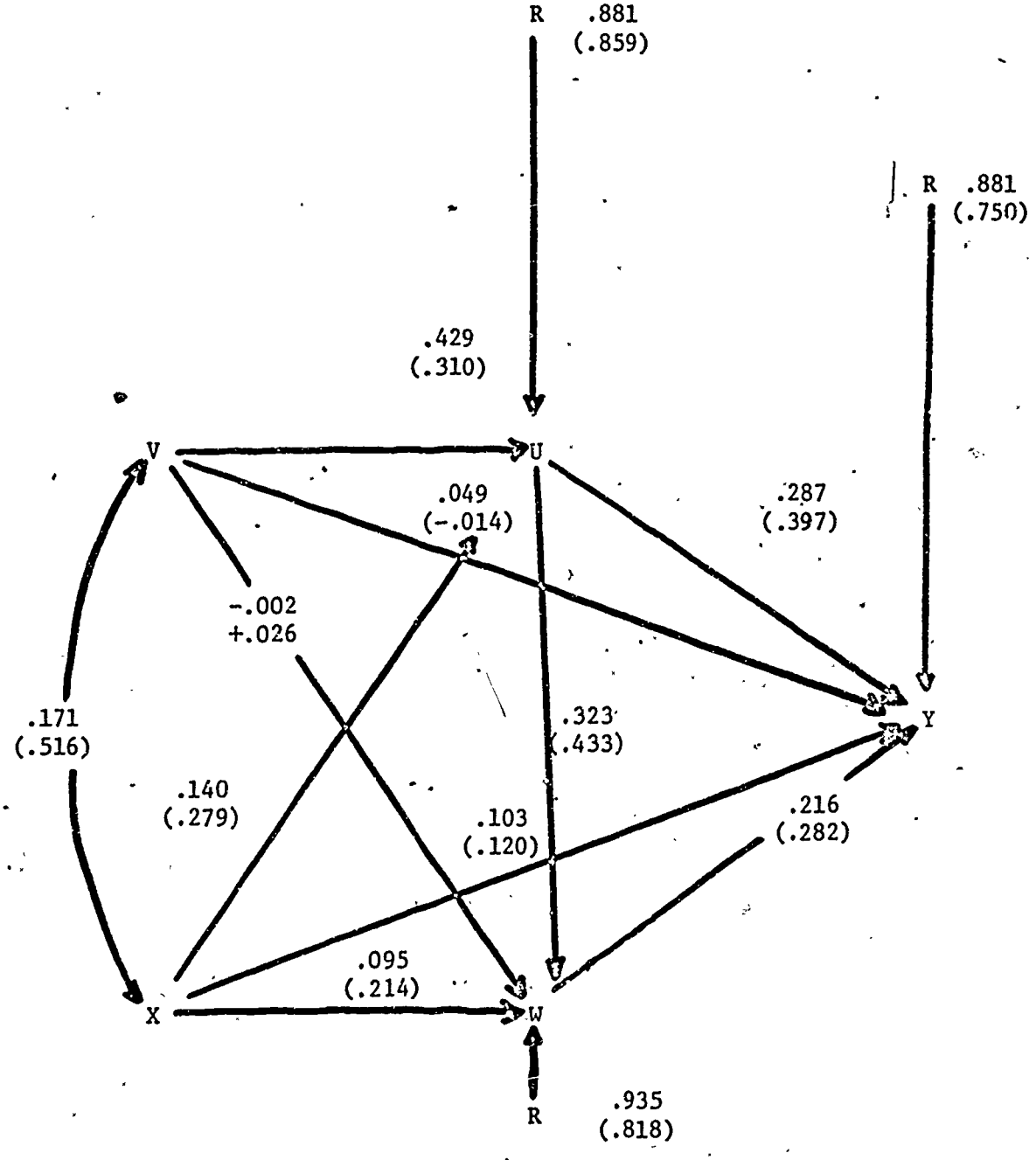
Another contrast is between prefectures which emphasize equality over against those which encourage individual achievement even at the expense of others. In Kyoto, all the way through senior high school students are assigned to the school nearest them in their local district with the result that there are no elite public high schools. In contrast in Tokyo until recently students were allowed some flexibility to apply to schools of their choice and the schools could devise their own entrance standards; consequently within the Tokyo system an elite track developed. The elite schools in turn were able to obtain better facilities and teachers. Tokyo and such areas have been disproportionately successful in placing their students in the top universities relative to Kyoto. Behind the decisions of local boards to be student-oriented and egalitarian, even if these incur some sacrifices, has been the influence of the progressive Teachers Union.

Occupational Attainment

Turning to the process of occupational attainment, we can draw on somewhat more satisfactory data--the 1965 national survey of social mobility--which we have analysed using path analysis. For the analysis, we have constructed interval scale measures of all the variables contained in the original occupational attainmant process model of P. Blau and O.D. Duncan. Our measures are somewhat different than Blau and Duncan as we have indicated

Figure 1

Path Analysis of Occupational Attainment in Japan and the United States



V = Father's educational attainment
X = Father's occupational status when respondent entered the labor force
U = Respondent's highest educational attainment
W = The occupational status of respondent's first job
Y = Respondent's occupational status in 1965

elsewhere in detail.[22] The primary difference is that we have used prestige for ranking occupational status rather than socioeconomic status; and where appropriate this index has made distinctions for nominally similar jobs in workplaces of different size. The latter modification is a reflection of the dualistic structure of Japanese employment. Because of these differences in operationalizing the variables, precise comparsions of our results with those of Blau and Duncan are not possible. However, an examination of the relative strength of relations between variables is meaningful as well as a useful starting point for our discussion of education's effect in occupational attainment.

In Figure One, above the respective paths we write in the path coefficients for the Japanese analysis. In addition, we write in within parentheses the equivalent path coefficients reported in Blau and Duncan's analysis of American data. There are striking similarities with respect to the relative magnitude of path coefficients. For example, as determinants of Y in both countries, $P_{yu} > P_{yw} > P_{yx} > P_{yv}$; as determinants of W in both countries, $P_{wu} > P_{wx} > P_{wv}$; and as determinants of U in both countries, $P_{uv} > P_{ux}$. We might conclude that the basic model gives us a fuller explanation of occupational attainment in the United States in that the American residual for Y is smaller, but that the general relations between the variables in these two countries are similar.

Keeping in mind that precise comparsions are not truly appropriate, it is nevertheless interesting to not some differences between the two analyses: For one, consistent with our earlier discussionof the Japanese school's effort to conceal social class we find that father's occupation is much less important in the Japanese case; on the other hand, father's education which has less of a class implication is slightly more important in Japan than in the U.S. Nevertheless, the combined effects of the two background variables explain far less of the variance in educational attainment and occupational attainment in Japan than in the U.S.

Another interesting difference is that we are able to explain only 13 per cent of the variance in first job status in Japan whereas Blau and Duncan explain nearly twice as much. We expect one reason for this difference is some special characteristics of the Japanese employment system. In our view it is useful to distinguish three major sectors of the Japanese occupational system--the organizational sector consisting of large business and government organizations, the entrepreneurial sector, and the agricultural sector. These three sectors consist of a wide range of occupations, and while most of the highest prestige occupations are in the organizational sector, the average prestige of the occupations of members in the three sectors is not very different. Thus the sectors are stacked side by side rather than on top of each other as in Western systems of occupational differentiation. The entrepreneurial and agricultural sectors which each employ between 15-20 per cent of the labor force are largely staffed on the basis of particularistic criteria--first sons take over the family farm, relatives assist in running the small shop, and so on. While many of the workers in these sectors acquire education beyond the compulsory level and this proves useful to them in their work, this education is not crucial for their attainment of their present job.

Table 3A. Simple Correlations, Means, and Standard Deviations for Five Status Variables, for Japanese sub-samples of Respondents in Four Age Cohorts

25-34 Age Cohort (N=620)

Variable	Variable Y	W	U	X	V	Mean	S.D.
Y: 1965 Occupational Status		.543	.410	.265	.227	43.7	10.8
W: Status of First Job			.429	.260	.203	40.7	12.7
U: Education				.248	.434	2.7	1.0
X: Father's Occ. Status					.198	43.9	12.8
V: Father's Education						1.8	1.0

35-44 Age Cohort (N=517)

Variable						
Y	.274	.435	.274	.375	47.0	10.7
W		.332	.140	.155	39.8	16.5
U			.239	.498	2.5	0.9
X				.187	44.2	11.2
V					7.7	1.0

45-54 Age Cohort (N=396)

Variable						
Y	.269	.485	.189	.157	44.4	11.6
W		.262	.123	.175	38.5	15.3
U			.203	.366	2.2	0.9
X				.089	42.9	11.4
V					1.3	0.9

55-64 Age Cohort (N=260)

Variable						
Y	.262	.319	.009	.089	42.2	14.6
W		.294	-.041	-.013	38.4	13.6
U			.038	.243	2.1	0.9
X				.170	43.1	9.9
V					1.0	0.9

Table 3B. Partial Regression Coefficients in Standard Form (Beta Coefficients), Coefficients of Determination, and Residuals for Specified Combinations of Variables, for Four Age Cohorts of 1965 Japanese Sample

25-34 Age Cohort

Dependent Variable	Independent Variable				Coefficient of Determination	Residual
	W	U	X	V	R^2	$\sqrt{1-R^2}$
U			.168	.400	.215	.886
W		.387	.163	.003	.209	.889
Y	.430	.184	.100	.040	.344	.810

35-44 Age Cohort

Dependent Variable						
U			.151	.470	.270	.854
W		.326	.066	-.019	.115	.941
Y	.137	.252	.158	.198	.265	.857

45-54 Age Cohort

Dependent Variable						
U			.172	.350	.163	.915
W		.214	.072	.091	.081	.959
Y	.150	.443	.084	-.039	.265	.857

55-64 Age Cohort

Dependent Variable						
U			-.003	.243	.059	.970
W		.316	.045	-.097	.096	.951
Y	.189	.256	-.015	-.031	.134	.931

Table 3Q The effects of fathers education, fathers occupation and respondents education on first job status Age Group

Age Group	first job sought between	Effects of fathers education on first job status			Effects of fathers occupation			Effects of respondents ed.		
		Gross r_{wv}	Total Pwvt Pwu Puv	Direct Pwv	Gross r_{wx}	Total Pwxt Rwu Pux	Direct Pwx	Gross rwu	Total Pwu	Direct Pwu
45-54	1925-1940	.175	.166	.091	.189	.125	.072	.262	--	.214
35-44	1935-1950	.155	.134	.019	.274	.145	.066	.332	--	.326
25-34	1945-1960	.203	.158	.003	.265	.269	.163	.429	--	.387

calculated from Table 4

In contrast with the two more traditional sectors, the organizational sector places a priority on recruiting employees straight from school and assigning them positions according to their educational attainment. A comparsion of the path coefficients for the full sample and the sub-sample employed in the organizational sector indicates the much greater importance of education in the latter case. For example, the path coefficients between education and first job status increases from .323 to .385 and that from education to present job from .287 to .373. (See Table 2)

While education is an important requisite for entry into the organizational sector, it does not lead to the immediate conferral of status. Japanese organizations tend to be finely graded with a large number of levels of relatively minor statuses both in the blue collar and white collar sectors leading up to a small number of supervisory and managerial positions. Higher educational attainment insures further advancement up these status ladders though at a measured pace. One way of illustrating this point is to break down our data into ten year age groups and to compare the path coefficients for the younger and older groups as in Table 3 . We will ignore the 55+ group as it is undersampled.

Studying the path coefficients for the three cohorts, the most striking finding is an apparent "delayed effect"of education. The path coefficients between educational attainment is weakest for the youngest age group ($P_{yu25-34}$=.184), intermediate for the second age group ($P_{yu35-44}$=.252) and greatest for the oldest age group ($P_{yu45-54}$=.443). Looking at the youngest cohort, we are comparing college graduates who have had from 2-12 years in the labor force with high school graduates who have had from 6-16 years and middle school graduates who have been in for 10-20 years.

TABLE 4

RELATIVE WAGE ACCORDING TO EDUCATION (MALE)

Age	Education	1954	1961	1965	1969
20-24	Middle School or less	106.4	106.7	109.5	111.6
	High school	100.0	100.0	100.0	100.0
	Junior College	123.3	95.8	98.3	97.9
	University	115.9	115.0	109.5	106.2
30-34	Middle School or less	88.5	92.1	91.2	96.2
	High school	100.0	100.0	100.0	100.0
	Junior College	115.7	113.3	111.0	103.2
	University	125.4	118.9	116.8	116.5
50-59	Middle School or less	74.7	80.4	76.5	83.3
	High school	100.0	100.0	100.0	100.0
	Junior College	125.5	143.7	125.7	126.6
	University	150.6	171.1	156.2	156.7

Source - Adapted from Tsunehiko Watanabe, "Improvement of Labor Quality and Economic Growth--Japan's Postwar Experience," Economic Development Cultural Change, Vol. 21 (October, 1972), p. 39.

While the college graduates first jobs are higher in average status than the first jobs of high school and middle school graduates, their having fewer years in the labor force means relatively less advancement from this initial status. This is at least suggested by wage data presented in Table 4. Comparing the wages of junior college graduates of the 20-24 years old cohort for each of the years noted, we find that they actually earn less than do graduates of middle schools and the wages of university graduates barely exceed those of elementary school graduates. But providing the contemporary wage structure is not radically changed, as the college graduates advance in their careers their wages will gradually improve so that by the time they are 50-59 years old their wages will far exceed the wages of those labor force groups with less education, generally becoming twice the amount received by elementary school graduates.

Strictly speaking, it is not proper to use the path coefficients calculated from independent data of three separate age groups in a cohort interpretation of the "delayed effect" of education. Rather, it is preferable to take the correlation coefficients for the several age groups and combine them to construct a path analysis for a single synthetic cohort. This can be done in several ways. Our approach was to work on two models as pictured in Figures 2A and 2B. In these models educational attainment is treated as a background variable in combination respectively with father's occupation and with father's education. We averaged the correlations over the three age groups between U-X, U-W, W-X, and W-V. The remaining correlations were taken from the age cohort data; for example r_{uy2} is r_{uy} for the 35-44 age group. We had no correlations for r_{y1y2} and r_{y2y3}, but using the correlations for r_{wy2} and r_{wy3} from the 35-44 and 45-54 age groups respectively and assuming P_{y2w} and P_{y3w} equalled zero we were able to solve for these two values.

Figure 2A. Synthetic Cohort. Model A with Fathers Occupation, Respondents' Education, and Early Work Statuses Determining Final Occupational Status

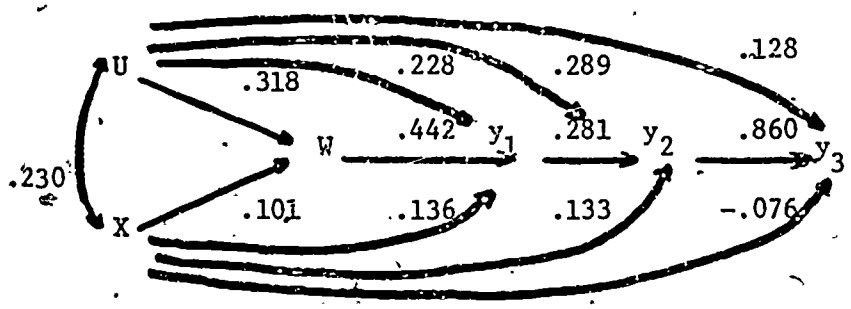


Figure 2B. Synthetic Cohort. Model B with Father's Education, Respondent's Education, and Early Work Statuses Determining Final Occupational Status

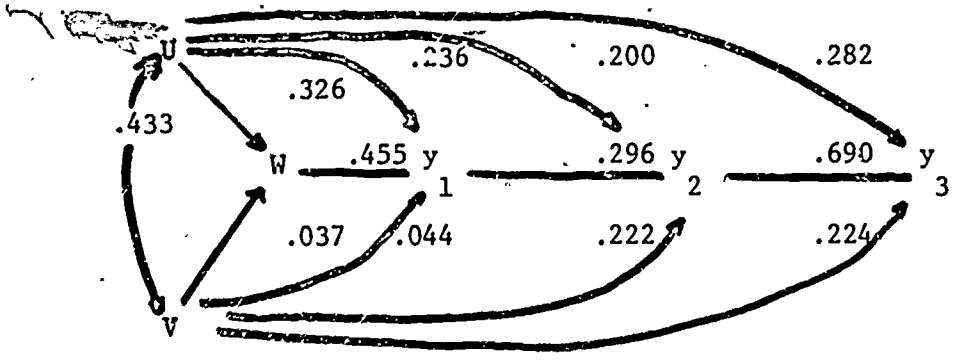


Table 5

The Effects of Respondents Education on Occupational Attainment at Sequential Points in the Careers of Two Synthetic Cohorts

	Model A				Model B			
	W	Y_1	Y_2	Y_3	W	Y_1	Y_2	Y_3
Gross Effect of Respondents Education	.341	.410	.435	.485	.341	.410	.435	.485
Direct Effect of Respondents Education	.318	.228	.289	.128	.326	.236	.200	.282
Total Effect of Respondents Education	.318	.369	.392	.466	.326	.384	.314	.498

In Table 5, we summarize the results from our computations bearing on the thesis of the delayed effect of education. In Model A, involving educational attainment and father's occupation as background variables, the direct effect of education on the sequential occupational statuses does not progress orderly, although $P_{y1u} < P_{y2u}$. On the other hand the figures for the total effect of education on the sequential occupational statuses falls perfectly in line with the thesis of education's delayed effect: $T_{wu} < T_{y1u} < T_{y2u} < T_{y3u}$. In Model B, involving educational attainment and father's education, the order of magnitude of direct effects is more suited to the delayed effect argument with P_{y3u} being greater than either P_{y2u} or P_{y1u} though somewhat less than P_{wu}. Also T_{y3u} is greater than any of the other total effects; with the exception of T_{y2u} the total effects of education on sequential occupational statuses increase in magnitude. In both models, the gross effectsoof education on occupational status increase in a reat sequential order. These several findings for our synthetic cohorts combined with the pattern of larger path coefficients between U and Y with older age groups lead us to conclude that there is considerable merit in the delayed effect of education hypothesis for the Japanese process of occupational attainment.

We have belabored this discussion of the delayed effect of education in Japan as it is the first instance where such a pattern has been discovered. It is plausible that education in Japan provides workers with special psychological resources that have their long-term payoff. On the other hand, it is also apparent that the Japanese employment system is organized in such a manner as to favor those with higher educational attainments.

The data available to us has not allowed an evaluation of the effect of variations in Japanese schools on the occupational attainment process. Such data was available to Christopher Jencks and led to his report on Inequality suggesting schools are unimportant because the effect of school quality variables on occupation and income attainment was modest.[23] In Japan the variation between schools is much less than in the U.S. and thus the school effect would probably be even more modest. However, this should not lead to the conclusion that schools are unimportant. Indeed to the extent that there is little variation between schools, educational attainment becomes a convenient proxy for the school effect. In the analysis above, we examined the effect of education on occupational attainment and found it to be substantial.

Education and Sociopolitical Attitudes

Distinct from the importance of education in promoting individual careers is its importance in liberating minds. Many educators would view this latter effect to be education's true goal. Westerners, observing the orderliness of Japanese schools and the control on curriculum exerted by the central government, have concluded that the schools must have a conservative effect. But the opposite is closer to the truth. Japanese schools have contributed to the appearance of substantial gaps between different generations over a wide

TABLE 6. EDUCATION AND SOCIOPOLITICAL ATTITUDES IN EIGHT COUNTRIES

	JAPAN			U.S.			ENGLAND					W. GERMANY					FRANCE				SWITZERLAND				SWEDEN						YUGOSLAVIA			
	MS	HS	U	MS	HS	U	G	SM	CM	C	U	GS	HS	RS	G	U	EP	PC	DC	U	VS	BS	MSI	UI	F	Y	G	R	G	S	G	J	S	U
QUESTION 1.																																		
TOTAL	74			36			21					34					14				23				35						11			
BY EDUC.	73	76	76	37	29	41	19	18	19	25	38	29	33	31	46	45	13	11	16	16	17	19	27	32	28	34	31	36	35	42	3	6	11	1
QUESTION 2.																																		
TOTAL	89			48			54					12					46				34				40						NA			
BY EDUC.	86	88	92	62	41	53	46	58	63	48	50	15	12	10	12	12	40	46	53	54	34	32	34	42	41	39	42	45	37	35				
QUESTION 3.																																		
TOTAL	88			74			68					43					68				63				68						NA			
BY EDUC.	84	87	92	79	77	71	58	76	72	61	54	43	51	41	42	47	54	68	77	77	69	65	60	55	71	70	72	73	64	61				
QUESTION 4.																																		
TOTAL:	90			69			65					47					42				64				76						NA			
BY EDUC.	86	90	95	69	70	70	59	71	68	54	54	47	52	43	48	47	43	46	44	40	62	63	66	63	78	78	71	85	76	70				
QUESTION 5.																																		
TOTAL	82			62			51					52					53				50				58						NA			
BY EDUC.	84	82	83	67	57	67	45	51	56	64	46	47	52	50	50	62	56	54	51	53	49	48	52	57	60	53	52	59	57	68				
QUESTION 6.																																		
TOTAL	72			41			59					60					72								80						55			
BY EDUC.	71	70	78	56	39	41	31	42	44	36	42	64	60	66	55	59	76	76	76	64	71	62	68	54	84	83	84	85	78	71	74	58	61	
QUESTION 7.																																		
TOTAL	57			17			21					49					34				44				36						50			
BY EDUC.	52	58	55	11	17	15	16	23	19	23	25	53	49	50	44	43	41	40	29	26	46	46	40	47	34	34	37	38	37	33	50	53	51	

QUESTIONS:

1. MODERATELY TO QUITE DISSATISFIED WITH SOCIETY.
2. FEEL GOVERNMENT IS NOT PROTECTING THE RIGHTS AND WELFARE OF THE PEOPLE;
3. FEEL GOVERNMENT IS PLACING TOO MUCH EMPHASIS ON THE BENEFIT OF THE NATION AS A WHOLE AT THE COST OF INDIVIDUALS.
4. FEEL GOVERNMENT'S STRONG EMPHASIS ON INDUSTRIAL DEVELOPMENT TENDS TO MAKE PEOPLE UNHAPPY.
5. FEEL THAT PRESENT DAY SOCIETY IS CALLOUS TOWARDS OLD PEOPLE.
6. FEEL THAT IT IS IMPORTANT IN THIS WORLD TO TAKE T EASY AND NOT WORK TOO HARD.
7. [illegible] THAT THE MOST IMPORTANT THING FOR THE COUNTRY TO DO NOW IS TO PLACE EXTRA EMPHASIS ON SOCIAL SECURITY.

SOURCE: SORIFU SEISHONEN TAISAKU HONBU, SEKAI SEINEN ISHIKI CHOSA HOKOKUSHO, MIMEOGRAPHED COPY, 1973.

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range of issues as has been thoroughly documented in a series of national character studies conducted by the Institute of Statistical Mathematics.[24] A recent comparative study of youth suggests that education tends to make Japanese youth especially critical of their society.[25] In this study, the same questions were administered by the Gallup poll organization to samples of youth in eight advanced societies (Japan, the U.S., England, West Germany, France, Switzerland, Sweden, and Yugoslavia) and three developing societies (India, the Philippines, and Brazil). As indicated in Table 6 , Japanese youth are among those most likely to say they are dissatisfied with their society, to feel their government was not protecting the rights and welfare of the people, to charge that the government places too much emphasis on the benefits of the nation as a whole at the cost of individuals, and to agree that the government's strong emphasis on industrial development tends to make people unhappy. In the realm of progressive issues, it is also interesting to note that Japanese youth are most likely to feel present-day society is too callous to old people and that the major priority for government is to provide social security. Finally in contrast with the image of Japanese schools as preparing youth for blind devotion to work, we find that Japanese youths are most likely to say it is important in this world to take it easy and not to work too hard.[26] In Table 6 , the percentage who express these attitudes by level of education is presented for each of the advanced societies. For most of these attitudes, in the Japanese case more education leads to a more extreme view suggesting that education does have an effect. In many of the other societies, there is little apparent relation; in some cases, more education is related to a more conservative view. In view of the importance of education to Japanese youth, it is reasonable to expect schools would have some effect on youth's sociopolitical attitudes. And given the progressive

orientations of many Japanese educators, it is not surprising that these effects tend to be progressive. The effects are not limited to attitudes. In japan the more educated an individual, the more likely it is that he will vote for a leftist candidate and to participate in progressive social movements. Thus education is a force for social reform. The evidence in Table 6 suggests that Japanese education may be outstanding in this respect.

Societal Effects

Due to the quality and attractiveness of their schools, the Japanese are possibly the best educated and intelligent people in the world. Economists would argue that they are over-educated, for examination of the societal returns to investment in various factors of production suggests a negative return for Japanese education.[27] On the other hand, there is little question but that the economy benefits from the high educational level of the people. Over the postwar period, they have proved to be highly adaptive to technological change and are now one of the most productive labor forces in the world.

The high educational level results in a discriminating demand for information and entertainment. The Japanese people are among the world's most avid newspaper readers and TV watchers. More new book titles appear annually in Japan than in any other society excepting the Soviet Union, and large numbers of magazines are consumed including several for high brow intellectuals that reportedly sell 100,000 to one quarter million monthly.[28]

In comparative perspective one of the most striking features of Japanese society is the relative absence of juvenile delinquency and crime.[29] For example, the murder rate is one tenth of that in the U.S. and the ratio for most other crimes even lower. The arrest rate for juveniles is less than one-third of that in the U.S. despite the fact that the Japanese police are relatively severe with juvenile delinquents. Moreover, over the last decade the crime rate in Japan has declined whereas it has increased in most

Western countries. The exposure of so many Japanese youths to schools may have some relation to the relative lack of deviance.

Japanese schools tend to act as agents of social control in several ways. For one, students are in school 220 days a year in contrast with 180 in the U.S. or 190-210 in various other advanced societies. Homework is typically assigned from the first grade. Even during the vacations students often have assignments and school-coordinated excursion trips. Thus schools demand a large proportion of the time youth leaving them few idle moments for vice. The schools tend to be a very central experience in the eyes of Japanese youth. Their friends are schoolmates, and to a surprising extent their most admired adults are teachers. All Japanese schools make a conscious effort to present a clean moral image--the worst scandal is to find a teacher engaged in some criminal activities or romantically involved with a student. Students who get into trouble with the law are provided special counselling by the principal and favorite teachers. Fortunately the number of delinquent students is so few in number that special attention is possible.

Graduates from school at any level have little difficulty in finding jobs. In contrast with the U.S. and other Western societies, middle school graduates are most in demand--they are called "golden eggs" by employers because of their increasing scarcity. The dynamic growth economy is a factor in the strong demand for school graduates. Regardless of the cause, the result is virtually no adolescent unemployment. In the past, night-time high schools and other provisional arrangements were made to provide opportunities for those students who wished to study while they worked. Now such arrangements are spreading at the university level or through specialized schools so sizeable numbers of youth have roles in both sectors. As a youth goes through the transition to adulthood, he is likely to be in frequent contact with his old schoolmates and may visit his teacher from time to time. Thus the school

stays with the student long after he has graduated serving as a mechanism of support and social control.

While education reinforces the traditional interpersonal morality, we have noted its progressive impact on sociopolitical attitudes. These attitudes are characteristic of growing numbers of the Japanese population, and have led to a steady erosion of the support for the conservative regime. In the 1974 election for the upper house of the Diet, the conservatives were barely able to maintain their majority. In order to forestall what seems inevitable, the conservatives have had to adopt an ever more progressive face. Their more recent concessions have been to promise a slow-down of the economic growth rate and a more serious attack on environmental and social welfare problems. In most of the large cities where the educated congregate, progressive governments now are in office.

Somewhat distinct from politics has been the effect of education on the class system. By virtue of the egalitarian spirit of the school and the subsequent experience of seeing friends going off into diverse occupations, there has been a tendency to reconsider occupational evaluations. Over the past ten years, the prestige hierarchy of occupations has substantially levelled. For example, in a 1955 occupational prestige survey doctors received a score of 83 out of 100 whereas in 1964 their score had declined by eight points. Similarly progressors declined from 90 to 83. On the other hand the prestige of a waiter on a train increased from 31 to 36 and that of an auto mechanic from 40 to 45. Over half the occupations surveyed regressed towards the mean prestige level between these two periods.[30] Possibly related has been the substantial reduction in income inequality over the postwar period. For those living in urban areas, income inequality as measured by the Gini index decreased from .360 in 1956 to .280 in 1969.[31] More concretely, today in Japan the average income of people in the top income

quintile is only about three times that of the average for the bottom quintile. In the U.S. in 1970, the ratio was 8.[32] According to Christopher Jencks' study of Inequality, there is less income inequality in Japan today than in any other advanced capitalist society. The trend towards income equality has been facilitated by the rapid rate of economic growth. While everyone has been getting richer, the working classes have been making the most rapid strides. The progressive attitudes of white collar workers acquired through their educational experience has enabled them to tolerate income egqualization more than would be the case in many Western societies; indeed, in Japan, the unique form of enterprise unionism has meant that white collar workers have often been in the position of promoting the equalization.[33] Needless to say, one of the by-products of the equalization trend has been political stability.

We do not wish to suggest that the schools are the only institutions responsible for these changes. We doubt that there is a methodology available which could discriminate the contribution of schools over against that of other sectors. The various sectors of modern society have complex interrelations which defy such efforts. Nevertheless one set of trends for postwar Japan which cannot be ignored is the substantial expansion of schools and educated people. We have shown that Japanese schools do have significant effects on the development of cognitive abilty and have suggested their effect in other areas of individual personal growth and status attainment. These individual changes are plausibly linked to some of the most impressive social developments of postwar Japan. In concluding, it is fitting to summarize the aspects of Japanese schools which we believe are linked to their effectiveness.

The Effectiveness of Japanese Schools: Sources and Strains

In comparative perspective as suggested by the IEA study and our analysis, the distinctive features of Japanese features related to their effectiveness are:

(1) The centrality they play in the selection process for the most attractive jobs

(2) The strong support they receive from their communities

(3) The battle constantly being fought over them by a progressive teachers union and a conservative political establishment

(4) The uniform high quality of their facilities throughout the nation, as well as the high minimum standards maintained in curriculum composition

(5) The high level of professionalism and training of the teachers

(6) The large proportion of the time of youths they command

(7) The conscious effort in many Japanese schools to ignore the ascriptive origins of youths, and to promote the ethic of effort

(8) The strong friendship tied, often across class lines, created in the school through continuity of home-room groups and the de-emphasis on social origins

(9) The extent to which the schools foster interest in learning and culture among youth which serves as an important motivation for study, independent of the motivation induced by career rewards.

It should be noted that not all in Japan are completely satisfied with their schools. Though students enjoy schools, they also yearn for more freedom to engage in non-academic recreation. Increasingly parents express the opinion that the pressures of schools prevent their children from becoming well-rounded. The teachers union joins in this criticism and advocates a five-day school week; not so incidentally, a shortened school week would also result in a reduced work load for teachers. There have been numerous reports by parent

groups and the teachers union advocating changes in the school. Similarly the conservative government has expressed its belief that the schools need to be reformed--though for somewhat different reasons.

In June of 1971, the Ministry of Education's Central Council for Education released its "Basic Guidelines for the Development of an Integrated Educational System Suited for Contemporary Society."[34] This report represent the first comprehensive government reappraisal of Japanese education since the occupation. Many of the Guidelines were little more than extensions of present attitudes--for example, more audio-visual equipment, more public support for kindergartens, more scholarships, more education for the handicapped, and the promotion of recurrent education. Some proposals were relatively neutral such as experimenting with new ways to organize the groupings of school grades such as 4-4-6 instead of the present 6-3-3 system. A major proportion of the rhetoric of the Guidelines was directed towards the "enrichment of individual personalities" through more personalized counseling and teaching; while these phrases were borrowed from progressive pedagogical theory, some of the concrete proposals such as streaming by ability and psychological testing met stiff resistance on the grounds that they would undermine the egalitarian goals of public school education. Several of the proposals were clearly aimed at reducing the influence of the leftist teachers union: for example, the institution of a personnel evaluation system and the establishment of new teacher's training and re-training colleges under the supervision of the Ministry of Education.

Needless to say, these Guidelines did not go unopposed. Indeed so much of the energy of Japanese educators has been devoted to debates over the more controversial aspects of this government report, that there has been insufficient attention to the more promising parts of it. Thus it is difficult to predict what reforms from the current debate over Japanese education.

FOOTNOTES

1. For a convenient summary of this thesis, see John K. Fairbanks and Edwin O. Reischauer, East Asia: The Great Tradition, Boston: Houghton, Mifflin & Co., 1958.

2. Some examples of inconsistencies of Tokugawa thought are neatly presented in H. D. Harootunian, Toward Restoration: The Growth of Political Consciousness in Tokugawa Japan, Berkeley: University of California Press, 1970.

4. A superb summary of the activities of Nikkyoso is Donald R. Thurston, Teachers and Politics In Japan, Princeton: Princeton University Press, 1973.

3. Herbert Passin provides a summary of the traditions the Meiji leaders honored in building the new educational system in Society and Education in Japan, New York: Teachers College Press, 1966.

5. One discussion of changes in the Japanese occupational structure is William K. Cummings and Atsushi Naoi, "Social Background, Education, and Personal Advancement in a Dualistic Employment System," Developing Economies, Vol. 12, No. 3 (Spring, 1975).

6. For information on the extent of uniform quality in Japanese schools, see Ministry of Education, Educational Standards in Japan: 1970, Tokyo: Ministry of Finance Printing Office, 1971.

7. L. Comber and John P. Keeves, Science Education in Nineteen Countries: An Empirical Study, New York: John Wiley & Sons, 1973, pp. 82-3; also see Appendix A of this paper.

8. Ibid., p. 107-8.

9. Some of the key works we have in mind are James S. Coleman, et al., Equality of Educational Opportunity, Washington: US.Government Printing Office, 1966; Otis Dudley Duncan, David L. Featherman, and Beverly Duncan, Socioeconomic Background and Achievement, New York: Seminar Press, 1972; W.H. Sewell et al, "The Educational and Early Occupational Attainment Process," American Sociological Review, Vol. 34 (1969): 82-92; Christopher Jencks, et al, Inequality, New York: Random House, 1972.

10. It should be noted that resistance is also mounting to any survey which asks the occupation or other characteristics of a respondent's parents, from the point of view that such considerations should have no bearing on how the respondent is viewed in society.

11. In these tests, the performance of Japanese primary school students was only impressive: they were highest on the tests of science understanding, application, and higher processes and second highest on information out of 19 countries.

12. See appendix B.

13. See Appendix B.

14. See Appendix A.

15. See Appendix B, Table B3. In Japan, the correlations of these variables are usually higher than the mean whereas for several of the other countries, father's status variables have the higher correlations.

16. For example Coleman, op. cit., and Jencks, op. cit.

17. See Educational Standards: 1970, pp. 60-61.

18. Yasumasa Tomoda, "Occupational Aspirations of Japanese High School Students," International Journal of Educational Sociology, Vol. 2 (1968), pp. 217-225.

19. From the right, the concern is to promote the traditional notion that will conquers matter; also many spokesmen from the right are well-placed and feel an ideology which ignores social origins would be beneficial for their children. From the left, the concern is promote the egalitarian spirit and to insure an evaluation procedure that cannot hold an individual's low origins against him.

20. While the information has not been conveniently summarized, one senses from the studies available that the correlations between measures of school performance, cognitive ability, scores on college entrance exams, and performance in colleges are unusually low. According to one study, none of these correlations exceed .35. See Central Council of Education, Basic Guidelines For the Reform of Education, Tokyo: Ministry of Finance Printing Office, 1972, p. 171.

21. We have examined the above report of the Central Council, a series of local studies by the National Institute of Education published in 1972, a series of small studies conducted by Morikazu Ushiogi of Nagoya University, and a small study by Takekazu Ehara of Nara Kyoiku University.

22. See Cummings and Naoi, op. cit.

23. Jencks, op. cit.

24. A summary report is Tatsuzo Suzuki, "A Study of the Japanese National Character," Annals of the Institute of Statistical Mathematics, Supplement 6, 1970.

25. Sorifu Seishonen Taisaku Honbu, Sekai Seinen Ishiki Chosa Hokusho, mimeographed copy, 1973.

26. On the other hand, according to the comparative survey Japanese youth are relatively more likely to look to work as a place for self-fulfillment.

27. Data leading to this conclusion is presented in Hisao Kanamori, "What Accounts for Japan's High Rate of Growth," Discussion Paper No. 11, Economic Research Institute, Economic Planning Agency, Tokyo, June, 1971.

28. Data to illustrate these claims are found in the Unesco, Statistical Yearbook.

29. For comparative data, see Japan Institute of International Affairs, White

Paper of Japan: 1969-70, Tokyo, 1971, pp. 155-176. Also see George DeVos, Socialization for Achievement, Berkeley: University of California Press, 1973.

30. Shigeki Nishihira, "Le Prestige Social des Differentes Professions--l' Evaluation Populaire au Japon," Revue Francaise Sociologie, Vol. 9, No. 4 (1968), p. 555.

31. Keizai Kikakusho, Kokumin Seikatsu Hakucho (White Paper on People's Lives) 1971, Tokyo: Okurasho Insatsukyoku, 1971, pp. 8-9.

32. Japan dated from footnote 31 compared with data from Jencks, op. cit., p. 210. Also see Jencks, p. 231.

33. For a discussion of enterprise unionism and Japanese wage settlements, see Robert Evans, The Labor Economies of Japan and the United States, New York: Praeger, 1971.

34. Central Council for Education, op. cit.

Appendix A. An Analysis of Between-Country Differences in Science Achievement

The IEA report on Science Achievement in Nineteen Countries did not include an analysis of the determinants of between-country differences in average science achievement for several reasons:

(1) The data from several of the countries were of suspect quality leading to doubts concerning their true representation of the national situations.

(2) The number of countries was only 18, a sample size too small to yield statistically significant results with any but the simplest analyses.

(3) There was an apparent concern that such analyses would lead to excessive interest in national comparsions to the detriment of serious investigation of the educational process.

These reasons should make us cautious about a between-country analysis, but they do not lead to the conclusions that such an analysis is meaningless. Our major interest is in determining whether the variables we have emphasized in our discussion of Japanese schools are useful ones for comparative analysis; are those features of Japanese schools which stand out important explainers of between-country variations. Accordingly, we have selected several school, teacher, and student variables where Japan is outstanding and recorded the average scores for each of the 18 countries participating in the middle school study. We also have recorded scores on national development, and family conditions that are related to student achievement. (See Table A1) Pearson product-moment correlation coefficients of each of these variables with each other and with the national average scores on science achievement are presented in Table A2.

Next we specified a causal model of the science achievement process composed of the following variables which we assumed to be related in a sequence: level of national development, extent of family resources, general conditions of schools as reflected in the student-teacher ratio and the extent to which "democratic" student-teacher relations are observed, the

extent to which students like schools, the relative qualifications of teachers, and the relative comprehensiveness of the science curriculum. Other causal sequences or even more complex models might have been specified, but the above appeared reasonable to us. It allows us to take account of the major background factors of national and family resources first, then consider general features of schools and the extent to which students like them, and finally examine whether specific attributes of teacher preparation and curriculum affect science achievement.

As a first step in examining the model, we computed composite measures for each of the above concepts though combining the Z-scores of the specific variables listed in Table A1. The new composite variables were computed as follows:

Development=(GNP per capita + % Employed in Non-Ag)/2

Family=(Mother's Yrs of Education + % Fathers with Professional or Managerial Job - Number of Children in Family)/3

Student-Teacher Ratio= same

Democratic Student-Teacher Relations=average score of schools on School Behavior Scale

Likes School= same

Teacher Quality=(Proportion of Teachers Male - Proportion of Teachers 27 year and under + Proportion university trained as science specialists + Proportion belonging to science association)/4

Science Curriculum=(Proportion of Schools teaching all branches of science + Proportion teaching some sciences simultaneously + Age science education begins - proportion of schools without science labs)/4

With the composite indexes, we tested the model using a step-wise regression procedure. For the first run, democratic student-teacher relations were excluded. As indicated in Table A3.1, this run explained 79 per cent of the variance in between-country variation in science education with each of the composite indexes explaining at least five per cent of the variance.

Because of the interest in the consequences of democratic teaching styles, we conducted another stepwise regression including the democratic student teacher relations index. The index added another four per cent to the variance explained, enabling us in our best effort to account for 84 per cent of the variation in science scores between countries; interestingly, more authoritarian teaching practices were positively related to higher science scores when this variable was entered after development, family resources, and the student teacher ratio.

We believe the sequence in which we entered variables is a reasonable one. It allows general background variables of stage of development and family resources which are known to have important bearing on cognitive achievement explain all the variance they can; then it provides an opportunity to evaluate the importance of the various attributes of schools. With only 18 cases, it would be inappropriate to draw major inferences from the analysis. However, the following conclusions seem justified.

Each of the variables in the analysis explains at least four per cent of the variance when entered in the indicated sequence suggesting that they are an important group for explaining cross-national differences. In terms of our discussion of school effects, it is significant that those aspects of the educational process over which policy-makers have immediate control--specifically the comprehensiveness of the curriculum, the quality of the teachers, the nature of student-teacher relations, and the ratio of students to teachers all have strong relations with science achievement. Moreover, interest in school which schools can attempt to foster also is related to national level of science achievement.

In terms of an evaluation of why the average scores of Japanese students is highest, it is pertinent to note that Japan measures high on most of the composite variables in the two equations as can be computed with the data from Table A1. Japan is especially noteworthy in terms of family resources,

authoritarian student-teacher relations, student interest in schools, and all of the teacher quality and science curriculum variables. In view of the high predictive power of our equation and the high scores for Japan on several of the variables included, . . . this exercise provides a useful accounting for Japan's high science scores.

TABLE A:1. SOCIAL, FAMILY AND SCHOOL VARIABLES FOR EIGHTEEN COUNTRIES

	AUSTRALIA	BELGIUM (FL)	BELGIUM (FR)	CHILE	ENGLAND	FRG	FINLAND	HUNGARY	INDIA	IRAN	ITALY	JAPAN	NETHERLANDS	NEW ZEALAND	SCOTLAND	SWEDEN	THAILAND	U.S.	Page Ref.
1. DEVELOPMENT STRATA																			
GNP PER CAPITA IN 100 U.S. $	28	20		2	18	34	22	7	1	2	15	16	24	16	13	31	1	43	45
% EMPLOYED IN NON-AGRICULTURE	92	95		72	98	91	76	69	18	50	80	81	93	86	97	88	20	96	155
2. FAMILY BACKGROUND																			
MOTHER'S EDUCATION (YRS.)	8.9	10.7	9.4	7.6	9.6	8.4	7.4	7.9	2.7	4.1	5.5	9.0	7.7	10.0	9.2	—	4.7	12.3	80
FATHER'S OCCUPATION: PROFESSIONAL AND MANAGERIAL, %	37	11	41	8	14	14	10	26	10	20	7	17	20	27	24	26	3	31	87
NUMBER OF CHILDREN IN FAMILY, MEAN	3.8	3.6	3.0	4.8	3.4	3.1	3.9	2.7	4.8	5.0	2.9	3.0	4.0	4.1	3.6	2.9	5.0	4.0	87
3. CHARACTERISTICS OF SCHOOL																			
STUDENT/TEACHER RATIO	19.3	15.1	11.6	39.3	18.0	27.4	20.2	20.3	27.2	73.9	15.6	21.9	17.8	22.2	17.1	14.2	23.8	19.7	72
SCHOOL BEHAVIOR SCALE (RIGID - LOW; FLEXIBLE - HIGH)	11.47	11.16	11.95	10.29	11.85	11.52	8.56	10.28	10.61	9.18	11.26	10.70	13.97	13.47	11.58	11.32	11.25	14.34	72
4. LIKE SCHOOL	-0.09	0.13	-0.05	-0.22	0.07	-0.26	-0.16	0.29	-0.01	0.13	0.01	0.20	-0.14	0.14	0.03	-0.37	0.10	0.19	101
5. SCIENCE TEACHER QUALITIES																			
MALE, %	68	57	51	44	66	74	66	46	91	17	38	90	85	63	77	76	67	70	82
27 YEARS AND UNDER, %	50	37	35	27	32	13	11	23	36	48	9	11	14	35	23	16	42	28	82
UNIVERSITY TRAINED, SCIENCE SPECIALIST, %	40	28	21	60	54	60	61	38	36	57	71	93	18	60	89	85	63	74	82
MEMBERSHIP SUBJECT ASSOCIATION, %	38	51	36	62	43	13	55	16	6	5	12	74	29	46	35	22	7	45	82
6. SCIENCE EDUCATION																			
NO LAB GROUPS	1	10	38	46	1	17	26	55	66	14	47	2	24	0	0	2	6	27	76
TEACHING ALL BRANCHES OF SCIENCE	97	87	76	81	85	91	62	89		10	68	100	45	97	86	100	97	71	76
TEACHING SOME SCIENCE BRANCHES SIMULTANEOUSLY	88	61	71	53	81	82	55	89	85	2	48	100	41	95	86	100	58	11	76
OPPORTUNITY TO LEARN (POPULATION I)	2.03	1.53	2.03	1.48	1.79	1.82	1.51	2.78	1.48	—	1.86	2.96	1.37	2.15	1.90	1.88	—	1.98	155
AGE AT WHICH LEARNING SCIENCE BEGINS	8	13	11	9	12	7	6	5	9	8	6	8	11	5	10	8	6	6	165
7. SCIENCE, TOTAL SCORE (POPULATION II)	24.6	21.2	15.4	9.2	21.3	23.7	20.5	29.1	7.6	7.8	18.5	31.2	17.8	24.2	21.4	21.7	15.6	21.6	159

L.C. Comber and John P. Keeves. Science Education in Nineteen Countries. New York: John Wiley and Sons, 1973.

TABLE A-2. CORRELATIONS OF SOCIAL, FAMILY AND SCHOOL VARIABLES FOR EIGHTEEN COUNTRIES

	GNP	NONAG	MOED	FROCC	NCHILD	STRAT	RIGID	OPPOR	AGESC
GNP		.72 S = .00	.37 S = .07	.50 S = .02	- .48 S = .02	- .46 S = .03	.59 S = .01	.39 S = .05	.16 S = .26
NONAG			.60 S = .00	.51 S = .02	- .63 S = .00	- .44 S = .03	.44 S = .03	.58 S = .00	.32 S = .10
MOED				.30 S = .11	- .19 S = .23	- .28 S = .13	.44 S = .03	.43 S = .04	.12 S = .31
FROCC					- .30 S = .12	- .18 S = .24	.44 S = .04	.36 S = .07	.11 S = .33
NCHILD						.61 S = .00	- .15 S = .28	- .76 S = .00	- .10 S = .34
STU-TEA							- .46 S = .03	- .60 S = .00	.02 S = .47
DEMO STU-TE								.24 S = .17	.06 S = .41
OPPOR									- .09 S = .36
AGESC									
ALL SCI									
SIMSCI									
MALE									
YOUNGTE									
UTRA									
MEMB									
LIKES									
SCIENCE ACHIEVE									
MEAN	15 1739	72.6 %	7.5 YRS	18.9 %	3.7	23.5	11.26	1.71	8.6
STD DEV	1202	24 6	3.5	10.6	1.8	14 0	1.30	.74	2.5

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Table A-2 Cont.

	ALL SCI	SIM-M	MALE	OLDTE	YNGTE	MEMB	LIKES	SCIET	NO LAB
GNP	.15 S=.27	.00 S=.56	.34 S=.08	-.31 S=.11	.13 S=.30	.26 S=.15	-.29 S=.12	.49 S=.02	-.30 S=.10
NonAG	.12 S=.32	.12 S=.31	.06 S=.40	-.32 S=.10	.11 S=.33	.55 S=.01	-.16 S=.27	.56 S=.01	-.38 S=.06
MOED	.13 S=.30	-.07 S=.39	.04 S=.44	.05 S=.43	-.09 S=.35	.60 S=.00	.42 S=.04	.44 S=.03	-.19 S=.23
FAOCC	.04 S=.44	.11 S=.33	.04 S=.44	.26 S=.15	-.11 S=.33	.13 S=.31	.01 S=.49	.26 S=.15	-.22 S=.19
NCHILD	-.37 S=.06	-.48 S=.02	-.11 S=.33	.56 S=.01	-.15 S=.28	-.15 S=.28	.04 S=.44	-.72 S=.00	.05 S=.42
STU-TEA	-.65 S=.00	-.52 S=.01	-.55 S=.01	.37 S=.06	.05 S=.42	-.28 S=.17	.09 S=.36	-.55 S=.01	.05 S=.42
Demo STU-TE	.23 S=.18	-.04 S=.44	.36 S=.07	.01 S=.49	-.03 S=.45	.10 S=.34	.10 S=.35	.23 S=.18	-.19 S=.22
OPPOR	.54 S=.01	.60 S=.00	.33 S=.09	-.44 S=.04	.11 S=.33	.49 S=.02	.14 S=.30	.74 S=.00	.06 S=.40
AGESCI	.05 S=.42	.01 S=.49	-.35 S=.08	.17 S=.25	-.30 S=.11	.09 S=.36	-.34 S=.08	-.12 S=.31	-.17 S=.24
ALL SCI		.81 S=.00	.51 S=.02	-.08 S=.39	.23 S=.18	.22 S=.19	-.04 S=.43	.55 S=.01	-.22 S=.19
SIM SCI			.61 S=.02	-.16 S=.26	.10 S=.34	.13 S=.31	-.14 S=.29	.52 S=.01	-.20 S=.22
MALE				-.30 S=.11	.09 S=.36	.23 S=.18	-.20 S=.22	.34 S=.09	-.21 S=.19
YOUNGTE					-.38 S=.06	-.04 S=.47	.31 S=.11	-.38 S=.06	-.16 S=.27
ULTRA						.18 S=.24	-.00 S=.49	.42 S=.04	-.43 S=.04
MEMB							.04 S=.44	.37 S=.07	-.27 S=.14
LIKES								.25 S=.16	.01 S=.49
SCIENCE ACHIEVE									-.42 S=.04
MEAN	79.1%	67%	63.7%	27.2%	55.4%	33.9%	0	19.6%	21.2%
SD	20.6	29.6	19.0	13.0	22.9	20.4	.19	1.1	

.0050

Table A3.1. Basic Stepwise Regression on National Average Science Achievement

Dependent Variables

Development

	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
Family	0.56219	0.31606	0.31606	0.56219	0.40831	0.37818
Student-Teacher Ratio	0.66765	0.44576	0.12971	0.66379	0.24002	0.17115
Likes School	0.71025	0.50446	0.05870	-0.54877	-0.00935	-0.00935
Teacher Quality	0.75642	0.57217	0.06771	0.24972	0.30593	0.30600
Science Curriculum	0.81948	0.67154	0.09937	0.53417	0.20301	0.13279
	0.88861	0.78962	0.11808	0.65709	0.77289	0.47318

Table A3.2 Revised Stepwise Regression Including Democratic-Student-Teacher Relations

Dependent Variables

Development

	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
Family	0.56219	0.31606	0.31606	0.56219	0.39730	0.64585
Student-Teacher Ratio	0.66765	0.44576	0.12971	0.66379	0.06966	0.04967
Democratic Relations	0.71025	0.50446	0.05870	-0.54877	-0.12684	-0.12684
Likes School	0.73675	0.54280	0.03834	0.23310	-0.31656	-0.31657
Teacher Quality	0.81299	0.66096	0.11816	0.24972	0.42326	0.42336
Science Curriculum	0.85162	0.72525	0.06429	0.53417	0.09850	0.06443
	0.91901	0.84457	0.11932	0.65709	0.77695	0.47567

Appendix B, Between School and Between Student Analyses, has been removed to conform with copyright laws. It lists variables included in between school analysis and accompanying tables, reported in Comber and Keeves.

Appendix C

Simple Correlations, Means, and Standard Deviations for Five Status Variables, 1965 Japanese Full Sample

Variable

Variable	Y	W	U	X	V	Mean	S.D.
Y: 1965 Occupational Status		.340	.406	.208	.232	44.6	11.7
W: First Job Status			.343	.164	.161	39.6	14.6
U: Respondent's Education				.213	.453	2.5	1.0
X: Father's Occ. Status					.171	43.7	11.7
V: Father's Education						1.5	1.0

Partial Regression Coefficients in Standard Form (Beta Coefficients), Coefficients of Determination, and Residuals for Specified Combinations of Variables, 1965 Japanese Full Sample

Dependent Variable	Independent Variable				Coefficient of Determination	Residual
	W	U	X	V	R^2	$\sqrt{1-R^2}$
U			.140	.429	.224	.881
W		.323	.095	-.002	.126	.935
Y	.216	.287	.103	.049	.223	.881

Simple Correlations, Means, and Standard Deviations for Five Status Variables, for Japanese sub-samples of Respondent with and Status Within An Organization

Variable	Variable						
	Y	W	U	X	V	Mean	S.D.
Organizational Sub-Sample: (N=1081)							
Y		.456	.519	.244	.274	43.9	12.2
W			.406	.173	.208	40.2	14.9
U				.252	.492	2.7	1.0
X					.210	43.0	13.6
V						1.7	1.0

Partial Regression Coefficients in Standard Form (Beta Coefficients), Coefficients of Determination, and Residuals for Specified Combinations of Variables for Japanese sub-samples of Respondent with Status Within an Organization

Dependent Variable	Independent Variable				Coefficient of Determination	Residual
	W	U	X	V	R^2	$\sqrt{1-R^2}$
Organizational Sub-Sample:						
Dependent Variable						
U			.156	.459	.265	.859
W		.385	.075	.003	.170	.911
Y	.285	.373	.099	.010	.350	.806