

Potentialities of Somatotyping for Secondary Schools

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The science of physical anthropology has become in the last two decades a busy field of research insofar as it concerns living subjects and the potential correlations with other fields of human biology. Possibilities have been indicated by Williams (12), Montagu (7), Hooton (6), and Boyd (1). The scheme of Sheldon for physique classification called "somatotyping" (9), and his temperament classification (10), offers a handy tool for such quantitative determination of individual differences. It has been widely used with good results reported, such as Draper (3) with medical correlations, and Heath (5), Glueck (4), and Cureton (2).

There are, of course, limitations and questions concerning the effectiveness of the Sheldon technique. The permanence of the somatotype is in question. What, for instance, are the effects of nutrition on it? What is the permanence of the somatotype given good health over a period of years? Have the high correlations been subjected to rigorous enough controls?

One of the prime difficulties of the Sheldon method, however, is one which is common to many achievements in science. The equipment necessary to take photographs in a standardized fashion, while not extraordinarily expensive, precludes its use under many conditions. The analysis of the anthropological data obtained to produce the somatotype is burdensome. In the field of secondary education all of this is not impossible to obtain. But the question is, is it so elaborate that the probability of its use is remote in secondary schools? This would probably have to be answered in the affirmative. Is the Sheldon method an illustration of sending a man to do a child's work? Can the Sheldon system be made simpler and still retain its accuracy? To broaden the research base in physical anthropology some effort must be made to simplify the anthropological analysis of an individual. Anthropologically unskilled persons should be able to use this data obtained by relatively unskilled but trained individuals, and use it in some field for which they have training and skill, to discover correlates, if any, with this data. Can a high school teacher somatotype with some accuracy without elaborate equipment?

To answer the query as to the possibility of the untrained somatotyping with some degree of accuracy, it must be assumed that this is possible without the use of the photograph technique. Sheldon seems to have confidence that this can be done with a high degree of accuracy by someone well acquainted with the theory and technique as he mentions frequently in his books the somatotyping he and his colleagues have done on the beaches and on the streets, and we assume that this was done with a feeling that some accuracy was obtained. Cureton (2) discovered that with his staff having received only a brief explanation of the components, it was possible to obtain such a high

correlation with the photographic analysis that the standard deviation was only one-half of a point on the Sheldon scale. It seems safe to assume, therefore, that the subjective judgment of a trained person may very well be highly accurate in somatotyping.

The discovery of any correlates with the somatotyping process in the personality range of the individual requires a huge outlay of time, money, and effort. The Heath study (5) attempted this. Sheldon's survey of delinquents (8) uses psychiatric data in an attempt to obtain some comparison with their physiques. Glueck (4) concludes that the delinquent has a high degree of mesomorphy in comparison to the average non-delinquent. The Stolz's (11) used the Sheldon technique in their survey of adolescent development. The role which could be played in education, guidance, and athletics, by somatotyping affords too bright a prospect to disregard.

The purposes of the investigation outlined here are to answer the following four questions:

1. Can somatotyping be done with some accuracy by a trained person without photographic equipment?
2. Can somatotyping be done by subjective judgment with a fair degree of accuracy?
3. What is the stability of the somatotype between the ages of fourteen to eighteen?
4. What correlates seem to be present, and are suggested, with the somatotype and other features of the individual?

The methods by which this was carried on were admittedly sketchy and rough. There had to be a rapport between examiner and the boys which was not always possible to obtain, or keep, over a four-year period. Therefore, the following results are not offered as the last word, nor a doctoral dissertation on the subject. They are offered with no pretense that the results are any more than they are or seem to be. They are offered in the hope that the members of the Academy in the psychology and anthropology sections will be enlivened to pursue one of the paths suggested with more precision than this author could accomplish.

Boys were selected at Thomas Carr Howe High School in Indianapolis to cooperate in this project beginning in 1948, by a personal interview with the examiner. Some effort was made in this selection to find what seemed to be as many possible somatotypes and types of personalities. Twenty-one boys have cooperated in this period of time with this project.

Each boy was given a somatotype examination, which consisted in the examiner finding the data outlined on a "Somatotype Data Sheet." A standard anthropometer (Cenco, Cat. No. 73115) was used. (Fig. 1). Then a subjective judgment was made by the examiner of the boy's somatotype.

The next step was to work out the somatotype by regions, with the general somatotype as a summary, as indicated by Sheldon. A

Distribution of Somatotypes
by Anthropometry

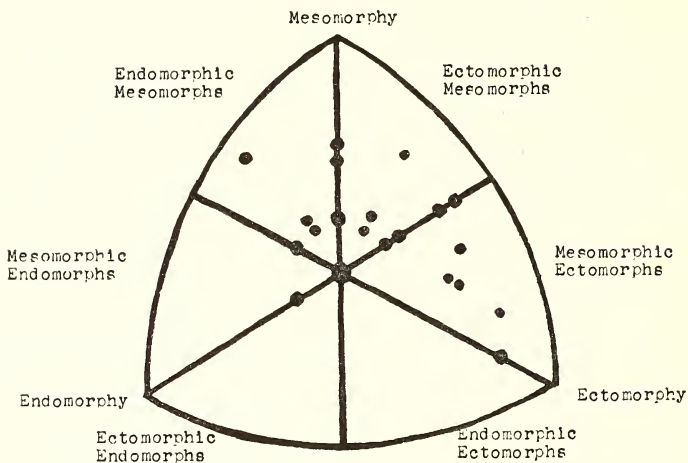


Fig. 1. Distribution of somatotypes by anthropometry.

temperament classification was also worked out in accordance with the suggestions of Sheldon. This was done on each boy by the examiner and also by another person. Other data was recorded by the examiner. The twenty-one boys were examined at least once on all scores.

The results obtained can be seen in the attached tables. (Table I). Although the survey was limited by many factors, chief among them being the small sample, the inadequate control factors, and the short period of time in which the project was carried on, several probabilities emerge. They should serve to forecast the probable results that might result from a more adequate study. This is, in fact, an exploratory venture in an effort to produce some more satisfactory research on the part of some group in the Indiana Academy of Science.

Whether or not somatotyping can be done with some accuracy by a trained person without photographic technique is shown by the correlation of .71 for endomorphy, .81 for mesomorphy, and .74 for ectomorphy between the subjective inspectional judgment and the somatotypes determined by the height and weight ratio. There is also a correlation of .65 for endomorphy, .80 for mesomorphy, and .81 for ectomorphy with the subjective judgment and the actual anthropometric data.

It is to be noted that although some somatotypes did change, the predominant component did not in any case. Correlations between the original measurements and the latest measurement show .81, .66, and .50 for the three components.

The correlation between somatotype judgment and the temperament classification (Table II) shows .74, .53 and .83, and .65, .69, and .77 between measurements and temperament classification. Indicated also is the comparison of temperament classification by two observers on the same boy with correlations of .79, .79, and .56.

Although the following results should best be subjected to statistical analysis if the sample were larger, several interesting observations can be noted. It must be emphasized, however, that they remain as observations and not conclusions. General athletic ability seemed to be correlated most highly with the predominant mesomorphs. Two exceptions among the twenty-one were noted, but in each of these cases the athletic record was mediocre and they were rapidly being supplanted by younger and better fitted individuals. It seemed, in other words, that their participation in athletics was initiated by their evident more mature development for their chronological or school age. Difficulties which necessitated action by the Dean's office were confined wholly to the mesomorphs, but by no means were all the mesomorphs in this classification. Ratings by each class teacher as to the personality traits designated on school records for each of the subjects showed no adequate correlation with any of the observable traits. This was also true of academic grades. Data on vocational disposition, majors and minors, favorite subjects, and favorite teachers were inadequate to make any justifiable observation. It seemed to be true, however, that the predominantly mesomorphic individuals were quite impressed with any teacher who dealt with his class in a firm manner, while the ectomorphic, and the two endomorphic boys had many personal prejudices and dislikes in this group of teachers. Intelligence quotients and other standardized test data yielded no observable correlation. In conclusion, general attitudes observed showed that the mesomorphs had great respect for formal and strict discipline, although they were the only ones in trouble with the authorities. The two with a high endomorphic component showed an easy-going nature which was quite evident in all their relationships. Mesomorphic individuals as a group had an objective relationship with the teacher, characterized by an easy friendly manner, with a sincere desire to work hard for only a few teachers, and with a cat and mouse attitude to the others. The two endomorphic boys with their easy-going natures tried to be friendly with everyone, and neither one showed any inclination to work hard. The ectomorphic persons caused no trouble for the teacher in class, but attempted to work hard at all times, applying themselves especially well in those subjects which interested them.

Those disciplines using the Sheldon techniques and those studies just published indicate a strong tendency to regard the somatotyping procedure with a great deal of respect.

How can this be applied on a practicing basis, or as an attitude, by secondary school teachers, or by any individual dealing with growing persons? What are the minimum essentials which such people must know before the technique can have any value? How can this information be used in guidance activities of the modern school in

10	14	4	344	344	344	71.5	154	16	3	354	352	444	73.25	186						454	453
11	16	5	354	354	354	70.5	156.5	17	8	354	354	344	70.75	160						454	454
12	17	4	542	543	433	72	183												543	644	
13	15	5	354	353	353	69	150.5	16	6	254	353	254	70	157				10	354	444	
14	15	5	354	352	354	67	144	16	5	353	362	353	67.25	153			8	353	155	353	363
15	16	12	444	443	443	73	173	16	5	444	443	443	73	173						444	444
16	16	4	354	354	344	73.75	180													354	343
17	17	10	363	452	352	72.5	187	17	1	362	451	452	74	205			7	352	200	552	562
18	15	11	345	235	245	70	130	15	1	245	145	235	70	128			11	245	139	344•	443
19	15	11	245	245	234	70.5	140	15	1	245	245	244	70.5	138						334	444
20	15	11	335	335	345	70.5	137	15	1	335	235	234	70.5	132						435	445
21	17	2	345	244	334	72.25	154	17	6	344	343	344	72.25	167						354	454

TABLE II.—Correlations; Pearson's Coefficient of Correlation

Endo- morphism	Meso- morphism	Ecto- morphism	Somatotypes	
.71	.81	.74	Endomorphy Mesomorphy Ectomorphy	Subjective Judgment and Height-Weight-Cube Root
.65	.80	.81	Endomorphy Mesomorphy Ectomorphy	Subjective judgment and Anthropometry
.81	.66	.50	Endomorphy Mesomorphy Ectomorphy	Original Measurements and Latest Measurements
.74	.53	.83	Somatotypes and Temperament Viscerotonia Somatotype Judgment Somatotonia and Examiner's Tempera- Cerebrotonia ment Classification	
.65	.69	.77	Viscerotonia Somatotonia Cerebrotonia	Somatotype Measurements and Examiner's Tempera- ment Classification
.79	.79	.56	Viscerotonia Somatotonia Cerebrotonia	Temperament Classifica- tion of Examiner and Classification by Someone else
Viscero- tonia	Somato- tonia	Cerebro- tonia		

physical education, health, discipline, interest, social and personality maturation, and methods of teaching? What minimum equipment and tests are necessary to make the individual student analysis adequate to help in this guidance?

This knowledge, leading to an attitude on the part of the teacher, should improve public education in precisely the place where it seems most deficient. First, it should aim the attention of the teacher on the individual as an individual. Second, it would encourage study of the whole child continually, while in school, rather than the present haphazard procedure. Third, it should assist guidance by the individual teacher, which is where most guidance seems to be centered in the public school, rather than in a busy guidance official. Fourth, because of its many and high correlations, somatotyping should make unnecessary the multitude of tests and critical observations which are

now considered necessary for an accurate appraisal of the child. It should shorten the analysis procedure of the school for each child to a more complete picture, yet without elaborate batteries of tests and interviews. Since the public school, especially in its crowded condition, tends to regiment its handling of the individual student because time, money, and staff preclude a complete and thorough examination of each student, a shorter method of perceiving the whole child seems to be in order. This method is similar to the statistical quality control procedures used in large industries, where inspection of each part of each unit is impractical and costly, but testing and examination by regulated probabilities make the inspection system adequate with a very low degree of probable error.

The Sheldon method, streamlined and shortened, simplified and standardized, aimed for the public teacher, may accomplish this end. This study indicates a possible direction that it might take.

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