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**DIFFERENTIAL EDUCATIONAL ATTAINMENT
AND ITS IMPACT ON SOCIAL STRATIFICATION:**
A Symbolic Interactionist Perspective

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DIFFERENTIAL EDUCATIONAL ATTAINMENT AND ITS IMPACT ON SOCIAL STRATIFICATION:

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Johannes Han-Yin Chang

Numerous studies have been conducted to investigate conditions that affect the unequal distribution of educational attainment in order to understand the reproduction and change of social stratification. So far scholars who follow the structuralist or semi-structuralist tradition have identified a variety of such conditions that are structural in nature. These conditions include the existing socio-economic system (Ainsworth-Darnell and Downey 1998; Bowles and Gintis 1976; Fischer et al. 1996), class-based cultural capital (Bernstein 1961; Bourdieu 1977; Bourdieu and Passeron 1990), parental education and occupation (Duncan & Hodge 1963; Duncan et al. 1972; Ko 1991; Quah 1991), institutionalized selection and elimination (Colclough and Beck 1986; Parsons 1961), “ostensible meritocracy” (Rahim 1998), industrialization and modernization (Chang 1995; Clark 1962; Inglehart and Baker 2000; Treiman 1970), government policies such as those on subsidization of education (Chang 1995), and so on. By contrast, findings derived from the cultural or semi-cultural approach point to cultural factors, such as class culture (Kohn 1977; Willis 1976), ethnic culture (Goyette and Xie 1999; Lewis 1961; Ogbu 1978, 1991; Mickelson 1990), state values (Chang 2000; Rahim 1998), schools’ “atmosphere” (Coleman et al. 1981), and individuals’ aspirations (Kahl 1961). And understandably, findings derived from the Weberian approach are mostly related to power, competition, domination, and exclusionary closure (Collins 1979; Lareau and Horvat 1999).

However, no inquiry has been made from the point of view of symbolic interactionism. This paper is intended to fill the gap: to develop a symbolic interactionist model for identifying the conditions that affect the unequal social distribution of education as well as for characterizing their impact on the reproduction and change of social stratification.

I construct the model by: (1) formulating a general symbolic interactionist model on social emergence on the basis of revising Blumer’s (1969,1990) action theory within the philosophical framework of George H. Mead’s (1962) dual determinism; and (2) adapting this general model to the field of social stratification,

thereby deducing an applied model specifically to account for the unequal social distribution of education and education-related social stratification.

In this applied model the social distribution of education is treated as an aggregate effect of individuals' competition for educational attainment - competition guided by perception, backed up by power, regulated by interaction, and constrained as well as facilitated by pre-existing life conditions, including multi-level contextual conditions and multi-faceted agentic conditions. The conditions that contribute to the unequal social distribution of education are not purely structural or cultural; nor do they exclusively belong to the category of power. Rather, they reflect the dynamics of mutual determination between the actor and the environment. I propose that the differential social distribution of these conditions, while directly accounting for the unequal social distribution of educational attainment, play a crucial, indirect role in affecting the reproduction and/or change of social stratification in the contemporary society.

I suggest that this model has greater explanatory power than any of the alternatives that addresses only part of the explanatory categories it identifies, for example, a pure structural or cultural model or one that only relies on interaction and perception for explanation. A quantitative approach is adopted to verify this claim.

In the field of symbolic interactionism the characteristic mode of research is qualitative and exploratory, with an emphasis on processes of interaction. I argue, however, that quantitative methods are not inherently inaccessible to this theoretical tradition. Symbolic interactionist research is not confined to the description of social processes; it is also interested in discovering regularities involved in such processes. Many concepts on relational regularities can be operationalized. Once they are operationalized, the regularities they represent become measurable. The relations between educational attainment and the hypothetical explanatory categories specified in the applied model of this paper are precisely such quantifiable regularities. Therefore, they can be measured and tested, using a quantitative approach. I choose a "non-conventional" approach for this symbolic interactionist study not only because it is more appropriate for testing the validity and relative strengths of the applied model but also because I intend to show that symbolic interactionism is capable of adopting quantitative methods as a supplementary means to expand the scope of its research.

I use Singapore as an empirical case for the testing. Most of the data used for the study is from the two surveys that I conducted in Singapore in 1999 and 2000.

Library data is also used – to overcome some of the limitations common to survey research.

“In its domain of competitive differentiation, education-related social stratification involves social processes in two distinct phases: the first phase centers on educational attainment and its social distribution whereas the follow-up phase centers on competition for socio-economic status (using educational attainment as capital) and the subsequent unequal status distribution among various social categories¹. This paper focuses on the first phase and touches on the impact of the unequal social distribution of education on social stratification only in terms of its implications in connection with the assumed fact that educational attainment plays a significant part in shaping social stratification as well as its reproduction and/or change. Analytically, a detailed study of the second phase from the point of view of symbolic interactionism constitutes a separate project, which is beyond the scope of this paper to pursue.

I should also note that in the empirical testing of the applied model, the paper only covers two dimensions of social stratification in Singapore, namely ethnic and class stratification.

Constructing the Model

The construction of this model requires a major modification of Blumer’s version of symbolic interactionism, but this modification will be conducted within the boundaries of Mead’s dual determinism, which Mead had used to frame his own version of symbolic interactionism. Therefore, the revision will not be a “Trojan Horse” to subvert the fundamental nature of symbolic interactionism.

Because Mead’s symbolic interactionist analysis is social psychological in nature, the substantive content of his discussions is partially relevant to the theme of the paper only at the social psychological level. Nevertheless, the philosophical framework of his dual determinism that underlies his substantive analysis is immensely more encompassing; it can be used as a general paradigm for theory building toward a comprehensive understanding of various forms of social emergence such as unequal social distribution of education and social stratification. However, Mead is well known for some of his specific, substantive discussions but not for his more useful dual determinism, because secondary readings on Mead usually do not interpret the former in terms of his dual determinism or do not do so explicitly.

Therefore, it is probably helpful to present his dual determinism at this point in some detail.

In Mead's (1962:129) view, "the organism [animal or human actor] determines the environment as fully as the environment determines the organ[ism]." This mutual determination is reflected in the interrelations between the two parties. Therefore, "the life-process, to be adequately understood, must be considered in terms of their interrelations." Consequently, when a life process gives rise to some new phenomenon, which Mead (1962:129,198) refers to as "emergence" or "new object", the new phenomenon can be explained in terms of these interrelations as well².

On the basis of this general conception, Mead develops a micro version of symbolic interactionism to explain human conduct and its intended and unintended consequences (emergence). He believes that human conduct is a life-process and that it leads to various kinds of emergence including "self-reconstruction" and "social reconstruction" (Mead 1962:308-309). Much of human conduct takes place at the level of symbolic interaction, which involves the mediation of "self" (interaction between the "I" and the "me") and "mind" (reflective thinking). Both self and mind are built on interrelations between the individual and his environment – interaction that occurs in his inner world with the assistance of the language and other symbolic systems at his disposal. Mind and the inner part of self intervene between his observable action and his environment, regulating the former and thus also affecting the nature of all forms of emergence derived from such action. (Mead 1962: 135-226).

In Mead's conception, self is an ongoing process that consists of the "I" and the "me" as its two inter-related phases. The "I" is constituted in the individual's responses to the social (or natural) world, in which "freedom", "uncertainty" and "novelty" is reflected and "individuality" produced and through which the social (or natural) world is "reconstructed" (Mead 1962:177, 198, 201-204, 209). But the "I" is not entirely free of environmental constraint. Through "role-taking", the "me" operates on behalf of the "other" (individuals, social groups, society or some things in the natural world) evaluate and advise the "I". "If we use a Freudian expression," says Mead (1962:209-210), " 'me' is in a certain sense a censor..." "[T]he me may be regarded as giving the form of the 'I'. The novelty comes in the action of the 'I', but the structure, the form of the self is one which is conventional."

For instance, through the regulation of this kind of self (and reflective thinking), a person may deliver a novel speech to address some interest of a particular

community (as an expression of the novel aspect of the “I”), while using a conventional language system (as a response to the regulation of the “me” that is on behalf of this community using that language, resulting in an expression of the conventional aspect of the “I”) (Mead 1962:198). Clearly, then, both the delivery of the speech as action and the features of the speech as a form of emergence can be explained in terms of the interrelations between the “I” and the “me”, or rather between the actor and his environment in general. These interrelations carry salient marks of mutual determination, that is, the determining influence of the actor as well as the environment. Mead (1962:198-204, 308-309) used the same approach to explain “self-reconstruction” and “social reconstruction” in general, treating them as two particular categories of “emergence”.

The term “interrelations” consists of three components: (1) patterns and substance of interaction between the individual and his environment, (2) factors emerging from the process of this interaction at a certain point that can affect his action and the next phase(s) of the interaction, (3) pre-existing conditions of the actor as well as his environment that enable the interaction to take place and the emergent mediating factors to arise and function. The nature of an emergent generated by these interrelations depends on the nature of these three categories of conditions. Thus, to use dual determinism (or interrelations) to explain the nature of the previously mentioned speech is essentially a matter of doing it in terms of these three categories of factors. It is the same with explaining self-reconstruction and social reconstruction in general.

An individual’s educational attainment in our case would be regarded as “self-reconstruction” in Mead’s paradigm, and the social distribution of educational attainment and the follow-up reproduction or change of social stratification as manifestations of “social reconstruction”. Therefore, from the viewpoint of Mead’s paradigm, a plausible explanation of these phenomena can focus on the three components of interrelations between the actor and his environment.

The strengths of Mead’s paradigm lie precisely in his recognition of the dual sources of determination that shape all kinds of life processes and their products. Mead does not provide a systematic macro-level elaboration on the social and cultural components of his concept of “other” or “environment”. However, his dual determinism contains sufficient theoretical space for incorporating contemporary sociological concepts such as social stratification, state, culture, values, norms,

technological imperatives, and capital/power³, and for recognizing their varied determining impact on social processes as well as on the products of these processes. On the other hand, Mead's paradigm allows for full recognition of the input that human agency can contribute to the shaping of social processes and their products.

It should also be noted that conceptually, individual actors in Mead's discussions can easily be transformed into collective actors and that collective actors can be studied within his same framework of dual determinism, albeit at a different analytical level.

Blumer (1969) was among the earliest scholars who attempted to extend Mead's analysis to the sociological level. Blumer's symbolic interactionism focuses on observable action – at both individual and group levels. He argues that society, including the formation, perpetuation, and change of social structure and culture, must be explained in terms of action (Blumer 1961, 1962, 1990). He identifies two factors that he believes are extremely crucial for shaping action, namely perception/meaning and social interaction⁴. Thus, he is highly critical of those sociological schemes that “bypassed or swallowed up” social interaction and perception/meaning by seeking to explain action directly in terms of “pre-existing conditions” such as social structure, culture, and psychological factors, for he believes that social interaction and perception/meaning⁵ mediate between action and the pre-existing conditions (Blumer 1969:3). He also rejects those persuasions that touched on social interaction and perception/meaning but treated them as a “mere forum” (Blumer 1969:7) or a “neutral link” (Blumer 1969:3) between action and the preconditions.

Blumer's major contribution to sociology, I believe, consists of his uncompromising emphasis on the independent effects of social interaction and perception/meaning on action and its consequences. This emphasis is perfectly consistent, in principle, with Mead's conception of the dynamic and novel aspect of the “I”. And his concepts of “social interaction” and “meaning” belong to two of the three component categories of Mead's “interrelations” between the actor and the environment.

However, Blumer's (1969:11,16) characterization of pre-existing conditions – the third component category of Mead's “interrelations” – considerably deviates from Mead's theoretical treatment. According to him,

[Any pre-existing condition is] a matter the human actor takes into account in mapping his line of action. The initiating factor does not

embrace or explain how it and other matters are taken into account in the situation that calls for action. One has to get inside the defining process of the actor in order to understand his action (Blumer 1969: 16)... from ...[the] standpoint of [individual actors], the environment consists only of the objects that [they] recognize and know. The nature of this environment is set by the meaning that the objects composing it have for those human beings (Blumer 1969:11).

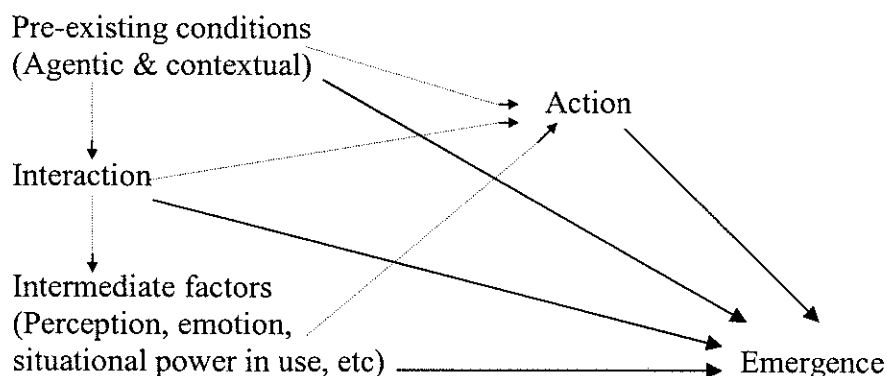
This view is untenable. For any given individual, the nature of his environment is not entirely “set by the meanings that the objects composing it have for” him. Much of his environment that he does not recognize not only exists but also affects the manner, quality and consequences of his action (Marx 1965; Mills 1959; Lenski 1966, Berger 1963). Further, the conditions in his environment that do have a meaning to him as a result of his recognition and interpretation sometimes may affect his action in a way beyond his initial interpretation of them (Mead 1938; Blumer 1969). Even if he apprehends certain environmental conditions well, his understanding and its impact on his action may still be attributed, in part, to the influence of these conditions – if we take Mead’s (1962:198, 254, 262-64) concepts of “role-taking” and “me” seriously. It is the same with pre-existing agentic conditions.

Denying pre-existing conditions as determining factors with an independent effect on action, Blumer’s view is at variance with Mead’s conception of pre-existing conditions as the foundation of mutual determination between the actor and the environment. In Mead’s paradigm, the effects of the pre-existing conditions of the actor are part and parcel of his total effects of determination on his environment, on the life processes in which he is involved, and on all forms of emergence these processes generate. Likewise, the effects of the pre-existing conditions of the environment are part and parcel of the environment’s total effects of determination on the actor as well as on the same life processes and products that involve him. Blumer’s view also contradicts his own statement on the “obdurate character of the empirical world” (Blumer 1969:22) as well as his argument that action cannot be understood apart from its context (Blumer 1969:20). He could have avoided this problem of inconsistency if he had thoroughly pursued the logic of his discussion on the obdurate character of the empirical world. Unfortunately, he did not.

The importance of pre-existing conditions to action is presented more adequately in the works of some other scholars (apart from Mead) who follow the tradition of symbolic interactionism, for example, Shibutani (1986), Strauss (1993), Stryker (1980), Goffman (1959), Turner and Killian (1987) and Hewitt (2000). Drawing on the conception of Mead and these scholars as well as the relevant insights from non-symbolic interactionists such as Marx (1965), Durkheim (1964), Bourdieu (1977), Giddens (1984), C. Wright Mills (1959), and Lenski (1966), I propose to remove Blumer's inconsistency in the light of Mead's dual determinism, that is, to explicitly affirm the independent impact of pre-existing conditions on action and therefore, also on its consequences such as the social distribution of educational attainment and education-related social stratification. The "independent impact" here refers to the probabilistic determining influence of pre-existing conditions that the independent effects of interaction and perception/meaning cannot account for. This affirmation not only recognizes the independent effect of social structure and culture on action (and consequences of action) but also enables symbolic interactionism to theoretically open its door to insights on power from other sociological traditions, for power is fundamentally based on part of the pre-existing conditions.

With this modification, coupled with the retention of Blumer's strengths, we can formulate an integrated symbolic interactionist model on action and social emergence in a general form – within the philosophical framework of Mead's dual determinism⁶. In a simplistic way, this general model may be illustrated as follows:

**Figure 1 Symbolic Interactionism on Action and Emergence:
A General Model**



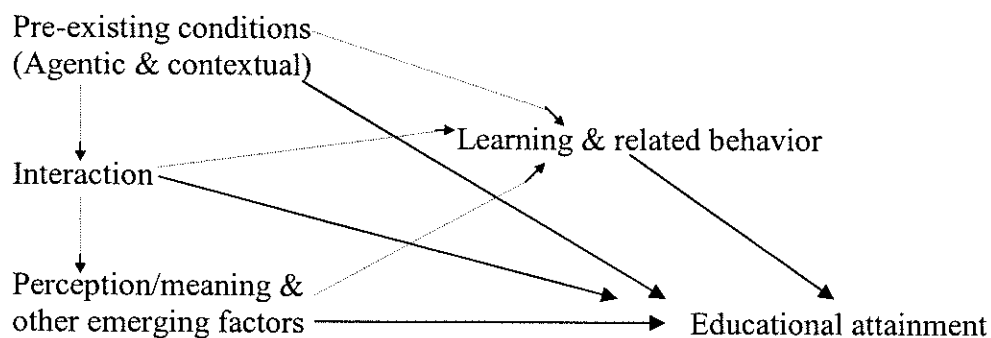
In Blumer's action theory, the actor may be an individual actor as well as a collective actor. Similarly, in this general model, "actor" refers to different levels

ranging from the individual to society and beyond. Thus, all of the five major concepts in this model – “pre-existing conditions”, “interaction”, “intermediate factors”, “action”, and “emergence” – refer to different levels accordingly.

Three sub-models can be deduced from this general model to explain the unequal social distribution of education and its implications for social stratification. Sub-Model I explains students’ learning achievement at the individual level, Sub-Model II the social distribution of educational attainment at the aggregate level, and Sub-Model III the impact of this social distribution on social stratification.

In Sub-Model I (Figure 2), educational attainment is hypothesized as being shaped by four categories of factors: (1) pre-existing conditions, both contextual and agentic; (2) interactive conditions, particularly interaction between the actor (student) and “significant others” as well as “reference groups” (Shibutai and Kwan 1965); (3) emergent intervening conditions (such as perception/meaning, emotion, situational power in use); and (4) behavioral conditions (learning and learning-related behavior).

Figure 2 Sub-Model I: On Educational Attainment



Sub-Model II, which is intended to account for the social distribution of educational attainment, is straightforward. According to this sub-model, the distribution of education in terms of social class and ethnicity is essentially a manifestation of the aggregate effects of the learning achievements of the individual students who belong to the various social categories in each of these two dimensions. Therefore, we can explain the pattern of unequal social distribution of education in each such dimension largely in terms of the uneven aggregate distribution, in the same dimension, of all the four categories of conditions that affect learning achievement at the individual level – conditions that are presented in Figure 2.

Whether the unequal social distribution of educational attainment has any impact on the reproduction and/change of social stratification in a society, first of all, depends on whether education plays a significant role in shaping such reproduction and/or change. There is abundant evidence to show that in general, education does play such a role (e.g., Bourdieu 1977; Bowles and Gintis 1976; Lareau and Horvat 1999). I will demonstrate that Singapore is no exception. Thus, even without comprehensively studying the specific processes of social stratification, we can still infer that unequal social distribution of educational attainment probably has a significant impact on the reproduction and/or change of the system of social stratification in a given society (e.g., Singapore), provided that we have evidence to show substantial effects of education on status attainment in this society. This reasoning constitutes Sub-Model III.

Sub-model I functions as the foundation on which the other two sub-models are built up. Together, they form one general applied model to explain the reproduction and/or change of social stratification from the viewpoint of the unequal social distribution of education⁷.

Major Concepts, Operationalization, and Measurement

The general applied model involves seven major concepts, namely pre-existing conditions, interaction, perception, learning and learning-related behavior, educational attainment, social distribution of educational attainment, education-based status attainment, and education-related social stratification. It is necessary to operationalize them and work out a plausible way to measure them in order to test the validity and explanatory strengths of the model.

Hypothetically, the first four concepts represent four categories of factors that directly contribute to learning achievement and its social distribution and indirectly to education-related social stratification. Since each category covers a large number of specific conditions, it is infeasible to attempt to test in one study the relevance of each and every specific condition in accounting for these social phenomena. Therefore, the objectives of the testing provided in this paper are moderate: (1) to find out whether each such category does have an independent effect on educational achievement, (2) to find out whether the first sub-model has greater explanatory strengths than models based on other theoretical approaches, and then, (3) to find out if these four categories of conditions are truly distributed unevenly among social classes and ethnic groups in

a manner to lead to an unequal distribution of educational attainment in these two social dimensions, (4) to find out if the unequal social distribution of educational attainment truly generates an impact on social stratification, and (5) if the applied model as a whole has greater explanatory strengths than some other models. Given the nature of these objectives, only a few factors are selected to represent each specified explanatory category for the testing. And the selection is made relevant to the empirical case used for the testing.

Pre-existing conditions. In the context of education and educational achievement, this concept is defined as all contextual and agentic conditions which have the potential to affect students' educational attainment and which exist prior to the onset of any given learning behavior. For manageability, the following factors are selected to represent pre-existing conditions for the study:

- (1) Ethnicity (three dummy variables are listed: Chinese = 1, Indian = 1, Others = 1; the Malay group is the omitted category);
- (2) Religion (Christianity is the omitted category; the other religions and no religious belief are treated as dummy variables, each coded as 1);
- (3) Social class background (father as worker = 1, father not as worker = 0; father as employer/official/manager/professional = 1, father not in this category = 0; mother as employer/official/manager/professional = 1, mother not in this category = 0);
- (4) Gender (female = 1; male = 2);
- (5) Siblings (1 = no sibling; 2 = 1 sibling; 3 = 2 siblings; 5 = 4 or more siblings); and
- (6) Marital status of parent (separate/divorced/widowed/never married = 1, not in this category = 0).

Pre-existing conditions that are common to Singapore's student population are excluded from the operationalization exercise, for example, the system of educational selection, the mechanism of the market system, the legal and political system related to education and status attainment, and so on. In reality, these macro conditions are crucial in affecting educational attainment, but the surveys used for this study do not involve cross-societal comparison and consequently are not sensitive to the effects of these conditions, since the effects are theoretically homogeneous to every Singaporean student surveyed in the study. Many of the pre-existing agentic conditions are also omitted, including biological potential, role-taking capacity, self-

conception, and social capital. This omission is an arbitrary cost paid for the benefit of research manageability. The actor's economic capital and cultural capital are not measured directly; rather, his class background is used as their rough indicator (cf. Bernstein 1961; Bourdieu 1977).

Interactive conditions. Interaction that involves students is multi-dimensional. Again, for manageability, I focus on parental actions toward the student with regard to his/her learning and learning achievement and students' response to societal influence with regard to the status of outstanding scientists and wealthy people. Thus, the following factors are selected to represent this category:

- (1) Parents arrange for private tuition for me (student-respondent) (1 = 1 hour per week, 5 = 5 or more hours per week);
- (2) Level of education parents expect me to complete (1 = primary, 2 = secondary, 3 = junior college, 4 = polytechnics, 5 = university);
- (3) Parents explain how to solve difficult problems (for this and the next four items, 1 = never, 5 = very often);
- (4) Parents reward me for studying well (using money, candies, toys, etc.);
- (5) Parents blame me for not studying well;
- (6) Parents scold me for not studying well;
- (7) Parents beat me for not studying well;
- (8) I revere outstanding scientists (for this the next item, 1 = not at all, 5 = very deeply);
- (9) I revere wealthy people.

Perception. For this study I focus on students' perception of education. This perception is defined in terms of the respondents' response to the following statements:

1. I study for Singapore.
2. I study to please my parents.
3. I study to get a diploma or a degree.
4. I study for real knowledge and my future job.
5. I have tried my best in study.
6. My exam results are satisfactory.
7. It is shameful to be in the middle range in my class in exam results.
8. Learning achievement is not genetically determined
9. It is important to have a study timetable.

10. It is enjoyable to work out problems with difficulty.

The measurement of the response is as follows: 1 = strongly disagree; 5 = strongly agree.

Learning and related behavior. The chosen focus is on the quantitative aspect of learning that is more accessible to observation and measurement. Thus, students' learning behavior is defined in terms of three indexes: (1) time spent on homework and related reading and exercise, (2) time spent on reading not related to homework, and (3) frequency of approaching teachers for help. Measurement for the first two indexes: 1 = 1 hour per day; 2 = 2 hours per day; 3 = 3 or more hours per day. Measurement for the third index: 1 = never, 5 = very often. The qualitative aspect, namely the effectiveness of learning for each unit of time spent on homework or related reading and exercise, is omitted from the study. The importance of this qualitative aspect of learning is assumed, and the factors that underlie such quality, such as cultural capital (Bernstein 1961; Bourdieu 1977; Chang and Mani 1995; Lareau and Horvat 1999) and IQ (cf. Wolfle 1961), are taken for granted.

Learning-related behavior is defined using two indicators: time spent on TV shows, and time spent on playing or hanging around. Measurement: 1 = 1 hour per day; 2 = 2 hours per day; 3 = 3 or more hours per day.

Educational attainment. Students' educational attainment (learning achievement) is defined in terms of the type of stream each respondent belonged to. There are three streams in the neighborhood schools – express, normal, and technical. For the independent schools, each of them manages a special stream and in some cases, also a gifted education program or an express stream. Initially, students are placed in the different streams according to their scores achieved in taking the national Primary School Leaving Examination (PSLE): those who have the highest scores are selected for the gifted education programs or special stream; those who have higher scores but are not qualified for the special stream are assigned to study in the express stream; and those who have the lowest scores are allocated in the technical stream; the normal stream is one level above the technical stream, designed for the lower middle-ranking students. The placement is adjusted on the yearly basis according to students' exam results obtained at each secondary level. Those in the special, express or normal classes who are not up to the standards set for their respective levels (judged by their annual exam results) will be downgraded to a lower level, and those in the lower streams will be allowed to move up if they prove as

competent as those in the stream at the immediate higher level. Therefore, stream membership can be used as a reasonable proxy to approximate the learning achievement of the students surveyed. The measurement is coded as follows: 1 = technical stream; 2 = normal stream; 3 = express stream; 4 = special stream or gifted education program. Other kinds of learning achievement, for example, achievement accomplished in character training, are omitted from this study.

Social distribution of educational attainment. For the students under investigation, the social distribution of their educational attainment is defined as the aggregate distribution of their educational attainment by social class or ethnicity.

Social status and Social stratification. Social status is defined in terms of income and occupation. Measurement for monthly income: 1 = below \$1,000, 2 = \$1,000-\$1,999, 3 = \$2,000-\$2,999, 4 = \$3,000-\$3,999, 5 = \$4,000-\$4,999, 6 = \$5,000 or more. Measurement for occupation: 1 = lower range (unskilled, semi-skilled and skilled workers; waiters and waitresses; sales persons; fishermen); 2 = middle range (office clerks, supervisors, self-employed); 3 = higher range (employers, managers, professionals, technicians, officers). For this study, social stratification refers to hierarchical systems of status distribution by ethnicity and social class. Gender stratification is not included in the testing.

Data

Most of the data used in this paper is obtained from the two surveys that I conducted in Singapore in 1999 and 2000. Singapore is a newly developed multi-ethnic city-state in Southeast Asia with a population of 3.8 million. Just as in larger nations, education in Singapore is unequally distributed among social classes and ethnic groups, although the pattern of the distribution has undergone some change since industrialization was initiated in the early 1960s. This appears to be a major factor in shaping Singapore's landscape of reproduction and change of social stratification. Therefore, despite Singapore's small size, findings from this study on the unequal social distribution of education and its implications for social stratification can be reasonably illustrative.

More than 700 Singaporeans aged 21-65 were investigated in the first survey. These respondents were secured from 218 randomly selected public housing blocks and private housing streets, three from each such block or street. A total of 711 sets of valid answers were obtained. One objective of the survey was to collect

information on social stratification and some of the major conditions, particularly education, which had contributed to it. This sampling was not purely random; for a compromise had to be made between the need for perfection and the restraint of financial resources.

In the second survey 1,049 students at the secondary level were studied. A total of 1,014 answered sheets turned out to be valid. This survey was designed to obtain information on students' learning behavior and learning achievement as well as the social distribution of their learning achievement.

Schools in Singapore are cautious about their reputation, ranking, and relationship with the Ministry of Education. Usually they do not cooperate with research scholars for academic investigation. Initially I selected seven secondary schools for the survey. However, only two of them offered a positive response. One of the two schools I surveyed was an independent institution, whose status of academic achievement was among the top twenty at the secondary level, and the other was an ordinary neighborhood school, representing the large majority in Singapore. A total of 541 students were randomly selected from the independent school, including everyone in the second year cohort and a random sample from the third year cohort. In the case of the neighborhood school, all of its students participated in the survey.

The background information on the respondents who participated in the two surveys is presented in Table 1. The background of the adult respondents in the national sample is very close to the descriptions of the national population. Although the distribution of education in this sample appears significantly different from that of the national population, the gap largely results from the disparity in their age ranges. Based on this comparison and the sampling method used for the adult survey, it may reasonably be argued that we can use the data from this survey as a proxy of Singapore's adult population aged 21-65.

No information is available in Singapore on its population of secondary students that can be used to compare with the background of the student sample. I assume that the data from the student survey can roughly approximate Singapore's student population at the secondary level. But further verification is necessary because of the limitations of data collection due to reasons beyond the control of the author.

Table 1 Background of the Respondents, 1999 & 2000*

Social Category	Respondents, National Sample Aged 21-65 (%)	Respondents, Student Sample (%)	National Population (%)
<i>Sex</i>			
Male	50.0	49.5††	50.7
Female	50.0	50.5††	49.3
<i>Ethnicity</i>			
Chinese	75.3	83.2	76.8
Malay	12.9	11.0	13.9
Indian	10.5	3.4	7.9
Others	1.3	2.5	1.4
<i>Religion</i>			
Buddhism/Taoism	47.1	37.9	51.0
Islam	15.0	12.3	14.9
Christianity	15.6	21.2	14.6
Hinduism	7.3	1.9	4.0
Other religions	1.8		0.6
No religion	13.2	26.7	14.8
<i>Occupation</i>			
Employer/official/manager /professional	42.3	46.5#	40.3@
Self-employed	8.2	7.3#	7.8@
Clerical	7.9	1.1#	14.0@
Manual workers, skilled & Semi-skilled workers	31.7	40.7#	34.5@
Unemployed	5.8		
Others	4.1	4.3#	3.4@
<i>Education</i>			
Primary/no education	26.4		42.7†
Secondary	39.7	100.0	24.6†
Junior college	4.9		14.9†
Polytechnics	14.9		6.2†
University	14.0		11.7†
# of respondents	711	1014	

* The 2nd & 3rd columns are based on the author's surveys; the 4th column (except for the section on occupation) is derived from *Census of Population 2000, Advance Data Release* (Singapore), p.xiv.

@ Proportion in labor force, *Yearbook of Statistics 2000* (Singapore), p.43.

Father's occupation.

† Proportion of Singapore residents aged 15 and over.

†† Proportion of student respondents from the neighborhood secondary school. The students of the independent school are of the same sex.

Testing Sub-Model I: Determinants of Learning Achievement

According to Sub-Model I (see Figure 2), four categories of conditions independently contribute to educational attainment – pre-existing, interactive, perceptual, and behavioral. Based on this model, I use 30 operationalized variables as hypothetical independent variables⁸ from which to identify the actual determinants of learning achievement, thereby testing the validity and explanatory strengths of this sub-model. The results are presented in Table 2 (not including information on those hypothetical variables that turn out to be statistically insignificant in the testing).

Table 2 provides a comparison between this model and four others each of which explains learning achievement from the viewpoint of a particular component category of the model. As presented in this table, all of the four explanatory categories specified in Sub-Model I have an independent effect on educational attainment, although not all the 30 hypothetical independent variables deduced from them are statistically significant. As a whole the integrated model (model 5 in Table 2) can account for 61 percent of the variances in the respondents' educational attainment. This is significantly more effective than model 1 (in Table 2) that is confined to structural, cultural and demographic explanations. It also shows greater explanatory strengths than the combination of models 2 and 3 that highlights effects of interaction and perception/meaning but leaves aside the independent effects of pre-existing conditions.

**Table 2 Standardized and Unstandardized OLS Coefficients from the
Regression of Students' Learning Achievement on Selected Variables: Five
Models in Comparison
(N=1014)**

Independent Variables	Model 1	Model2	Model 3	Model 4	Model 5
<i>Demographic/Structural</i>					
Chinese#	1.01*** (.44)				.53*** (.23)
Father: worker	-.55*** (-.28)				-.27*** (-.14)
Parent: divorced/sep/nm	-.26* (-.07)				-.18* (-.05)
<i>Interactive</i>					
Parental expectation		.52*** (.43)			.24*** (.20)
Parents use material rewards		-.17*** (-.23)			-.09*** (-.12)
Parents scold me		-.08*** (-.10)			-.03* (-.05)
Revere wealthy people		.09*** (.12)			.05** (.06)
<i>Perceptual</i>					
Study for Singapore			-.05* (-.06)		
Study to please parents			-.15*** (-.21)		-.09*** (-.13)
Study for knowledge & job			.19*** (.25)		.02 (.03)
I have tried my best			-.21*** (-.31)		-.14*** (-.21)
Middle range shameful			.16*** (.26)		.11*** (.18)
<i>Behavioral</i>					
Time for homework				.18*** (.26)	.08*** (.12)
Time for reading				.22*** (.27)	.09*** (.12)
Time for playing				-.11*** (-.18)	-.05*** (-.08)
Time for TV shows				-.06** (-.09)	
Approach teachers for help				-.04* (-.06)	
Intercept	2.62***	1.27***	3.58***	3.05***	2.23***
Adjusted R ²	.36	.29	.37	.23	.61

Notes: 1. Standardized OLS coefficients in brackets.

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

3. # The Malay group as the omitted category; no significant difference found between the Malay group and any other ethnic group.

Specifically, three factors in the category of pre-existing conditions are found statistically significant – ethnicity, social class, and parents' marital status. On average, Chinese students achieve more than Malay students. This difference

between the two ethnic groups probably originates in part from their differences in culture (Chang and Mani 1995). Further, those whose fathers are ordinary workers or unemployed achieve less than those whose fathers are not in this category. And students from broken families tend to achieve less than those from non-broken families. Without controlling for the other conditions, these three structural factors account for 36 percent of the variances in the respondents' learning achievement.

In the category of interaction, four factors are statistically significant. Parents' higher expectations on children's education and students' higher level of reverence for wealthy people have a positive effect on students' learning achievement. By contrast, parents' use of material incentives or scolding as a means to "drive up" children's interest in study seems to be negative on average in affecting their learning achievement. As a whole, these interactive factors can explain 29 percent of the variances in learning achievement if not controlling for the other conditions. In the category of perception/meaning, five factors are statistically significant. Students who emphasize more on education as a way to please parents or serve their country tend to achieve less than those who emphasize less. And students who have a stronger judgment that they have tried their best in study tend to achieve less than those whose judgment is less strong. The fourth factor is related to students' perception of whether it is shameful to be in the middle range in examination performance in their respective classes. Those who feel more strongly that it is shameful are more likely to achieve better than those who feel less strongly. Further, those who are more serious in seeing education as instrumental for acquiring knowledge for their future jobs tend to achieve more than those who are less serious. The first three factors appear to reduce students' motivation of study, whereas the other two function to promote their motivation. These perceptual factors can account for 37 percent of the variances in the respondents' learning achievement, when the other conditions are not controlled for.

The impact on learning achievement of the five kinds of learning and learning-related behavior is generally straightforward. Spending more time on homework and general reading helps educational attainment while too much involvement in playing and TV watching has a negative effect. The impact of approaching teachers for help requires further study: it is slightly negative in model 4 in Table 2 but becomes statistically insignificant in model 5 when factors in the other three categories are controlled for.

In model 5, 13 factors remain statistically significant, and one is close to statistical significance. Three variables that are statistically significant in partial models lose their statistical significance in model 5, including perceiving education as being for their country, time spent on TV shows, and approaching teachers for help. Their slight effects observed in models 3 and 4 seem to have reflected the effects of some of the 13 factors that remain significant in Model 5, most likely those of the structural factors as well as of parents' expectations. Model 5 suggests that five factors are crucial for understanding students' learning achievement in Singapore: ethnicity, father's occupation, parental expectation, and students' perception of whether they have tried their best in study and whether it is shameful to be in the middle range in academic achievement.

Testing Sub-Model II: The Social Distribution of Educational Attainment

Sub-Model II hypothesizes that the four categories of conditions affecting learning achievement identified by Sub-Model I are unevenly distributed among social classes (in favor of the upper class division) and among the ethnic groups (in favor of the more privileged groups). Based on the expected validity of this central hypothesis as well as that of Sub-Model I, Sub-Model II infers that the differential social distribution of these conditions can account for the unequal social distribution of educational attainment. It further infers that Sub-Model II probably has greater explanatory strengths in accounting for the social distribution of educational attainment than models that explain the unequal social distribution of education only in terms of part of these four categories of conditions. Since the validity of these two logical inferences depends on the validity of the central hypothesis, it is meaningful to begin the testing of Sub-Model II with the verification of the validity of the latter.

The results derived from the testing of Sub-Model I provide a major basis for mapping out a profile of how the conditions affecting learning achievement are distributed among various social categories. Based on these results (Table 2) and a separate analysis of the determinants of students' time spent on homework (not reported in detail in the paper), a total of 19 factors are identified as statistically significant in affecting learning achievement, directly or indirectly. Tables 3 and 4 present their distribution among secondary school students in the dimensions of social class and ethnicity respectively.

Table 3 Distribution of Learning-Affecting Conditions by Father's Occupation (N=1014)

Category of Comparison	Father as employer/mgr /professional	Father not as employer/mgr/prof (difference in score)
<i>Structural/Demographic</i>		
Father as worker (%)	.00	+.76***
Parents: divorced/separate/non-married (%)	.03	+.05**
<i>Interactive</i>		
Parental expectation (level of education)	4.81	-.33***
Parents explain how to solve problems	2.97	-.32***
Parents use material rewards	2.17	+.21**
Parents scold me for not studying well	2.69	+.11
Revere wealthy people	2.10	-.18**
<i>Perceptual</i>		
Study partly for Singapore	3.46	+.26**
Study to please parents	3.59	+.20*
Study for knowledge & job	4.22	-.44***
I have tried my best	3.33	+.42***
Standardized perception of satisfaction regarding exam results	.71	+.42***
Middle range is shameful	2.79	-.54***
Basically learning achievement is not genetically determined	3.96	-.17*
<i>Learning behavior</i>		
Time spent on homework (hrs per day)	2.54	-.52***
Time spent on reading (hrs per day)	1.59	-.42***
Time spent on TV shows (hrs per day)	2.08	+.13
Time spent on playing (hrs per day)	2.04	+.13
Approach teacher for help	2.82	+.06

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$ (two-tailed test).

Three items not included in Table 2 are added to Tables 3 and 4 based on the analysis of the determinants of learning behavior. In that analysis it is found that students who strongly believe that basically achievement is not genetically determined are likely to spend more time on homework than those who have a greater emphasis on the genetic effect. Further, parents' explanation on how to solve difficult problems also helps to stimulate their children to spend more time on homework. However, for students who have a stronger belief that their exam results are satisfactory, they are likely to spend less time on homework than those whose belief is less strong. Scores on standardized perception of satisfaction regarding exam results are obtained by dividing each respondent's score of response to the statement "My exam results are satisfactory" with his/her level of learning achievement (measured in terms of stream

membership). Since this and the other two factors are statistically significant in the analysis of what determine students' time spent on homework and since this kind of time spending has proved a determinant of learning achievement, they are all added to Table 3.

Table 3 shows that students from the upper class division benefit more than those from the lower class division⁹ from all but two of the conditions that are favorable to educational attainment, for example, parents' higher expectations on children's education, students' strong belief in education as a means for true knowledge, and generous time spending on homework and reading. Actually the two exceptions – perceiving education as for Singapore and approaching teachers for help – are not statistically significant in directly affecting learning achievement (see Table 2). Further, on average, students from the upper class division suffer less than their counterparts from the lower class division from all of the identified conditions that are unfavorable to learning achievement such as restricted class-based economic and cultural capital (as indicated by father's status as a worker), broken family conditions, scolding children for not studying well, excessive satisfaction with one's own examination results or one's effort in study.

This distribution necessarily tips the balance of educational attainment in favor of students of the first category and leads to unequal distribution of education between social classes. Thus, 70 percent of the respondents from the upper class division studied in the special stream or gifted education program and 23 percent in the express stream. Those who studied in the normal and technical streams constituted 7 percent. However, 34 percent of the respondents from the lower class division were trained in the normal and technical streams and only 35 percent had access to the special stream or the gifted education program.

Almost every adult in Singapore knows that for those who study in the special stream or gifted education program, their future place in university is nearly guaranteed, but for those who study in the normal stream, the chance of their future access to university is very slim and the chance for those of the technical stream is almost zero. If these findings can roughly be used as a proximate reflection of the overall situation in Singapore, it follows that to a substantial extent, the distribution of education between the upper and lower class division in Singapore can be explained in terms of the class-based distribution of the achievement-affecting conditions listed in Table 3 that are statistically significant.

Table 4 shows that in the ethnic dimension, if we compare the Chinese respondents with their Malay counterparts, we observe a pattern of contrast that is similar to the contrast between students from the upper and lower class divisions. On average, the Chinese respondents benefit more from the conditions that are favorable to educational attainment whereas Malay respondents suffer more from the conditions that are unfavorable to educational attainment. For example, on average, Malay students are significantly more inclined to believe that they have tried their best in study despite that they spend 31 percent less time on homework than the Chinese respondents. And Table 2 has revealed that this kind of belief has the second largest negative effect on learning achievement, judging by the standardized regression coefficient of this factor.

As in the class dimension, the distribution of the achievement-affecting conditions between the Chinese and Malay respondents necessarily results in an imbalanced distribution of educational attainment between these two ethnic groups. For the Chinese respondents, 69 percent of them gained a place in the express stream, special stream or gifted education program, and 3 percent ended up in the technical stream. For the Malay respondents, however, 25 percent of them studied in the technical stream, and only 24 percent of them had succeeded in acquiring a place in the express stream or above. This distribution of learning achievement at the secondary level suggests that a sharp disparity in gaining access to tertiary education will emerge between these two groups in favor of the Chinese group.

Table 4 Distribution of Learning-Affecting Conditions by Ethnicity (N=1014)

Category of Comparison	Malay	Chinese Difference	Indian Difference
<i>Demographic/structural</i>			
Father as worker (%)	.71	-.51***	-.23*
Parents: divorced/separate/non-married (%)	.08	-.02	+.06
<i>Interactive</i>			
Parental expectation (level of education)	3.97	+.76***	+.58**
Parents explain how to solve problems	3.02	-.25	+.12
Parents use material rewards	2.67	-.49***	+.23
Parents scold me for not studying well	2.97	-.25*	+.09
Revere wealthy people	1.70	+.36***	+.12
<i>Perceptual</i>			
Study partly for Singapore	3.99	-.47***	-.31
Study to please parents	4.38	-.80***	+.29
Study for knowledge & job	3.48	+.60***	+.61*
I have tried my best	4.39	-.99***	-.18
Standardized perception of satisfaction regarding exam results	1.73	-.96***	-.48*
Middle range is shameful	1.87	+.77***	+.07
Basically learning achievement is not Genetically determined	3.54	+.38**	+.34
<i>Learning & related behavior</i>			
Time spent on homework (hrs per day)	1.64	+.75***	+.50*
Time spent on reading (hrs per day)	.82	+.65***	+.21
Time spent on TV shows (hrs per day)	2.49	-.35**	-.37
Time spent on playing (hrs per day)	2.68	-.62***	-.71*
Approach teacher for help	2.96	-.12	-.14

Note: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$ (two-tailed test).

The differences between the Indian and Malay respondents are less sharp or extensive. However, they are sufficiently sharp and extensive to generate an edge for the average learning achievement of the Indian respondents. Consequently, the Indian respondents as a group gained a second place in educational attainment, positing between the Chinese and Malay groups.

Again, if the comparison among these three groups of respondents is roughly representative of the overall situation in Singapore, the unequal distribution of education among different ethnic groups in Singapore can be explained, to a large extent, by the distribution of the achievement-affecting conditions listed in Table 4. According to Singapore's population census conducted in 2000, for resident Singaporeans 15 years and older, 12.6 percent of the Chinese group had received tertiary education as compared with the 2 percent of the Malay group. Some scholars have attempted to explain the disparity in terms of structural and cultural conditions

(Chang and Mani 1995; Chiew 1991; Ko 1991; Lee 1991; Quah 1991). Our research suggests that although structural and cultural conditions are important for understanding ethnic disparity in education, interactive and perceptual conditions are at least equally important for the same purpose. A better understanding can be obtained when all of these conditions are taken into consideration. These findings attest to the validity of Sub-Model II.

Testing Sub-Model III: Implications for Social Stratification

Sub-Model III contains two explicit hypotheses (EH) and two implicit arguments (IA). EH1: Educational attainment plays a crucial role in determining individuals' acquisition of socio-economic status. EH2: "Imperfect"¹⁰ unequal social distribution of educational attainment contributes to both perpetuation and change of the existing system of class and ethnic stratification. IA1: Since the unequal social distribution of educational attainment is in part the product of the differential social distribution of the four categories of conditions identified in Sub-Model I, the differential social distribution of these conditions necessarily contributes to the reproduction and change of social stratification, if EH1 and EH2 are valid. IA2: If Sub-Model I that identifies these four categories of conditions has greater explanatory strengths than models that identifies only one or two of them, then, by logical inference, Sub-Model III necessarily has greater explanatory strengths in accounting for education-related social stratification than models that account for it only from the viewpoint of part of the explanatory categories that Sub-Model I identifies – if IA1 is valid. Testing the validity and explanatory strengths of Sub-Model III is fundamentally a matter of verifying the validity of its two explicit hypotheses: if these two hypotheses are valid and if Sub-Models I and II are valid, then, the two implicit arguments of Sub-Model III must be valid automatically.

To verify the hypothetic impact of educational attainment on status attainment, I use a simplified OLS regression model as well as a simplified logistic model for estimation. In these regression models, educational attainment and a set of other pre-existing conditions are hypothesized as explanatory factors, but the other potential explanatory categories – interactive, perceptual, and behavioral – are omitted from the estimation. Despite that this simplified analysis is only a partial and restricted reflection of the general model on action and social emergence, the key objective to

identify the impact of educational achievement on status attainment is not compromised.

Table 5 OLS Coefficients from the Regression of Monthly Income on Selected Independent Variables: Singaporeans Aged 21-65, 1999 (N=711)

Independent Variable	Model 1	Model 2	Model 3	Model 4
<i>Demographic/Structural</i>				
Father's occupation	.24* (.13)	.13 (.07)	.11 (.06)	
Mother's occupation	.82*** (.55)	.62*** (.42)	.60*** (.40)	
Gender	.49*** (.17)	.43*** (.15)	.37** (.13)	
Age	.15*** (1.07)	.21*** (1.57)	.20*** (1.45)	
Age ²	-.002*** (-1.07)	-.002*** (-1.41)	-.002*** (-1.30)	
<i>Educational qualification</i>		.39*** (.40)	.39*** (.40)	.45*** (.47)
<i>Personal values</i>				
Self confidence as top value			.45*** (.17)	
Important to help others			-.08* (-.09)	
Intercept	1.67*	-1.65†	-.67	1.80***
Adjusted R ²	.40	.52	.55	.22

Notes: 1. Standardized coefficients in brackets.

2. * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$, † $p < .10$.

3. Measurement for "self-confidence as top value": 1 = top 5; 5 = top 1.

Measurement for "happy to help others": 0 = not important at all; 10 = extremely important.

Table 5 presents the findings on determinants of monthly income in Singapore – obtained from the simplified analysis on the basis of the survey of Singapore's adults aged 21-65. In this analysis, monthly income is treated as an indicator of status, and educational qualification an indicator of educational attainment. The measurement of the monthly income has been specified earlier; for educational qualifications, their measurement is as follows: 1 = primary or less, 2 = secondary, 3 = junior college, 4 = polytechnics, 5 = university. Table 5 suggests that monthly income varies positively with educational qualifications as well as the status of father's occupation, the status of mother's occupation, age, and perceived importance of self-confidence; it is negatively related to the perceived importance of offering help to others. Further, males' monthly income is higher than that of females. Other

factors such as religion, race, and parental education are not statistically significant when the estimation controls for all the structural and demographic variables listed in Table 5. As a whole, the explanatory factors presented in this table account for 55 percent of the variances in the monthly income of the working adults surveyed. Education alone can explain 22 percent of the variances: better educational attainment brings about higher income in general. Two conclusions can be drawn: (1) educational attainment is not the only factor affecting monthly income (as an indicator of status), but (2) the impact of educational attainment on individuals' status attainment is crucial.

The logistic regression analysis (Table 6) shows that educational attainment also has a crucial positive effect on the acquisition of occupation (another indicator of status).

Since educational attainment is unequally distributed among different ethnic groups (in favor of non-Malay communities) as well as by parents' class background (in favor of the upper class division), we can reasonably argue that this fact and the crucial impact of education on income and occupation, when working together, will lead to the reproduction of the existing pattern of class stratification (in favor of the upper class division) and ethnic stratification (in favor of the non-Malay groups). This argument is well supported in the empirical world in Singapore.

Table 6 Estimated Coefficients of Logistic Regression Models Predicting Upper Class Division Membership: Singaporeans Aged 21-65, 1999 (N=711)

Independent Variable	Model 1	Model 2	Model 3	Model 4
Constant	4.99***	.83	1.50	-3.58***
<i>Demographic/Structural</i>				
Buddhism#	-1.53***	-1.06*	-1.03*	
Taoism#	-1.04†	-.80	-.54	
Islam#	-2.03***	-1.34*	-1.30*	
Hinduism#	-1.49**	-.91	-1.15†	
Christianity#	-.96*	-1.45**	-1.23*	
Other religions#	-1.80†	-1.49	-1.37	
Father's occupation	.64***	.47*	.42†	
Mother's occupation	.93***	.65***	.62***	
Gender	1.14***	.80**	.66*	
Age	-.07***	-.04*	-.03*	
<i>Educational qualification</i>		.78***	.69***	1.07***
<i>Personal values ##</i>				
Outstanding as top value			.38**	
Favor maximum self-development			.24**	
Favor filial piety			-.28**	
Model χ^2	128.90	165.62	185.94	257.65
df	10	11	14	1

Notes: * $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$, † $p < .10$.

No religious belief as omitted variable.

Measurement for "outstanding as top value": 1 = top 5; 5 = top 1. Measurement for "maximum self-development" and "filial piety": 0 = not important at all; 10 = extremely important.

In the year of 2000, about 23 percent of the Malays in the labor force had an occupation that qualified them to be members of the upper class division, whereas the proportions for the Indian and Chinese Singaporeans were 43 and 46 percent respectively. This pattern of ethnic stratification was the same as that in 1990 in terms of the general ranking of the three groups with regard to occupational distribution (Census of Population 2000/Advance Data Release, Singapore: xv). Indeed, there is abundant evidence to suggest that this pattern was similar in terms of general ranking as that in the 1960s, 1970s and 1980s, although the specific percentage for each ethnic group varied over the years. The perpetuation of the class

structure in terms of the general positioning of each class is beyond no doubt (Yearbook of Statistics, Singapore 1981/1982:55; 1996:41; Census of Population 2000, Singapore: xv) and does not require further elaboration.

However, our analysis of the student sample reveals that the unequal social distribution of educational attainment does not assume a perfect pattern of inequality. A significant proportion of the students from the lower class division were able to gain a place in the express and special stream, and therefore had a fair chance of receiving tertiary education in the future. A similar phenomenon is also observed in the general population. By contrast, a significant proportion of the respondents from the upper class division or non-Malay groups performed poorly in learning. And again, a similar phenomenon is observed in the national population. Given the crucial impact of education on status attainment in Singapore, this “imperfect” unequal distribution of education suggests that: (1) education can be used as an effective vehicle for some of the lower class people as well as Malays to join the upper class division, and (2) some children from the privileged groups may have to pay the price of downward mobility for not performing well in education.

Our sample analysis of the working adults shows that 34% of those whose parents belonged to the “blue collar” working class had an upper division occupation, that is, working as an employer, a manager, a professional/paraprofessional, or an administrator/officer. For this kind of upward mobility, the probability of success for those who had educational qualifications at the levels of junior college, polytechnics and university was 45.5 percent, 73.7 percent, and 88.9 percent respectively, whereas the probability of success for those who had received secondary or primary education was only 27.9 percent and 13 percent respectively. The pattern is clear: the higher the educational attainment, the greater the probability of upward mobility.

Similarly, education has contributed to the upward mobility of a sizable proportion of Malay respondents as well. For the Malay working respondents whose parents belonged to the “blue collar” working class, 22 percent of them had higher income occupations.

While education helps people in the lower classes to move up, it works to prevent people in the upper and middle classes from moving down. Among the working adult respondents, for those who had a polytechnics diploma or a university degree and whose parents belonged to the upper class division, the possibility of their taking a lower class division job was 26.3 percent and 11.1 percent respectively. By

contrast, for those who had an educational qualification at the primary, secondary and junior college (senior high school) level, their probability of moving down was 69.7 percent, 44.8 percent, and 33.3 percent respectively. The relationship between education and downward mobility at the individual level is also clear: the higher the educational attainment, the lower the risk of downward mobility¹¹.

These findings support the two explicit arguments of Sub-Model III and therefore, also support its two implicit claims.

Conclusion

The central concern of this paper is to develop a symbolic interactionist model on social stratification from the viewpoint of educational attainment. I constructed this model on the basis of Blumer's action theory within Mead's philosophical framework of dual determinism. I started the project with a revision of Blumer's theory in the light of Mead's dual determinism to develop a general model on social emergence (including social structure such as social stratification). Then I adapted the general model to the research area of social stratification and deduced an applied model to explain the social distribution of educational attainment and its impact on the reproduction and/or change of social stratification. Finally, I took Singapore as an empirical case to test the validity and explanatory strengths of this applied model, using a quantitative approach.

The applied model consists of three sub-models. Sub-model I accounts for learning achievement in terms of four categories of factors: (1) pre-existing contextual and agentic conditions relevant to educational attainment; (2) interaction between the actor (student) and his environment on the basis of these pre-existing conditions (including the actor's various forms of potential capital); (3) intermediate mediating factors emerging in the process of this interaction such as perception/meaning, emotion, and situational power in use; and (4) action (learning and learning-related behavior) that takes place under the influence of (1) to (3). Each category is perceived as having an independent effect on learning achievement and therefore none of them can fundamentally be reduced to any other category. Sub-model II treats the social distribution of education as an aggregate effect of students' educational attainment specific to each relevant social dimension such as ethnicity and social class. Thus, it explains the unequal social distribution of educational attainment primarily in terms of the differential social distribution of the four

categories of conditions that affect individuals' learning achievement in favor of the more privileged social categories. Sub-model III regards education-related social stratification as the logical consequences of using differential educational attainment as capital to compete for socio-economic status under certain life conditions. As such, it accounts for the reproduction and change of education-related social stratification in terms of the "imperfect" unequal social distribution of educational attainment.

In this applied model, individuals' educational attainment, the social distribution of educational attainment and education-related social stratification are regarded as three distinct forms of social emergence. The second and third forms are progressively built on the first form, which in turn depends on a complex process of power-based, perception-guided symbolic interaction under specific pre-existing conditions – a process of dual determinism.

The empirical test had to be moderate. It was basically used to verify whether each of the four hypothetical explanatory categories specified in Sub-Model I contributes to these three forms of social emergence as well as to find out the comparative explanatory strengths of the applied model. The results of the verification are positive.

Several clarifications are in order. First, this paper, while emphasizing the crucial impact of education on social stratification, has no intention to reduce research on social stratification to the single dimension of education. Second, in the dimension of education itself, this study has only investigated a particular aspect, namely the unequal social distribution of educational attainment and its impact on social stratification. It is necessary to study the other major aspects as well, if we wish to acquire a comprehensive understanding of the relationship between education and social stratification.

Third, the applied model deduced in the paper is more comprehensive than what has been covered in the empirical testing. The testing is illustrative rather than exhaustive. It is instrumental only in the sense that its results support the basic claims of the applied model in a general sense. Many of the specific conditions belonging to the four hypothetical explanatory categories specified in Sub-Model I have been omitted from the testing – either for the benefit of analytical manageability or because of the nature of the survey. I have to reiterate at this point that some of the omitted conditions are actually very crucial in shaping the unequal social distribution of

education and education-related social stratification. These conditions include societal factors that define the rule of the game and that form the framework within which those factors that directly affect learning achievement (see Tables 3 and 4) operate. In the case of Singapore, this kind of “framing” conditions consists of its meritocratic system, its political and legal systems that support it, and so on. Since the operation of the verified factors depends on these “framing” conditions, the latter should be regarded as determinants of education-related social stratification as well, that is, as part of the category of pre-existing contextual conditions specified in the applied model. The importance of these framing conditions can be tested and demonstrated through special cross-societal comparison on the basis of the same applied model. In other words, the applied model does not adopt a “substantialist”, “atomistic” mode in Bourdieu’s (1977:487; 1989:15,19) sense in which the researcher is excited by the “tree” while losing sight of the “wood”. Therefore, it should not be interpreted as such, let alone the general model on action and social emergence, which arguably may be used as a useful tool for studying all aspects of education-related social stratification and social stratification in general.

Notes

¹ These two phases pertain to education-based competition for the existing privileges (power, wealth, prestige, etc) in a society. It is a “pie-sharing” game. Education can also contribute to the production of the pie itself, including its “nutrition, taste” and size. In this pie-producing game, education as human capital (Drucker 1959; Schultz 1961) helps to promote technological and economic development, which in turn will generate a decisive effect on the occupational structure and the subsequent social structure in a given society (Lenski 1976, Chang 1995). For example, technology and economy determines the optimal proportional size of the managerial and professional positions in each society in the contemporary world; this optimal size will roughly determine at the societal level, how many people in the labor force can expect to take managerial and professional positions and consequently acquire or maintain a privileged class membership. The pie-sharing processes intervene at a different level – to determine who gets the privilege and how much one may obtain, if at all; they do not directly contribute to the production of the pie. The social processes involved at the level of “pie-production” can be studied as a particular aspect of education-related social stratification; this sort of research can also be conducted using an applied model deduced from the general model on social emergence developed in this paper.

² A favorite example from Mead (1962:198, 329-330) is grass becoming food for an ox (emergence) when it comes in contact with the latter (interaction). The nature of the emergent in this case (grass as food) is determined by the nature of the interrelations between the ox (an organism) and the grass (something in its environment), that is, first by the nature of the particular pattern of the interaction between the two parties, for example, interaction characterized by the ox’s chewing and digestion of the grass; and second, by the nature of the respective pre-existing conditions of the ox and the grass that enable the interaction to occur, say, unlike stones, the grass contains something that is edible and consumable to the ox and the ox in turn must have some apparatus that can be used for the consumption. Therefore, both the ox (organism) and the grass (environment) have a determining effect on the fact that the grass has become food for the ox (emergence).

When analyzing the life processes of human beings, Mead adds another category of factors that affects the nature of an emergent – factors that emerge in the process of interaction earlier than a certain emergent that is supposed to be explained. This third category includes meaning, self, attitude, emergent reflective intelligence (mind), and so on.

³ The concept of “power”, although not explicit in Mead’s terminology, is implied in many aspects of his analysis of the actor’s resources such as his role-taking ability, reflective intelligence, and past experiences (cf. Hewitt 2000:167).

⁴ In dealing with “social interaction”, Blumer stresses its observable dimension – in contrast with Mead’s interest in its invisible dimension in the inner world. And he is more explicit than Mead in taking perception/meaning as an “independent variable” capable of affecting and explaining action. He notes, for example, “... human beings act toward things on the basis of the meanings that the things have for them (Blumer 1969:2).”

⁵ Blumer (1969:5) distinguishes between interpretation and meaning. In this paper I use “perception/meaning” to refer to Blumer’s “interpretation” as well as “meaning”. I also use it to refer to part of the implications of Mead’s concept of “role-taking”.

⁶ An enormous amount of symbolic interactionist literature is theoretically relevant to the construction of this model. This is not the place to review it. Suffice it to say that the insights embodied in this literature can be borrowed to enrich all of the four categories of factors in the model that are hypothesized as being capable of explaining social emergence.

⁷ Another applied model can be deduced from the general model on social emergence to study education-related social stratification (or social stratification in general) at the level of status attainment.

⁸ This selection is based on the section on operationalization and measurement.

⁹ “Lower class division” covers lower classes and lower middle classes, including manual laborers, semi-skilled and skilled laborers, fishermen, waiters and waitresses, salespersons, clerks, and the self-employed.

¹⁰ “Imperfect” means not by one hundred percent.

¹¹ From the viewpoint of symbolic interactionism, the use of educational attainment as capital to strive for upward mobility or preventing downward mobility is a process of action under the guidance of perception/meaning. There is no perfect correlation between educational attainment and income or between educational attainment and occupation. This reality results in part from the variation in perception on the meaning of educational qualification. For example, for some of the 42 people I interviewed, a university degree is a special kind of capital that must be used to secure a high-paying job; for some others it is a good possibility that one may use it to obtain a high-paying job but it is “OK” to have a middle- or lower-middle-range job. And for 5 male and 3 female interviewees, a university degree does not have to be tied to employment; in their view, a woman should feel happy if she gets a good husband who loves her and who is capable, trustworthy and “earns big bucks stably”. All of the interviewees who had a university degree who held the first view became employers, managers or professionals. About 80 percent of those who had a degree but adopted the second view had relatively high-paying jobs. One of the ladies who favored the third view and had a university degree became a full-time housewife. Difference in perceiving the implications of an “A-level” or “O-level” certificate led to diversity of occupational attainment as well among those who possess the same kind of certificate. Those of my interviewees who believed they could achieve more than their certificates apparently promised according to Singapore’s general societal expectations spent more time and energy on seeking opportunities of development than those who did not perceive their certificates this way. A much larger proportion of the first category became employers or managers.

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