

EFFECTS OF GENETIC AND SOCIO-ECONOMIC FACTORS ON BODY DEVELOPMENT OF STUDENTS OF THE BUDAPEST TECHNOLOGICAL UNIVERSITY

by G. GYENIS and G. TILL

Department of Anthropology, Eötvös Loránd University, Budapest, Hungary;
Polyclinic of the Technological University, Budapest, Hungary

Abstract: The paper is dealing with the genetic and socio-economic factors influencing the body development of the fifth year students of 1975/76. The age of the students were between 22 and 27, but we have only analyzed in detail the data of the two largest age groups of males and females each, i.e. the data of 321 boys of 23 years and 430 boys of 24 years old as well as 73 girls of 22 and 128 girls of 23 years old. From the genetic and socio-economic factors only the place of birth, father's occupation and number of children per household are presented in this paper. Regarding to the birth place a distinction was made between students born in Budapest and in the country. The father's profession was classified in three groups: intellectual, employee and manual worker. The number of children per household was simplified as 1, 2, 3, and more than 3. — The data show genetical and socio-economic differences in body measurements of the students, which are analyzed in detail in the paper.

Key words: Growth and development, genetic and socio-economic factors influencing growth, university students.

Human body measurements and body development are resultants of both genetical and environmental factors. From the time of the "industrial revolution" (1778: the invention of the steam-engine), the environment and human society have been changing rapidly, ever according to various degrees but not uniformly in the different countries. One result of these changes is the secular trend. This phenomenon shows various patterns nowadays. In the countries of the so-called "Consumer's Societies" secular trend as well as social differences in the body development have been decreasing or even completely disappeared (BAKWIN 1964, DAMON 1965, 1974, MARESH 1972, WALTER 1977). Opposite to this, in the countries of the "Third World" they are characteristic phenomena (MALHOTRA 1966, SOMOGYI 1970, 1973). In the countries intermediate between these two large groups (e.g. in East-European countries) secular trend as well as the social differences on body development can be observed, too (SCHMIDT-KOLMER 1965).

Material and Method

In order to study these phenomena on Hungarian university students, regular screening tests have been made for a long time on first and fifth year students in the Polyclinic of the Technological University, Budapest (TILL—GYENIS 1975, 1977).

The present paper is dealing with the genetic and socioeconomic factors influencing the body development of the fifth year students of 1975/76. 17 body and head measurements were measured, but only the data of height, weight and the Rohrer index are presented here.

The age of fifth year students was between 22 and 27, but we have only analyzed in detail the data of the 2 biggest age groups of males and females each, i.e. the data of 321 boys of 23 and 430 boys of 24 years old as well as 73 girls of 22 and 128 girls of 23 years old. From the genetic and socio-economic factors only the place of birth, fathers' occupation and number of children per household are presented in this paper. As to birth place distinction was made between students born in Budapest and in the country. The fathers' profession was classified in three groups: intellectual, employee and manual worker. The number of children per household was simplified as 1, 2, 3 and more than 3.

Results and Discussion

The male students (Table 1) born in Budapest are taller and heavier than those of born in the country. However, they are not better developed, because the values of their Rohrer index are equal or less than that of the students born in the country.

According to the fathers' occupation, the male students with intellectual fathers are also taller and heavier than the students with manual worker father. In spite of this the values of their Rohrer index show that they are less developed, than the other two groups.

The number of children per household has an important effect on income of a family (TANNER 1964). The data of the weight and Rohrer indices show this effect very well (except of the 23 years old students where the sample

Table 1
Data of male students

Factors	N		Height (mm)		Weight (g)		Rohrer-index	
	23 yr	24 yr	23 yr	24 yr	23 yr	24 yr	23 yr	24 yr
Birth-place								
Budapest	179	209	1767.2	1760.8	69008.4	68916.3	1.25	1.26
Country	142	221	1746.6	1746.5	66908.4	68079.0	1.25	1.28
Together	321	430	1758.1	1753.2	68079.4	68485.9	1.25	1.27
Fathers' occupation								
Intellectual	215	254	1766.6	1762.7	68188.4	69380.7	1.24	1.27
Employee	32	48	1745.2	1747.6	68453.1	67510.4	1.29	1.27
Manual worker	74	128	1738.9	1737.5	67601.3	67076.2	1.28	1.28
Number of children per household								
1	79	89	1756.6	1751.5	68481.0	69606.7	1.27	1.29
2	177	210	1755.3	1752.8	67768.4	68352.1	1.25	1.27
3	41	85	1757.8	1756.6	66304.9	68158.8	1.22	1.26
more than 3	24	46	1784.0	1754.5	72083.3	67532.6	1.27	1.25

Table 2
Data of female students

Factors	N		Height (mm)		Weight (g)		Rohrer-index	
	22 yr	23 yr	22 yr	23 yr	22 yr	23 yr	22 yr	23 yr
Birth-place								
Budapest	48	65	1637.7	1629.4	56093.8	54938.5	1.28	1.27
Country	25	63	1624.8	1622.4	55400.0	55119.0	1.29	1.29
Together	73	128	1633.3	1626.0	55856.0	55027.3	1.28	1.28
Fathers' occupation								
Intellectual	57	80	1637.7	1631.5	55912.3	54856.2	1.27	1.26
Employee	5	17	1625.8	1625.9	53400.0	56029.4	1.24	1.31
Manual worker	11	31	1613.9	1611.7	56681.9	54919.3	1.35	1.32
Number of children per household								
1	14	28	1641.8	1631.9	57178.6	55464.3	1.30	1.27
2	33	69	1634.5	1621.1	55227.3	55231.9	1.26	1.30
3	20	23	1626.3	1630.4	55200.0	54608.7	1.28	1.26
more than 3	6	8	1629.7	1633.9	58416.7	52937.5	1.35	1.21

of the more than three children in the family was small and there was a very large and heavy student in the group). For the height no such tendency could be observed.

The two samples of female students (Table 2) were smaller, than the samples of males but in general they show the same tendencies like those of the male students. Thus, the female students born in Budapest are also taller and heavier, than those born in the country. But their Rohrer indices are less, than the latter. According to the fathers' occupation the girls with intellectual fathers are taller than the girls with manual worker fathers, but their weight are equal or less than the latter. Therefore the value of the Rohrer indices of the female students with manual worker fathers are higher, than the girls with intellectual fathers.

According to the number of children per household there is no connection with the height, but there is with the weight and at the Rohrer indices, except of the small sample (only 6 person) of the 22 years old girls with more than three children in the family, where an overweight female students was in the group, too.

On the basis of our data the following conclusions may be drawn:

Genetical factors we observed in the relation of height and number of children per household.

According to our data the height of the students is independent of the income of the family (measured with consideration to the number of children). The reason of this is the strongest genetical controll of the body height than body weight (KNUSSMANN 1977). The effect of the genetical factors appears in the relation of the investigated measurements to the birth-place and the fathers' occupation, too. These data show constitutional differences between students born in Budapest and born in the country as well as between students with intellectual and with manual worker fathers. Students born in Budapest

and of intellectual fathers are taller but slighter, than the students born in the country and of manual worker fathers which is caused by the so-called "social shifting effects".

Finally, the effect of socio-economic factors appears in the relation of weight and Rohrer index and the number of children per household, where the students with sibs are less developed than the students having no sibs. The reason of this may be the lower income level per head in the families.

We obtained similar data in a former study (TILL—GYENIS 1977) where the first year students of the 1974/75 academic years was examined, thus according to our data the effect of the genetic and socio-economic factors can be observed on Hungarian university students, yet.

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Authors' addresses: Dr. GYENIS GYULA
Puskin utca 3.
Budapest
H-1088, Hungary

Dr. TILL GABRIELLA
Műegyetem rakpart 1—3.
Budapest
H-1111, Hungary