FACIAL FEATURES AS CHARACTER PREDICTORS: PHENOTYPIC APPROACH TESTING

Abstract. This paper presents the results of testing the hypotheses concerning the connection between some phenotypic bodily features and such individual psychological characteristics as aggressiveness, impetuosity, pedantry, passivity, etc. In particular, studied the validity of using appropriate representations of phenotypology to predict respective character traits. The results obtained disprove the possibility of a direct use of the phenotypic approach for reliable characterological profiling.

Keywords: phenotype, phenotypology, facial features, bodily features, characterological traits, behavioral diagnosis, profiling, aggressiveness, impetuosity, pedantry, passivity.

Introduction

Transformation pace of modern education, healthcare, business management systems, etc., requires new approaches of prompt and reliable personality assessment. The need for rapid diagnosis of psychological characteristics of the student, patient, manager, seller, customer, etc. – is actualized as never before. In turn, this reanimates interest towards the idea of a direct relationship between physical and psychological characteristics. Explicitly or implicitly, such an idea underlies many theoretical models of personality. However, with regard to a practice, this notion does not turn up straight and simple, does it? Bodily-psychological interconnection is an object of complex interdisciplinary study, which requires a convergence of viewpoints on observable physique characteristics (phenotype), personality traits and behavioral patterns.

The very idea of connection between phenotype, personality and behavior is not new and goes back to the ancient Greeks. Darwinism led to a revival of interest to this issue, which was reflected in the emergence of a number of relevant theories in the late nineteenth and early twentieth centuries (Lombroso, 2006, Kretschmer, 1921, Sheldon, 1940, et al.). Currently the topic has been mostly studied and discussed in terms of health disorders gamut (Cassidy, Morris, 2002, Couzens, 2014, Flint, 1998, Lloyd, Valles, 2010, O'Brien, Yule,1995, Riva, Bellugi & Denckla,2005, Skuse, 2000, et al.). Nevertheless, there are lack of modern scientific data and theoretical models that

would claim a personality assessment and behavior prediction based on the phenotype. The exception is a recently appeared, but promising approach called Phenotypology.

> "Phenotypology is a science about the interconnection of psychological and psychophysical characteristics in person's behavior genetics on the basis of individual features of his phenotype. Phenotype is an aggregate of the biological individual's (in particular human's) features in every specific moment of its life. Phenotype is formed with the assistance of genotype under the influence of the environment, and is manifestation of genotype in particular conditions. It is possible to uncover the genetic program of any person's development merely using the scientifically ascertained well-founded and strictly classified data. Phenotype technology combines multidimensional scaling, cluster and factor analysis" (**L-contact, 2018**).

Phenotypology claims to be a scientific basis for business management systems, offers recommendations on the specifics of recruitment, features of working with clients, etc. (**Kaftanova, 2014, Lucin, 2018**). The theory is popularized (mainly in Eastern Europe) as a new way to quickly understand personal psychology and endeavors to be introduced into specific spheres of social life as guide to action. Most diagnostic criteria are associated with different characteristics of facial features (eyes, nose, lips, ears, chin, etc.) and neck length. Moreover, the authors clearly distinguish Phenotypology from Physiognomy and insist the uniqueness of the former.

> "Phenotypology *doesn't have any analogues in the whole world* to date and is the most efficient technology of person's character features' recognition and people's behavior prediction. Possessing the knowledge of Phenotypology you possess a *powerful "weapon", latest technologies* in the sphere of interpersonal relationships, family, children up-bringing, selling, employing, working with clients, business etc." (**L-contact, 2018**).

Unfortunately, up to the time of this publication, we were unable to find any scientific reports containing the empirical results of Phenotypology verification. Some of the theoretical positions are set forth on the predominantly promotional Internet-sources (**L-contact, 2018**; **Vivapersona, 2018**). Yet more or less detailed disclosure of the methodology, theoretical basis and practical application of the approach have been presented in a series of television programs on one of the popular TV channels (**Life Code, 2012**).

Nevertheless, the lack of published research data does not necessarily mean that the theory is untrue. The accessibility of diagnostic criteria — such as facial features and

neck length — potentially makes Phenotypology's hypotheses a promising basis for developing a profiling tool. For over twenty years, we have been developing and improving such a tool (**Shymko, 2017**) based on understanding of the behavioral patterns through a lens of manifestation of character as a hierarchized set of psychological defense mechanisms (**Reich, 1990**). Therefore, the goal of our research was to test the validity of some Phenotypology hypotheses for making a character diagnosis.

Materials and methods

The first phase of our study[1] was theoretical, i.e. we analyzed the consistency of the conceptual model with the criteria apparatus of Phenotypology and respective logic of diagnostic inference. Here we`ve found an essential mismatch. On the one hand, Phenotypology declares a complex multi-level view on the behavior formation:

> "Phenotypology is based on organs' physiology. Teaching Phenotypology is based on four sharply successive steps: 1. **Physiology** – how the human organs are structured (for instance, chin, helix, nose, lips, eyebrows etc.) 2. **Psychophysiology** – the interconnection between the nerve system and individual peculiarities of physiology. 3. **Psychology** - in the immediate branch of person's character. 4. **Compensatory (adaptive) mechanism** – the most significant index in Phenotypology. As the compensatory (adaptive) mechanism in particular illustrates and explains the difference between the features that are founded by nature (which sometimes are thoroughly camouflaged) and those characteristics, which are shown open" (**L-contact, 2018**).

However, the factual procedure of diagnosis is relying on the direct conclusion about the behavior specificity based on peculiar bodily features or combination of ones. Thus, the structure of the individual behavior understanding is at odds with the structure of respective inferences of its peculiarities. The inferences are carried out based on a direct reduction of the individual psychological characteristics to the anthropometric features. The explanatory reasoning used is, in our opinion, highly debatable and to be experimentally proved. Here some of Phenotypology assumptions that we are interested in due to the possibility of their applied use in profiling:

[1] The study was not preregistered in any independent, institutional registry.

a) *narrow tip of the nose*[2] corresponds with the pedantic features and the propensity of the individual to distinguish small details (*in our study, we signified this group of traits as* – ***pedantry***);
b) *wide tip of the nose*[3] is associated with a lack of pedantic features and a tendency to perceive the current situation as a whole (***lack of pedantry***);
c) *length of the neck*[4] is proportional to the stress resistance of the individual - the shorter the neck, the lower the tolerance to stress and the higher the impulsivity (***impetuosity – lack of impetuosity***);
d) *protruding chin*[5] (together with a well-developed lower jaw) is associated with a belligerence, high level of aggression, prevalence of achievements motivation (***aggressiveness***);
e) *receding chin* indicates passive traits, predominance of failure avoidance motivation (***lack of aggressiveness or passivity***);
f) *protruding ears*[6] correspond with the intellectual straightness of the individual, the propensity to perceive the world as "as it is" (**naivety**);
g) *ears pressed to the head*[7] are inherent to intellectually flexible people, cunning and quirky, who perceive the world as going beyond obvious things (***paranoidness***);
h) *ratio of nose length to ear length*[8] indicates prevalence of ***pragmatic*** (if nose shorter then ear) or ***axiological*** (if ear shorter then nose) ***style of reasoning***.

The second phase of the study[9] was an empirical one. The research was conducted during the period from 2013 to 2018 at the Pereyaslav-Khmelnytsky Hryhoriy Skovoroda State Pedagogical University (Kyiv region, Ukraine). All subjects were undergraduate and graduate students, faculty and technical staff of the university.

[2] Phenotypology comes from the assumption that the narrow tip of the nose causes the sequential air access. In such conditions the stimulation of the olfactory receptors occurs in portions. This leads to a separate perception of odors and, consequently, forms a generalized tendency to distinguish details and attach importance to them.

[3] Phenotypology suggests the wide tip of the nose causes mixing of air entering the body and, unlike the narrow tip; this contributes to the prevalence of a tendency towards holistic perception of the object, situation, event, etc.

[4] The long neck, in the theory of Phenotypology, is regarded as a mechanical shock absorber of the head. In addition, the longer neck is the longer system of blood vessels connecting the heart and the brain. This supposedly reduces cardiac intensity during stress.

[5] Chin, as part of the lower jaw, is considered within the framework of Phenotypology, in fact, in the Lobrosian sense.

[6] In the opinion of phenotypologists, with protruding ears a person perceives auditory information, which is fundamentally relevant to what is accessible through the visual channel of perception. Thus, the auditory stimuli correspond with the visual stimuli and vice versa. This leads to the formation of a worldview, which is characterized by visibility, simplicity, straightness, etc.

[7] According to Phenotypology, a man with ears pressed to his head, hears more than he can see. And directly not visible part of reality forms such representation about it which assumes explicit and latent its dimensions.

[8] Phenotypology is based on the assumption that olfactory stimulation is associated with evaluative sensual function of thinking, meanwhile auditory stimulation is associated with non-emotional rational reasoning.

[9] The study complies with all relevant ethical regulations. All data collection and study procedures were approved by the Pereyaslav-Khmelnytsky Hryhoriy Skovoroda State Pedagogical University Ethics Commission. Each participant provided written consent.

Initially, the sample was 306 respondents, of which 235 were selected for analysis, based on the criteria set out below. The sample comprised respondents aged from 21 to 64 years (59.6% of women), all Caucasians and belong to the <nationality deleted> ethnicity. The evaluation of the bodily features and character traits was carried out by 4 experts (2 Ph.D. in psychology, 1 Ph.D. in pedagogy and 1 M.D.; each of them has more than 15 years of practical psychological and pedagogical experience).

On the one hand, we assessed the presence and degree of respective characterological traits manifestation, which are allegedly determined by or at least connected with the specified facial and neck features. Herewith we proceeded from the fact that such traits as *impetuosity*, *aggressiveness*, *passivity* and *pedantry* obviously correspond to the central features of the so-called pure character types described by Wilhelm Reich (1990), namely – *hysterical*, *phallic-narcissistic*, *passive-feminine* and *compulsive* (respectively). The same traits are inherent to representatives of the so-called mixed types of character, whose behavioral repertoire is expanding due to the action of other factors (including above naivety, paranoidness, pragmatic and axiological way of thinking, etc.). Before current research the Reich model was adapted by us for the diagnostic identification of pure and mixed types of character through the standardized observation of bodily, mimic, paralinguistic, and certain speech characteristics (**Shymko, 2017**).

Using this adaptation, experts had carried out diagnostics of each subject and summarized diagnostic opinion on the expression degree of a particular characterological trait on the scale: 1) there are no signs; 2) signs are mild; 3) signs are pronounced (acute). Thus, in further analysis, it was not only the type of character of the subject that was considered, but the degree of behavioral manifestation of respective features as well. Those respondents for whom expert opinions differed, either qualitatively or even quantitatively, were excluded from the sample. In this way, we tried to increase the reliability of our findings.

On the other hand, we carried out assessment of the respondents` bodily features according to the criteria of Phenotypology set forth in the television programs (Life Code, 2012). Thus, in assessing the tip of the nose, we identified three options – a narrow, medium and wide (fig. 1). We also distinguished three chin variants: protruding, normal and receding (fig. 2). Nose length we measured from a nose bridge to the tip and an ear length was determined by the maximum straight distance between its upper edge to the lower border of the earlobe (fig. 3). In both cases, measurements were made using a conventional measuring ruler with an accuracy of 1 millimeter, after

which we compared the results and distinguished the following positions: 1) the nose is longer than the ear; 2) the nose is equal to the ear; 3) the nose is shorter than the ear.

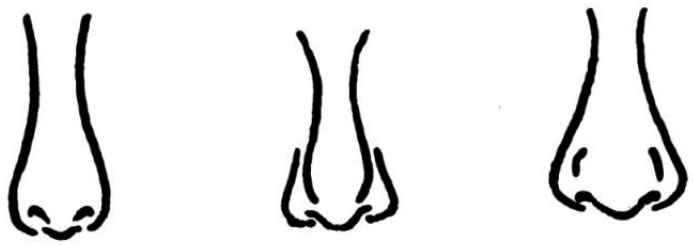

Fig. 1. Nose tip features: narrow, medium, wide.

However, in available sources of Phenotypology, guidelines for the measurement of the anthropometric features are not always presented clearly and unambiguously. For example, difficulties arose in estimating the length of the neck – short, average, and long. For this purpose, we used a technique that allows one to differentiate the length of the neck, prorated to other anthropometric features of the same body – the palm width (**Lamport, 2014**). Namely, each subject was asked to place own hand vertically on the neck right under the chin. If the distance to the upper edge of the jugular cavity was equal to palm width (four fingers wide barring the thumb), we conclude such a case as an average neck. If that distance was smaller than palm – short neck. If it was bigger – long neck.

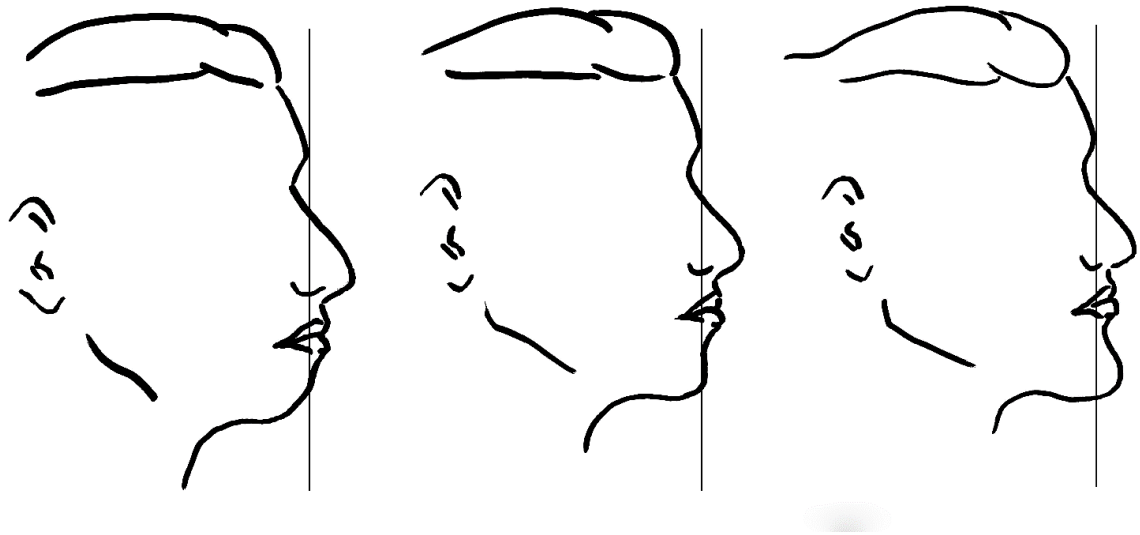

Fig. 2. Chin variants: receding, normal and protruding.

To assess the ears protrudiness, we used the otoplastic method of rapid diagnosis of lop-earedness (**Plastic surgery, 2010**). This technique, as well as the evaluation of the length of the neck, involves a different bodily features comparison of one person. To wit, we used a comparison of the thickness of the index finger and the width of the space between the ear and the surface of the head. If the finger did not fit into this space, the ears were evaluated as pressed to the head. If the finger fitted - normal ears. If it fitted and there left free space between the finger and the auricle - protruding ears.

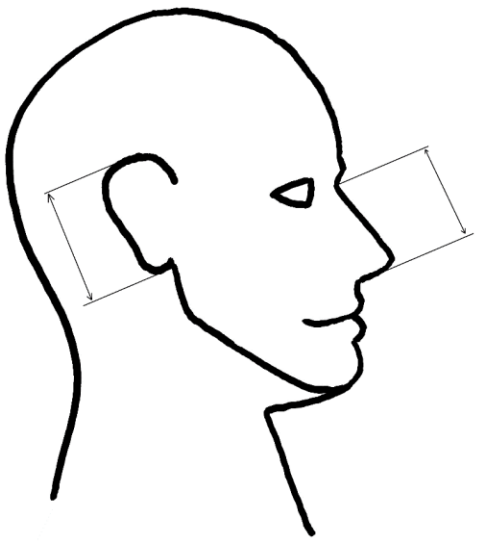

Fig. 3. Ear and nose length measurement.

Results and discussion

Multiple regression analysis was applied to the data obtained since we were interested in the question whether it is possible to use the facial and neck features to predict the psychological characteristics of the subjects. Consider the cases when regression was statistically significant.

Impetuosity

As we can see in the Table 1, the significance of regression is conditional here (F=2.791, p=0,027). Adjusted $\mathbf{R^2}$ = 0,030, which means that approximately 3% of the variance in dependent variable (DV) is explained by independent variables (IVs).

Table 1

Impetuosity, ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.576	4	1.644	2.791	.027[b]
	Residual	133.700	227	.589		
	Total	140.276	231			

a. Dependent Variable: impetuosity
b. Predictors: (Constant), neck_length, ears_protruding, nose_tip_narrowness, chin_shape

The only significant predictor of impetuosity was found – chin shape (β =0.184, p=0.01). Other predictors were not significant as we can see from Table 2.

Table 2

Impetuosity, Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	.412	.337		1.221	.223	-.253	1.076
	ears_protruding	-.117	.086	-.091	-1.360	.175	-.286	.052
	nose_tip_narrowness	.079	.067	.082	1.185	.237	-.052	.210
	chin_shape	.246	.095	.184	2.591	.010	.059	.434
	neck_length	.074	.084	.064	.870	.385	-.093	.240

a. Dependent Variable: impetuosity

Aggressiveness

The significance of regression here is much better in comparison with the previous parameter, i.e. it is F=6.729, p<0.001 (Table 3). Adjusted $\mathbf{R^2}$ = 0,090, that is, about 9% of the variance in DV is explained by IVs.

Table 3

Aggressiveness, ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	14.815	4	3.704	6.729	.000[b]
	Residual	124.939	227	.550		
	Total	139.754	231			

a. Dependent Variable: aggressiveness
b. Predictors: (Constant), neck_length, ears_protruding, nose_tip_narrowness, chin_shape

In accordance with the data in Table 4, when levels of aggressiveness were predicted, it was found that chin shape was the only significant predictor (β =0.283, p<0.001).

Passivity

High significance of regression for this parameter (F=5.447, p<0.001; Table 5) is still accompanied by a weak performance of adjusted $\mathbf{R^2}$ = 0.071.

Table 4

Aggressiveness, Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
		B	Std. Error	Beta			Lower Bound	Upper Bound
1	(Constant)	-.182	.326		-.560	.576	-.825	.460
	ears_protruding	-.042	.083	-.033	-.512	.609	-.206	.121
	nose_tip_narrowness	.070	.064	.073	1.084	.279	-.057	.197
	chin_shape	.379	.092	.283	4.127	.000	.198	.561
	neck_length	.135	.082	.118	1.657	.099	-.026	.296

a. Dependent Variable: aggressiveness

And again, chin shape was the only significant predictor that has been turned out in our analysis (β = -0.221, p=0.002). Results on other predictors you can find in the Table 6.

Table 5

Passivity, ANOVA[a]

Model	Sum of Squares	df	Mean Square	F	Sig.

1	Regression	8.957	4	2.239	5.447	.000[b]
	Residual	93.319	227	.411		
	Total	102.276	231			

a. Dependent Variable: passivity
b. Predictors: (Constant), neck_length, ears_protruding, nose_tip_narrowness, chin_shape

As we can see, the results of multiple regression analysis prove that the prediction of the psychological characteristics cannot be realized through such bodily parameters as: neck length, protrusion of the ears and the shape of the nose tip. At the same time identified statistical regularities for the chin shape, in our opinion, too, are not reliable enough that the parameter could be used as a practical tool for profiling. Our skepticism on this issue is based on low rates of $\mathbf{R^2}$ <0,10 and insufficiently high rates of the predictor`s strength $\boldsymbol{\beta}$<0.300.

Table 6

Passivity, Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
1 (Constant)	1.216	.282		4.315	.000	.661	1.771
ears_protruding	.097	.072	.088	1.353	.177	-.044	.238
nose_tip_narrowness	-.028	.056	-.034	-.501	.617	-.138	.082
chin_shape	-.254	.079	-.221	-3.195	.002	-.410	-.097
neck_length	-.142	.071	-.145	-2.019	.045	-.281	-.003

a. Dependent Variable: passivity

Conclusions

Results of the study are tentative due to respective Limitations on Generality. We believe it is necessary to continue verification of the Phenotypology hypotheses on a broader experimental sample with the inclusion of various ethnic and racial groups' representatives. As well it is necessary to expand the set of diagnostic attributes (it is stated that the criterial apparatus of Phenotypology includes more than 140 such features, however, it is published an order of magnitude less). In addition, when forming the sample, it is necessary to consider such moments as possible surgical or traumatic interventions in the subjects that changed their appearance. We did not clarify this issue in the formation of the current sample. In addition, a fundamentally important issue is the correct application of phenotypic criteria and attributes, the idea of which we have formed from the only available source – television broadcasts. Therefore, the prospect of further verification of the Phenotypology hypotheses will be determined in many respects by the appearance of relevant scientific publications that reveal the methodological and practical specifics of the approach. However, until then, based on our findings, we believe that the practical application of Phenotypology statements is doubtful at the very least for the purposes of character diagnosis and personality assessment.

Declarations

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Competing interest statement

The authors declare no conflict of interest.

Additional information

The data that support the findings of this study are available on request from the author. The methods of the research were carried out in accordance with the relevant guidelines and regulations.

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