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SOME DATA TO GROWTH OF HUNGARIAN YOUTH IN FUNCTION OF SOCIO-ECONOMIC FACTORS

ABSTRACT — Prompted also by sociologic problems, the authors organized and carried out a nationwide representative cross-sectional growth study in the early 1980s in Hungary. Their sample contained 1.5 per cent of the 3—18 year-old healthy boys and girls (N = 39,035). Based on their detailed anthropometric study (18 body measurements) the authors elaborated and already published the first Hungarian national growth standards. It can be stated that secular trend in Hungary still exists. The authors give a sketch on variability of growth caused by different socio-economic factors influencing growth and development of children like educational level and profession of the parents. They point out the importance of the family-background in this relation.

KEY WORDS: Growth and development — Socio-economic factors — Educational level of the parents — Profession of the parents — Hungarian nation-wide representative growth study.

INTRODUCTION

In human biology several studies deal with differences which occur also in anthropometric traits in the different social strata. Among these researches growth studies are in an outstanding place. The differences of mean height and weight in children belonging to different socioeconomic strata occur in almost all developed as well as in developing countries, and also in Hungary. Possible reasons of such differences according to social strata can be genetic and environemntal ones. The growth pattern and its anthropometric characteristics in children—as it is well known—are genetically determined. These genetic endowments, however, can better manifest themselves under better environmental circumstances. Human biological researches confirmed that the decrease of differences in living standards in the different social strata results also in decrease in the anthropometric characteristics of these different groups. Children in upper social classes are higher and heavier also in early childhood compared to their counterparts belonging to the lower classes. Rietz described already in 1906 a phenomenon as "hysteroplasia": children of upper social classes precede in growth and maturation children of lower social classes.

In Hungary Darányi and Jankovich (1935) were the first ones to study this problem, and they found significant differences in growth and development of children belonging to different social classes. Further Hungarian studies confirmed these findings, however, the human biology and public health in Hungary missed a systematic, representative study analyzing this problem.

In the framework of our nation-wide growth study we managed to find time and occasion for such a special analysis.

MATERIAL AND METHODS

Endorsed by the Hungarian Government, the national sampling was based on the 1980 national census. The sample was regionally stratified and involved over 40.000 healthy boys and girls with cohort sizes ranging from 830 to 1730 over the age

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range 3—18 years. Those suffering from serious anomalies or congenital defects were excluded. Children with incomplete data-set were also excluded. The sampling investigated 39.035 boys and girls and this sum represents 1.5 per cent of the Hungarian youth in question. Stratification of the sample was made according to size of settlements. All geographical regions, the whole territory of Hungary were visited. The industrial and/or agricultural characters of the counties as well as urban and rural differences were taken into consideration. Groups of national minorities were not projected to look especially but neither were these groups omitted. The actual choice of the settlements and its institutions and schools was made by random selection from a national list (Pantó—Eiben 1984a). In total, cca forty thousand boys and girls from 350 pre-schools and schools from 113 communities were included in our sample.

The methods used were both human biological and sociological. The basic anthropometric programme contains 18 body measurements, and produces information about (1) children's growth status and age differences, (2) proportional changes, (3) changes in body composition, (4) changes in physique (somatotype components), and (5) maturation status, both age at oigarche and menarche, and—partly—skeletal age. In about 16 per cent of the sample, in the case of about 6,500 boys and girls the skeletal age according to the TW2 method was also assessed.

In addition to the anthropometric techniques, the field study team obtained data on the socio-economic background of the children's family, birth order, number of siblings in the household, education and occupation of the parents, type of schools the children had attended, and some estimate of the opportunities and availability of facilities for physical activity (Eiben—Pantó 1981).

All the measurements were taken by highly-experienced investigators. The full elaboration of the data is underway. An initial analysis of data from seven counties with Hungary's largest cities outside Budapest, cca 13,000 boys and girls, one third of the whole sample, serves to pilot the final analysis

PRELIMINARY FINDINGS

Based on this initial subsample, a number of preliminary conclusions appear warranted. We point out here that family background and socio-economic status determine children's growth and development and maturation more than those family-genetic endowments we could investigate. Paternal/maternal age, the child's place in the sibling-sequence, number of brothers and sisters—in this increasing effect's order—influence the growth process of children, but the differences in height according to these viewpoints are small. The educational level of the parents and their profession, i.e. cultural level and mode of life of the family, however, show significant differences also in biological development (Eiben—Pantó 1985, Pantó—Eiben 1984b).

RESULTS

Based on our analysis of the complete nation-wide representative sample, we give a short report here on the differences only of height in boys and girls according to the educational level and profession of parents. The distribution of our sample according to these two respects is shown in *Table I.*

1. *Educational level of parents*

The educational level of fathers and/or mothers as a respect of our analysis dissociate our sample remarkably. Sons of fathers with uncompleted basic education (i.e. "general" school) level are the shortest, sons of fathers with complete general school level are taller, sons of fathers with vocational training school level are more taller, sons of fathers with secondary school level are still taller, and sons of fathers with high school or university level are the tallest (*Fig. 1*). As higher is the fathers' educational level as taller are their sons. In this group also the pubertal growth spurt occurs earlier than in other groups of boys.

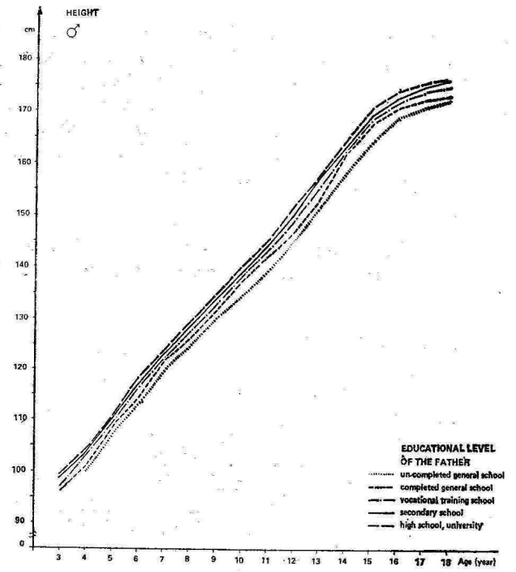

FIGURE 1. *Height of boys according to the educational level of the father.*

According to the educational level of the mothers, boys show a similar picture, and indeed, in sons of mothers with low educational level backwardness in growth and development is more evident (*Fig. 2*).

This pheanomenon in girls is more expressed, expecially in daughters of fathers and mothers with low educational level who are the shortest, and in daughters of fathers and mothers with university level who are the tallest, especially after puberty (*Figures 3 and 4*).

TABLE 1. *Distribution of the Hungarian boys and girls investigated according to the educational level and profession of their parents*

	Boys		Girls		Together	
	N	%	N	%	N	%
Educational level of the father						
no school	52	0.26	46	0.25	98	0.25
uncompleted general school	1 172	5.89	1 038	5.56	2 210	5.73
general school	4 331	21.76	4 101	21.96	8 432	21.85
vocational training school	6 815	34.23	6 298	33.72	13 113	33.99
secondary school	4 128	20.74	4 016	21.50	8 144	21.11
high school, university	3 409	17.12	3 177	17.01	6 586	17.07
	19 907		18 676		38 583	
Educational level of the mother						
no school	69	0.34	66	0.35	135	0.35
uncompleted general school	1 180	5.88	1 031	5.48	2 211	5.68
general school	7 225	35.99	6 750	35.85	13 975	35.93
vocational training school	3 193	15.91	3 016	16.02	6 209	15.96
secondary school	6 119	30.48	5 835	31.00	11 954	30.73
high school, university	2 289	11.40	2 127	11.30	4 416	11.35
	20 075		18 825		38 900	
Profession of the father						
physical worker in industry	7 371	37.19	6 872	36.96	14 243	37.08
physical worker in agriculture	2 878	14.52	2 648	14.24	5 526	14.39
other physical worker	3 700	18.67	3 581	19.26	7 281	18,95
non-physical worker	5 872	29.62	5 493	29.54	11 365	29.58
	19 821		18 594		38 415	
Profession of the mother						
physical worker in industry	3 956	19.79	3 626	19.32	7 582	19.57
physical worker in agriculture	1 695	8.48	1 480	7.89	3 175	8.19
other physical worker	6 510	32.56	6 253	33.33	12 763	32.93
non-physical worker	7 830	39.17	7 404	39.46	15 234	39.31
	19 991		18 763		38 754	

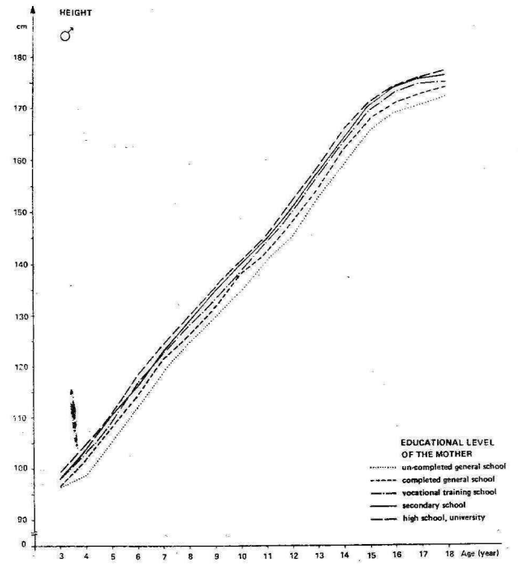

FIGURE 2. *Height of boys according to the educational level of the mother.*

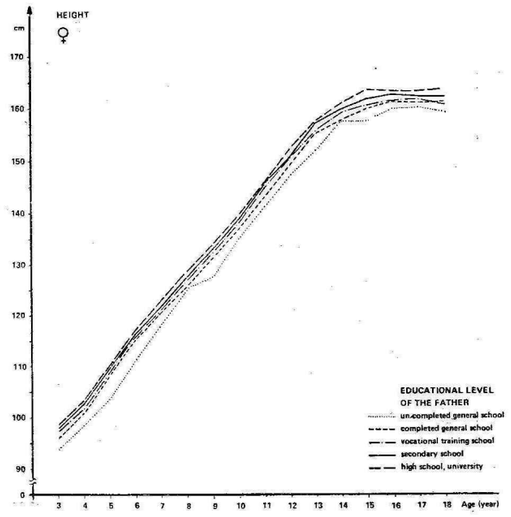

FIGURE 3. *Height of girls according to the educational level of the father.*

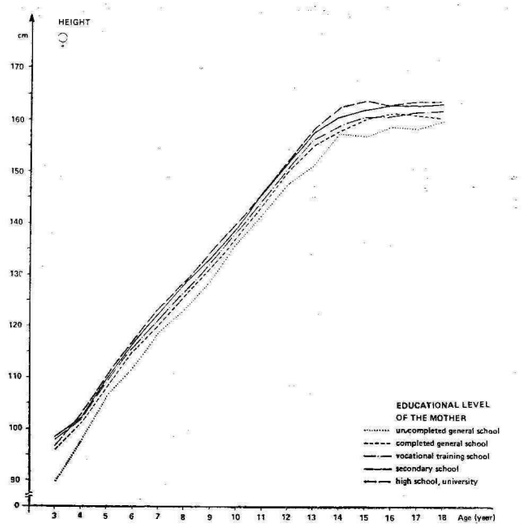

FIGURE 4. *Height of girls according to the educational level of the mother.*

2. *Profession of the parents*

The profession of the fathers and/or mothers is another respect in our analysis. The usual tendency here is that children of parents working in agriculture used to be the shortest, children of industrial physical workers are taller and the children of white collar parents are the tallest. This tendency can be observed also in the Hungarian youth. The sons of industrial and agricultural and other physical worker fathers show very small differences in height, however, sons of white collar fathers (or better said non-physical workers) are the tallest (*Fig. 5*).

According to the mothers' profession, the tendency is the same, but the sons of non-physical worker mothers tower above all the other groups of boys (*Fig. 6*).

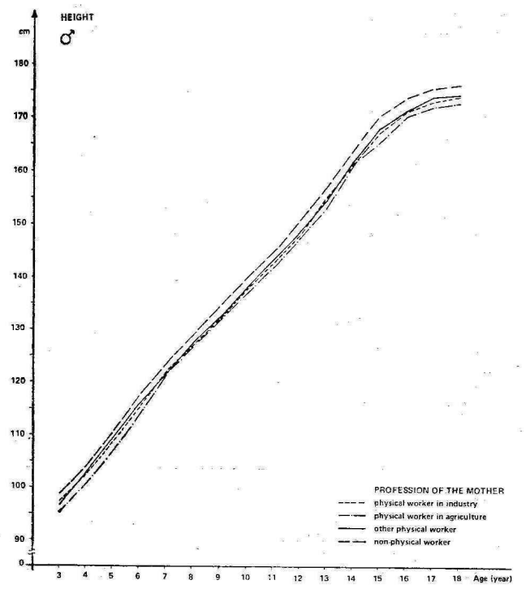

FIGURE 6. *Height of boys according to the profession of the mother.*

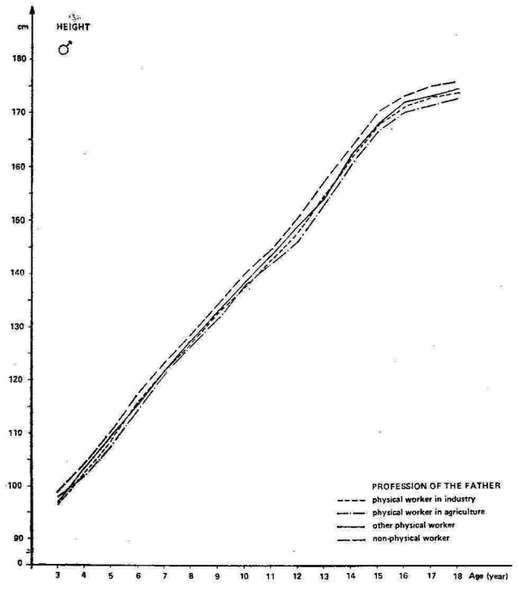

FIGURE 5. *Height of boys according to the profession of the father.*

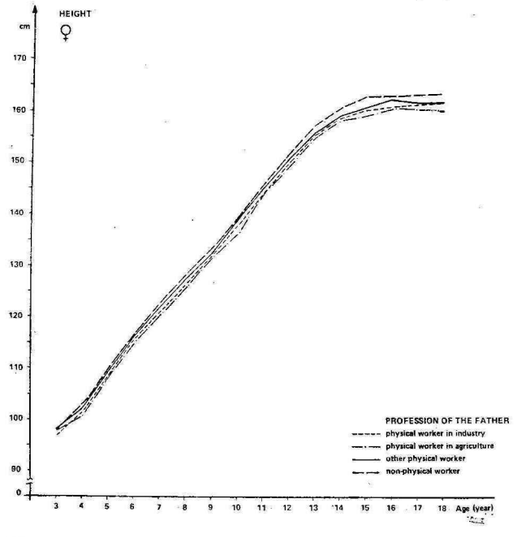

FIGURE 7. *Height of girls according to the profession of the father.*

In girls the tendency is again the same. Daughters of non-physical worker fathers are taller in all age-groups than daughters of physical worker fathers, and the differences increase during prepuberty and puberty (*Fig. 7*).

According to the mothers' profession the differences mentioned here are larger, and they are remarkable also in early childhood (*Fig. 8*).

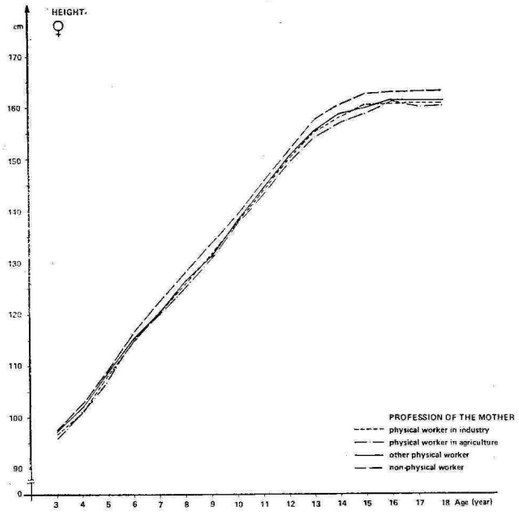

FIGURE 8. *Height of girls according to the profession of the mother.*

DISCUSSION

Most factors causing differences in socioeconomic groups more or less correlate to each other, e.g. even the educational level and profession, since the earlier one partly determines the later one. This is the reason why it is so difficult to separate the effect of the certain ecologic factors. Higher educational level usually joins with better nutrition, better care of infants and child. These parents usually put social services to its proper use, etc.

In case of the Hungarian youth the educational level of the parents is determinant. As it was demonstrated, as higher is the educational level of the parents, both fathers and mothers, as taller are their sons and daughters. These differences in height under groups of boys and girls belonging to different parent-categories usually can be observed already in early childhood, and during prepuberty and even in puberty they become more remarkable.

Profession of parents also influences height of the children characteristically. The trend goes from agricultural physical workers through industrial and other physical workers to the non—physical workers. The groups of children according to this trend are taller and taller. However, profession of parents as an organizing principle—at least in Hungary—is less suitable to describe the family's lifestandard, or to characterize the child-centric family home. It seems to be, however, one of the most important environmental factors which is based on the educational level. We are convinced that educational level of the parents, their cultural niveau is the most important social factor which determines family's background influencing growth and development of youth. Consequently, we point out the cultural background.

In this sense we have to do a lot, quickly and definitely, sparing no pains and money. We do know that an undisturbed or optimal growth and development process of children and youth is one of the most characteristic indices of public health of the whole population. We must make efforts to optimalize the environmental circumstances influencing growth and development process of our youth.

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