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English summaries

Berit Carlstedt, 2002: Cognitive ability, school performance, and choice of education/ Begåvning, utbildningsval och utbildningsresultat/. **Pedagogisk Forskning i Sverige, Vol 7, No 3, pp 168–175. Stockholm. ISSN 1401-6788.**

The theme of the present special issue is »Individual qualifications for education». One important such qualification is cognitive ability. In my article I have chosen to relate cognitive ability assessed at the age of 18 to school marks from the ninth grade of compulsory school and to how boys choose tracks in upper secondary education. I present two analyses based on data from the longitudinal research project »Evaluation through follow-up» that has been conducted at the Department of Education, Göteborg University.

Cognitive ability was assessed at the enlistment to compulsory military service using the Swedish Enlistment Battery (SEB). The SEB consists of ten tests of varying content, including problem solving, spatial and verbal items. Inspired by the theoretical and empirical work of Gustafsson (1984, 1988, Gustafsson & Balke 1993) the evaluation of the test results was done according to a hierarchical model of intelligence with three orthogonal factors. A general factor (G) influenced all ten tests, but particularly the problem solving tests. A general visualization (spatial; Gv') factor and a Crystallized intelligence (verbal; Gc') factor were assessed from the residual (remaining) variance. By measuring these three ability factors the SEB was expected to provide a test with high construct and predictive validity (Mårdberg & Carlstedt 1998).

A total of 110 592 boys born in 1977 and 1978 had school marks from grade nine and test results from SEB. Andersson (1998) has presented a hierarchical model of the school marks for another large sample of boys and girls. Her model was tested on the 17 school marks of the present subjects and was found to fit the data well. The factors were a general school-achievement factor influencing all marks, and two domain specific achievement factors in mathematics-science and language. A non-verbal factor and an aesthetic domestic factor related to a broader range of subject matters were also identified. In contrast to Andersson, in the present data with exclusively boys a spatial-practical factor related to crafts, art, and technology could also be identified.

When the cognitive factors were related to the school achievement factors, a pattern of correlations much like the one reported by Gustafsson, et al. (1993) emerged. General school-achievement had a high correlation with the G factor and a somewhat lower correlation with the Gc' factor. The mathematics-science factor was positively related to G and Gv', and the language factor was positively related to G and Gc'. The non-verbal factor was negatively related to

the Gc' factor. The spatial-practical factor was related only to the Gv' factor, strongly and positively.

The main question of the second study was whether and how the profile over the three cognitive ability factors of SEB differed between groups of boys who had chosen different tracks in upper secondary school. Both cognitive ability data and upper secondary school data were available for approximately 51 000 boys. Nineteen tracks contained a sufficient number of subjects to enable an analysis. A multiple-group model with the population data as comparison group (zero value) estimated how the means of the ability factors G, Gc', and Gv' for each one of the upper secondary school tracks differed in number of standard deviations from zero. All the tracks can be compared directly concerning the general factor. The results are unambiguous – the theoretical tracks show the highest results and the practical tracks the lowest. To enable a comparison of the residual factors (Gc' and Gv') tracks with similar levels of G must be focused. Some such comparisons are outlined:

(i) *Science and Technical tracks* – both perform about one standard deviation above the mean of the population on G, but for the rest of the profile the Science track is superior concerning the Gc' factor and the technical is better on the Gv' factor.

(ii) *Media and Social science tracks* are similar on the G factor (about 0.3 standard deviations above the population), both are strong on the Gc' factor, but the Media group is clearly better on the Gv' factor. This could be an effect of the particular focus of the Media track.

(iii) *Humanistic and Electric/tele-technique tracks* show average results on G but display very dissimilar profiles in other respects. The Humanistic group is prominent on the Gc' factor and the Technical on the Gv' factor.

(iv) *Wood-work and Caring tracks* are two tracks that show below average results on G. The Wood-work group is low on Gc' and high on Gv', while Caring has an opposite profile where verbal ability dominates over the spatial.

These results indicate that boys tend to choose upper secondary school enrichments based on their cognitive ability. Firstly, higher general intelligence corresponds to the choice of a theoretical track and lower general intelligence to the choice of a practical track. The subjects with a strong verbal profile tend also to be found on the tracks with verbal themes, and the subjects with a more spatial profile on the technical tracks, regardless of whether these tracks are theoretical or practical.

The assessment of cognitive ability was made during the second year in upper secondary school. Thus, since both the grade nine marks of compulsory school and the choice of track in upper secondary school preceded the assessment of cognitive ability there is no genuine prediction here from ability to the school variables. It is reasonable to suppose that the education given within the different tracks and the different spare-time activities following from the interests of the subjects have resulted in experiences that may influence the test results.

Taken together, the reported associations between cognitive ability, compulsory school marks and choice of track in upper secondary school can be regarded as signs of differentiation. Starting from the basic prerequisites of the individual, his cognitive ability and the experiences he gains will develop a

capacity profile, partly reflected in school marks, which leads to a differentiation in choice of track for the secondary education. These steps of self-selection will certainly result in an even greater differentiation in knowledge and ability among the subjects.

Kjell Härnqvist, 2002: The spoken language in a longitudinal perspective/ Det talade språket i ett longitudinellt perspektiv/**. Pedagogisk Forskning i Sverige, Vol 7, No 3, pp 176–182. Stockholm. ISSN 1401-6788.**

Personal interviews about education and career with 415 Swedish men and women (age 34) forms the basis of a speech corpus with 1.8 million words. The vocabulary is described by means of two sets of variables. One is based on the number of tokens and types, word length, and sectioning of the running text. The other set divides the corpus into parts of speech. Both sets of variables are related to a number of background variables such as gender, socioeconomic status, education, and indicators of verbal proficiency at age 13 and 32. This possibility to study the relationship between adult speech vocabulary and a broad set of respondent characteristics is a rather unique feature of the corpus.

On average, male respondents used more words (tokens), more different words (types), more single types, and more long words (>10 letters) than female respondents. The gender differences varied between 0.31 and 0.43 of the standard deviations which seems quite substantial. The male dominance here, as well as in a large number of foreign studies, is typical for formal speech situations and evidently also for structured interviews.

When the respondents were classified according to their parents, socio-economic status, the differences in these same variables were much stronger between the high status and a middle status group (standardized difference from 0.50 to 0.57) than between the middle group and the manual workers (range 0.08 to 0.17). Much of these differences are likely to be an effect of different levels of education among the parents.

When the respondents were classified according to their own education, however, the main difference occurs between compulsory only and upper-secondary education (range 0.30 to 0.67). The difference between upper-secondary and higher education also was quite substantial but smaller (range 0.27 to 0.41). Among the vocabulary variables studied the number of tokens distinguished least and the number of long words most in all comparisons.

The most interesting findings were made when the corpus was divided according to parts of speech (word classes), and their incidence was related to the respondents' verbal skills as measured in school at age 13 and through self-assessed skills in Swedish and English at age 32. The frequencies of five word classes were positively related to verbal skills at both 13 and 32 years of age, and five were negatively related. The positively correlated word classes were Substantives, Adjectives, Conjunctions, Determiners, and Prepositions. The negatively correlated were Adverbs, Pronouns, Interjections, Verbs, and Particles. The correlations were somewhat higher with verbal skills at age 32

(0.47 and -0.46) than with school measures at age 13 (0.38 and -0.37) but still remarkably high.

Finally path analyses were made following the individuals over time, from their socioeconomic status and school at 13, through attained educational level and verbal skills at 32, to percent words in ›positive› word classes at age 34. The measures taken together had a multiple correlation with the frequency of ›positive› word classes of 0.56 for men and 0.59 for women. There was no direct relation between the parents' socioeconomic status and adult speech proficiency. The most important link in the whole chain was between verbal skills at age 13 and education attained at age 32.

Ingemar Emanuelsson & Bengt Persson, 2002: Differentiation, special pedagogics and equality: A study of school careers among pupils with difficulties/ Differentiering, specialpedagogik och likvärdighet: En studie av skolkarriärer bland elever med svårigheter**/. Pedagogisk Forskning i Sverige, Vol 7, No 3, pp 183–199. Stockholm. ISSN 1401-6788.**

The main aims in this project are to study and analyse if and in what ways the school and learning careers of students with different kinds of special education support during their compulsory schooling differ from those judged not in need of such support. Especially, choice of study programmes, success in upper secondary schooling, and school grades in compulsory school are being focused on and related to further possibilities. Development of self concepts and patterns of post secondary school careers as well as drop out problems are of special interest. Determined needs of special education support are related to individual student characteristics as well as curricular and teaching needs of differentiation and educational demands. In such respects the school needs of special education support are related to individual needs. Consequences from one or the other will be analysed.

The data base used is a longitudinal follow up of a representative sample of approximately 8 000 students in Sweden, born in 1982 and followed from school start at the age of seven up through post secondary school (gymnasieskolan) to the age of 19. The comprehensive data base comprises repeatedly collected information from school registers – school marks, national test results, special education support given, subject and programme choices etc. – answers to administrated questionnaire items related to different aspects of the self concept and school experiences of the students. Also available is information on home background and parent opinions as well as results from four ability tests at the age of 13.

The main analysis methods used are correlation and regression analyses in combination with Structural Equation Modelling (SEM). The methods make it possible to identify latent variables (factors). Such factors might explain differences between various groups of students.

Some tentative results are presented. The distribution and allocation of special education resources are found more clearly related to school and teaching needs for differentiation and for making groups less heterogeneous

than to effectively meeting students' needs, according to different kinds of individual characteristics and preconditions. This is also mirrored in relation to curricular demands as documented in e.g. school marks. Amount of as well as kind of special education support given to students is also related to self concepts and self confidence as well as further possibilities for students to choose and succeed in different post secondary school programmes.

Organisation models for special education support seem to be of certain importance here. Special needs students, especially from special classes or otherwise segregated groups, are over-represented among dropouts and in low status programme groups. In conclusion the results could be summarised by saying, that most of the individual student education career possibilities are determined very early, in most cases not later than the sixth year of compulsory school. This seems to be most clear for students judged to be in or to cause difficulties and therefore in need of special education support.

Results from the study are briefly discussed and related to similar results from follow up studies of earlier Swedish cohorts from the 1960's and onwards. Such patterns are further related to the overruling aims in school policy documents, like development of inclusive education in »a school for all». Some concluding suggestions for more proactive roles for special education support teachers in school and teaching development are discussed. Challenges from special education knowledge to get closer to a fully inclusive education in school are stressed, too.

Erik Wallin, 2002: Equality, equivalence and individuals in schooling/ Jämlikhet, likvärdighet och individer i undervisning/**. Pedagogisk Forskning i Sverige, Vol 7, No 3, pp 200–209. Stockholm. ISSN 1401-6788.**

During recent years the author has been engagd in a local school development activity comprising all schools in a whole community. The guiding concept has been a simultaneous integration of physical environment, work organisation and pedagogy. A basic idea is that pupils at school are met according to individual development plans, an idea that, taken to its extremes, brings issues of ethics and morale in terms of a potential tension between individual interests and common good.

The author has felt obliged to try to find out whether and/or in what terms it is possible to formulate a rational for the development concept applied. In short the issue at stake is how far differential treatments according to pupils' interests and needs can be taken without violating the common values and interests.

In his discussion of his issue the author notes how equality (mostly as fairness) as a basic concept in the Swedish school has, during the last two decades obtained a changed emphasis from equal opportunity to equivalence of offerings in relation to individual needs and individually defined quality of life. Thus, there is a political and societal support for the idea guiding the development project referred to. But still, and also just for that reason, there is ground to discuss the problem stated of individual versus societal interests.

Taking the change of rhetoric and the importance, for the whole public sector, of the concept of equality, the author notes the distinction developped between equality as an institutional concept and equivalence, using individual needs and interests as criteria, as an organisational concept. In the public discourse the latter meaning has won acceptance as the school system has been more diversified. (As a matter of fact, this is the very basic problem of the issue treated in the article and the development project used as an example is just an illustration.)

To handle the issue the author makes a distinction between equivalence as form and of content. The former means treating all pupils in school with consideration and respect in terms of recognising their equal value and their potential for using what the school makes aviable to their best ability, irrespective of the differences between them. In illustrating the development project, this relates to the pupils' individual development plans. These plans are formulated by pupils, parents and the school together and recognises that the pupils are able to influence what can promote their own development for their future lives.

One aspect of the issue is that no discrimination is allowed in terms of differential resource allocation. Differences of results (between e.g. boys and girls) must not violate the demand for respect and consideration. This is still a matter of form, i.e. of how the school should work. The risk for extreme individualisation as individual work and work in isolation is counteracted by a different form of cooperative work but still more by what is implied by the aspect of equivalence of content.

The school should, by definition, give the pupils basic resources needed to handle their lives and make their choices in the situation and in the political, economic and social structures where they will live. In this matter school is not neutral to the interests of the pupils here and now. The documents stating the value base and the subject contents of the school define the arena of content for the school's work and by this define what are considered basic resources. The concept of equivalence relates to to this arena. The equivalence is related to the individual but anchored in common interests and needs.

It is not enough to apply moral subjectivism or relativism saying that »I am the measure» or that any life project is justified. Instead, if the pupils choices and their chosen development is to be supported by the school, the options must have meaning. This meaning can only be judged against their own identity and against the values and norms, needs and demands in the society they live in and will be living in. The individual's self realisation has to be related to a common frame of reference: Man is a dialogic creature (Taylor).

In the article the role of the teacher to, in dialogue with the pupils, embody and express the common interests is emphasised. This means that teaching, instruction and other school work as dialogue might be a dialogue between equals but not »on equal conditions». The relation between teacher and pupil is an assymetric relation. This is part of the definition of teacher and teaching and also one expression of school as a place where the relation between individual and society is highlighted.

The article ends in stating that differential treatment and differences between individuals as a result of the form and content of school work is acceptable if the differences are reconcilable with common values and needs. But it is also stated that equality as a fundamental value rooted in everyone's equal value is superordinated to both freedom of choice and equivalence.

Robert Erikson & Jan O. Jonsson, 2002: Why does the socially uneven recruitment remain/ Varför består den sociala snedrekryteringen/? Pedagogisk Forskning i Sverige, Vol 7, No 3, pp 210–217. Stockholm. ISSN 1401-6788.

Educational attainment differs considerably among children from different social classes in all industrial societies and the association between social origin and educational attainment changes very little over time. An answer to why this association prevails, given early in the literature, can be sought in a primary effect related to social differences in school performance and a secondary effect of choices made at different transition points in the educational system. Social differences in educational performance and in educational choice account for roughly equally large proportions of such inequality. The former is assumed mostly to follow from the transmittance of intellectual, verbal and material resources from parents to children while the latter could be seen as following from rational choices made by children and parents in different life situations.

To interpret the different educational choices made by children of different social origins but with similar school marks we propose a simple decision model. In this model we assume that an individual has a number of choice alternatives – in our case, educational routes – and wants to maximise her »utility» (U). For each alternative she estimates the benefits (B) that will result from it, the costs (C) associated with it, and she also considers the probability of success (P) connected with it. Benefits are all kinds of rewards and advantages expected to come from choosing a certain alternative, monetary and non-monetary, immediate and long-term (though individuals are assumed to act on the present value of all benefits). Costs are, in the same way, of various kinds, including things you have to forfeit and incomes foregone. This means that, for example, the amount of time and effort one has to exert in succeeding in a given educational programme is a cost. Benefits and costs must be measured in the same unit, which is psychological rather than economic (though economic considerations are crucial). To simplify the model, we make the assumption that if the individual fails to complete her studies benefits become zero, while the costs remain at C. Then we have, for alternative i,

$$U_i = P_iB_i - C_i$$

which is the expected utility of alternative i.

Expressed in words, an individual is assumed to compare the benefits from and costs of different educational alternatives and thereby weigh the benefits with the risk of not being able to complete the studies (in which case she will not reap any benefits, but still have to cover the costs). The individual makes estimates of the utility of all alternatives, including leaving school, and chooses the alternative that maximises U. Obviously, no one is capable of assessing the exact values of P, B, and C. It is, however, sufficient that the individual manages to rank order the different alternatives.

The choice is restricted by two conditions. First, a choice alternative i is considered only if it belongs to an individual's feasible set of options (F):

$$i \in F$$

Second, risk aversion should be taken into account. Let the risk r an individual takes by choosing alternative i be

$$r_i = (1-P_i)C$$

and let R be the highest risk the individual is willing to accept. The choice is then restricted by

$$R \geq r_i$$

The restrictions take different forms. If, for instance, a student has poor grades, some educational routes may be closed. There may also be other limits on admission, such as physical demands for becoming an airline pilot. Additionally, there may be levels of (1-P) or of C at which an individual rules out the alternative i, regardless of the actual risk (i.e., of the value of their product). Furthermore, the combination of B, P, and C may be important. Someone who is risk averse may, given U, prefer the combination of high P and low B or low B and low C to the opposite.

Thus, for understanding the nature of educational inequality, it is fundamental to see that it is created partly because children of higher classes do better than other children in school and partly because they also make more »academic» educational choices, given the same level of educational performance. The former mechanism is probably chiefly based in the subtle transmission of knowledge, skills, and values during early socialisation. The second, we think, is based on differences in economic, educational, cultural, and social resources that impinge on all educational decisions made by an individual.

While an exposition of primary and secondary effects may be informative with regard to why there is an association between social origins and educational attainment, it does not in itself provide an understanding of why this association prevails or changes very slowly. Despite the fact that educational reform, and other political changes, may promote equalisation, many of the mechanisms we have distinguished above explain why educational inequality is deeply entrenched.

We regard it as probable that class differences in the interaction between parents and children will remain and educational differences in the parental generation will affect their children's probability of success, even at given levels of achievement. The perceived benefits of education will generally be greater for children of higher social status. Differences in income and wealth will lead to differences in costs for taking higher education; and risk aversion will furthermore tend to favour children from more affluent backgrounds. The goal of equality of opportunity therefore seems impossible to reach as there is considerable inertia in the stratification system. Nevertheless, the Swedish experience verifies that educational equalisation is conceivable under favourable conditions, and in Sweden, like in other nations, further equalisation is indeed possible.

Urban Dahllöf, 2002: Needles' eyes, steering groups or a frame system adapted to individual needs. On unfulfilled reform intentions and curriculum alternatives in Swedish upper secondary schools/ Nålsögon, styrgrupper eller individanpassat ramsystem? Om ofullbordade reformtankar och läroplansalternativ i gymnasieskolan/**. Pedagogisk Forskning i Sverige, Vol 7, No 3, pp 218–232. Stockholm. ISSN 1401-6788.**

The great majority of school-leavers from the Swedish compulsory nine-year comprehensive schools nowadays want to enter the upper secondary school. However, even though there is a relatively even balance between the number of school leavers and the total number of study places at the upper secondary school level, there is often a mismatch between the number of study places on different programmes and the number of applicants having a certain programme as their first hand choice. This applies both to academic and vocational tracks. There is also evidence that students who enter programmes far from the top of their priority list will be less successful than those whose first hand choice has been satisfied.

Another particularly severe and at the same time probably unnecessary difficulty is caused by the structure of the secondary school curriculum itself, since it expects every student to reach the basic demands for general eligibility to college in terms of a satisfactory level of achievement in Swedish, English and Mathematics and to do that within a uniform amount of teaching hours. Thus, the teaching time-frame for that qualification is the same for everybody irrespective of the variations in the students' starting points. It is no wonder, then, hat particularly more practically oriented students meet great difficulties, complaining about hard study conditions and quite often numerous failures.

As a potential remedy for these problems, the author draws attention to some curriculum principles that were recommended by the Swedish 1976 Upper Secondary School Committee (SOU 1981:96) 20 years ago but were never fully implemented due to certain specific administrative and financial problems. In contrast to the present system, the 1981 proposal tried to base its recommendations on fundamental research in education about the development of the students' intellectual abilities and interests as well as on available evidence of needs for instructional time-variations, development of independent study habits and greater co-influence for the students on matters of instructional pacing and planning.

With respect to the development characteristics of intellectual skills and individual interest patterns, the 1976 committee had good reasons to build upon a large representative study by Härnqvist (1960) on inter- and intraindividual differences in intellectual skills and interest patterns among males and females. Also Härnqvist's (1958) earlier study of the reserve of talent played an important role. Further, a number of teacher reports (Ekholm 1980) gave support to the need for greater time-variations between students at different levels of achievement in certain subjects such as English and other modern languages. These reports fitted growing evidence from research on class-composition, steering groups and instructional pacing, initiated by Dahllöf (1967, 1971) on the comprehensive school level and further developed by Lundgren (1972, 1979) on new data from secondary schools. More-over, students' attitudes towards working forms and various programmes had been

analyzed by Härnqvist and Grahm (1963) on academic tracks as well as by Axelsson (1977) on vocational programmes.

In an earlier reform step during the mid-sixties, an effort had been made to introduce a systematic stepwise programme for the training of independent study habits based on recommendations both from universities, industry and public service (Dahllöf 1963) and from the students themselves (Härnqvist & Grahm 1963). But that programme had never been given a fair chance according to an evaluation by Richardson and Siöö (1970), not least because of a combination of a labour market conflict and lacking support from the national school authorities (Dahllöf 1987).

The final report from the 1976 committee (SOU 1981:96) contained three sets of recommendations. The first of them tried to adapt the system to the characteristics of growth and to the development of interests instead of forcing the individuals to adapt to a number of preconceived system details. Thus, the stiff teaching system was transformed into a stepwise number of choices during the first secondary school year, starting with a limited number of broad interest areas and ending up with the choice between a longer academic programme and a shorter vocationally oriented one for the second year. The longer programme was intended to lead to the general eligibility for college entrance, but those who after having taken the shorter programme would like to go to college, could for that purpose add an optional third year leading to the same entrance qualification when they had gained experience from the training in more specific practical subjects.

The second recommendation concerned varying the number of teaching hours in foreign languages should be varied with respect to he students' level of achievement. Those with high marks in English in the comprehensive school should be allowed to follow a more condensed form of syllabus in order to make it possible for them to devote more time to other languages. With respect to the students' study motivation, the committee regarded it as important that new subjects, specific for the specific interest areas should be introduced early in order to promote a certain degree of identity making it easier and more meaningful for the students to see the relevance of more general subjects like history and civics when the students had acquired some degree of professional or vocational identity.

The third suggestion concerned widening the students' responsibility for planning their own studies. For that purpose, self-managing groups of 6–8 students were suggested and resources were to be allocated to the teachers' guidance of the independent work by the students. Further, the old system of several short lessons were to be replaced by a reduced number of subjects taught every day in favour of longer periods.

It goes without saying that it would not make sense to try to launch the twenty year old plan discussed here as a realistic alternative to the present situation. Nevertheless, it could be used as an example of a deliberate effort to adapt the upper secondary school system to some basic characteristics of the target groups. Even though the 1981 plan was never fully implemented, some of its curriculum components may still be able to serve a constructive purpose.

Ulf P. Lundgren, 2002: Educational research and education reformes /Utbildningsforskning och utbildningsreformer/. **Pedagogisk Forskning i Sverige, Vol 7, No 3, pp 233–243. Stockholm. ISSN 1401-6788.**

This article contains a personal reflection on how education as a science has developed during the 20th century. The perspective applied is the relation between educational research and policymaking. From this perspective two periods are discussed. One is the research carried out in relation to the reforms of the primary and secondary levels in the after war period. The impact of research on policy making was rather straightforward. The second period is the reconstruction of the educational system at the end of the century, when the research asked for had to be theoretical in nature and deliver answers on possible consequences of various and different policy decisions. Rather little of that kind of research exists. According to my view educational research has moved away from being policy oriented.