Manifestation of Face Asymmetry and Emotions in the Drawing Test Taken by Students from Different Ethnic Groups of the Small Siberian Region of Russia in the Republic of Altai

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Abstract

The study was conducted in the Republic of Altai, one of the Russian regions, with the participation of students of different ethnic and gender backgrounds. The main idea was to clarify the anthropoesthetic preferences when choosing a sexual partner; however, in this work, attention is paid to a characteristic feature of the drawn face – its asymmetry. One of the original projective psychodiagnostic methods was used – face drawing, which made it possible to determine the coefficient of asymmetry of its structural elements and the manifestation of emotions in relation to a potential sexual partner. The algorithm for obtaining a face pattern, drawing reference (cephalometric) points, and a module for calculating asymmetry was described in detail. In addition, the authors made an attempt to show the connection between asymmetry and the space occupied by facial structural elements with the emotional background.

Keywords: *anthropoesthetic preferences, face drawing test, projective techniques, sexual partner.*

Introduction

The impression people make on each other can be read on the face [1–4]. Even when looking at a stranger, an appropriate mimic reaction is recorded, and rather informative signals are recorded on the most impenetrable face, which is transmitted to the outside world [5–7]. The emotionality of a person is most clearly reflected in the face. In the process of direct communication, it shows the most complex "texts" of states, thoughts, interests, and intentions of communicants [8–10].

As soon as a person realizes that he or she is at the mercy of emotions, he or she begins to rethink and assess the situation. In this case, the assessment of emotions occurs automatically. This indicates that emotional experiences arise in a person; he or she does not choose them [11].

In addition, more and more information began to appear about emotional sex differences, i.e. differences between men and women in the demonstration of emotions and feelings [12].

This test allows a person to express him/herself through a drawing. The test results are more informative due to their projective nature and low susceptibility to control by consciousness. Besides, when interpreting the drawings, it comes to the problem of information quality.

Unfortunately, no research based on a detailed analysis of human face images based on drawings [13,14] and describing in detail the asymmetry of drawing details and psychological phenomena associated with asymmetry in the field of projective research methods has been found.

In view of the foregoing, the following goal was set – to determine the coefficient of asymmetry of facial structural elements and the manifestation of emotions in relation to a potential sexual partner, using the original projective psychodiagnostic method (drawing test).

Material and Methods

The participants in this study were residents of the Republic of Altai from among students of various ethnic and gender backgrounds. At the time of the study, all the participants reached adulthood, the estimated average age was 19.7 years, which corresponds to the adolescent stage of ontogenesis in terms of age periodization.

In total, 462 people were examined, including 22 young Kazakh women; 149 young Russian women; 130 young women and 47 men ethnographically related mainly to the southern group of Altaians (self-name "Altai-Kizhi", Telengits), hereinafter referred to as "Altai-Kizhi"; 55 young Russian men; 59 young mixed-race women. The uneven distribution of the respondents is explained by the low occupancy of student groups at educational institutions with young men. The minimum number of young Kazakh women and the lack of young men of this ethnic group in the analysis can be explained by the small composition of the Kazakh population, concentrated mainly in one of the remote regions of the Republic of Altai and, therefore, their frequency of occurrence in the student environment. The identification of ethnic groups in this study was carried out on the basis of a family survey map, in which the respondents noted their belonging to a particular ethnic group at the level of three generations.

Ten Phe-Martin head and face contours developed by European anthropologists, presented in the classic work on anthropology [15], on pre-prepared separate A4 sheets (Figure 1) were used as stimulus material.

The participants were given the task of drawing on the chosen contours the missing parts of the face of a potential (future sexual) partner as the subject wanted him or her to look like. In addition, the task was accompanied by the statement that in this part of the task, the subjects' artistic abilities were not evaluated.

Reference cephalometric points, well known and practically worked out by more than one generation of anthropologists, were applied on the test material obtained as a result of the first stage of the study (Figure 2), presented in the form of a face drawing [15–25].

In the study, only those cephalometric points were used that reflected the specificity of this work.

Structural elements of all received facial patterns were measured. As a result, it became possible to calculate their average size. In addition, it was possible to compare the structural elements of a face pattern, drawn with due account for the preferences when choosing one or another preferred general head contour in representatives of different sex and ethnic groups.

The resulting measurements, the sizes of interest in millimetres, accurate to hundredths, were used to calculate the coefficient of facial asymmetry, using the modulus of difference between the parameters on the left (L) and on the right (R), dividing by the sum of the same parameters:

(L-R)/(L+R), thereby calculating the asymmetry indicator for each feature.

Data processing was carried out by using the STATISTICA 6.0 software [26]. To analyze the differences in the structural elements of a face drawing between sex and ethnic groups, the authors used nonparametric statistics, the Wald-Wolfowitz test, which is used to compare data from independent samples.

Findings

When considering the results of this study as a process or some kind of technology for obtaining information from respondents, one should turn to the stages of its implementation. In this case, the first stage of the experiment will be the statement of a problem – stimulus. The second stage involves the processing of the stimulus that causes a number of objective changes in the subjects' bodies, up to and including changes in the activity of the nervous system. The third stage is the design of the stimulus in the form of a drawing, i.e. presenting subjective information on a sheet of paper. In this sequence of events, the only thing the experimenter obviously understands is the problem statement. He or she does not know a reflective degree of the brain.

In this regard, Simonov noted that "while studying the human brain, science deals with correlates (speech, electrophysiological, biochemical ones) of mental processes, but it does not have access to their subjective side. The methods of science cannot make a person feel pain, pleasure, joy, despair, and other emotions experienced by another person. This opportunity can only be given through empathy, the role of which has not yet been fully evaluated by either the theory or practice of education" [27].

First of all, the analysis starts with the factor that has recently found wide application in the section of natural and human sciences. This is asymmetry, and, as for the subject of this study, asymmetry of a face drawing,

which was obtained using the metric of the main facial structural elements in relation to the central axis of the mid-sagittal plane. As a result of the measurements and calculations of the asymmetry index, it turned out (Figure 3) that a larger amount of displacement fell on the left half of the drawn facial parts, which has negative values in the figure. In this case, the left side is viewed from the side of a face drawing, and not from the side of the person who draws or analyzes. In addition, one can see an increase in the large value of the asymmetry coefficient, starting from the upper face height to lower face height, respectively. Another thing to be clarified is that the face division into face heights is rather conditional and in literary sources, one can find a sufficient variety of options for its execution, this variety can be particularly found in the technique of drawing faces and in the literature on physiognomy.

In this work, the authors considered it necessary to use three face heights, the boundaries of which run through the eyebrows separating the upper face height and the wings of the nose, separating the lower face height from the middle one. In Figure 3, they are represented as gaps between data.

Moreover, in the details of the face, i.e. in its structures, the asymmetry coefficient is especially pronounced on the wings of the nose, lips (a point in the raised part of the intranasal depression above the contour of the red border), and the mouth as a whole. The least asymmetric were eyebrows, their medial and lateral borders. Thus, the effect of the dominance of facial structures is observed on the left side of the drawing, and this effect generally reflects the ethnic and gender components without any statistical differences between the groups.

On the one hand, this can be explained by the inequality of the functions of hands; the overwhelming majority of respondents drew with their right hand. In addition, based on modern ideas about the localization of functions, it should be understood that along with the dominance of the left brain in right-handers and the right brain in left-handers, there can be simultaneous participation of brain halves, as well as their alternate dominance in controlling movements [28].

In an article, the author cites Aristotle's reasoning about linking the concepts of "harmony" and "order". "He presents harmony as a mutual transition of order and disorder. But the main thing in Aristotle's philosophy was the concept of the "middle", the most moderate, equilibrium state, which he considered the idea of a sage who avoids extremes. The "middle" is between "excess" and "lack", it is completeness, which is no longer insufficient, but not yet excessive, and in this sense, it is perfect" [29].

When confronting symmetry with asymmetry [30–35], it must be borne in mind that the visual mass of a symmetrical figure will be greater than the mass of an asymmetric figure of a similar size and shape; symmetry creates balance in itself and is generally considered beautiful and harmonious. However, there is also a downside – it is often devoid of dynamics and may seem static and boring; asymmetry, as the antipode of static symmetry, usually brings dynamics to the composition [36–38].

An interesting review of facial symmetry is given in the article by Butovskaya *et al*., thereby emphasizing the factors of health, attractiveness, and reproductive success [39].

Excessive details of the drawing in its right part are perceived by the left brain. It is known that signals from the right halves of both eyes (left visual field) go to the right brain, and from the left halves (right visual field) – to the left brain [28,40].

Translating the results of this part of the study into the mainstream of emotions and the search for connections between the respondents' emotional response and the asymmetry revealed in the process of experimental material processing, it would be logical to provide some literary data that, in the authors' opinion, are very close to the issue under study in their content.

In the literature, there are proponents of two types of concepts. Proponents of the first type tend to believe that the right brain is emotionally negatively oriented, while the left brain is responsible for all positive emotions. However, proponents of the second type argue the same, while separating the ability to process from the ability to experience emotional information [41–43]. In experiments with differently emotionally coloured patterns, it was found that the more active area in the process of experiencing emotions was largely predetermined by

the experimental conditions. Besides, according to the author, the results of the study also depend on whether a person experiences emotions him/herself or they are induced by external stimuli [28].

In this regard, relying on the data from literature sources, it can be assumed that emotions experienced by the respondents when drawing the face of a potential sexual (future life) partner are positive.

In healthy people, the facial expressions of the left side of the face reflect the emotional state to a greater extent than the facial expressions of the right half, which also indicates the predominance of mechanisms of the right brain in the processes of expressing emotions. Similar data on the asymmetry of mimic expressiveness of the facial halves were obtained on macaques, and this indicates phylogenetic tendencies towards a more significant manifestation of the mechanisms for expressing emotions in the right brain. A more pronounced manifestation of emotions in the left half of the face is confirmed in special model experiments, in which it was shown that emotions are better recognized in photographs composed of two left halves of the face [43].

The space occupied by the drawing is associated with emotional manifestations, experiences of the past, present, and future. The left side is the subject's past, inactivity, passivity, negative emotions; tendency to reasoning, daydreaming, planning, but there is no real activity, actions. The higher the drawing is located on the left side of the sheet of paper, the more pronounced it is, the deeper the roots of these phenomena are. The right side is reality or the future, positive emotions, activity, actions, initiative. The higher the drawing is on the right side, the more pronounced it is. Normally, the drawing is located in the middle, without obvious displacement up, down, to the right or left [44]. Consequently, taking into account the above author's opinion, the position of the facial parts in the ethnic-gender groups of students represented in the space of the drawing indicates positive emotions, their activity in planning, daydreaming, reasoning, and real activity in relation to a sexual partner.

The facial expressions of the left side of the face represent the emotional condition of healthy individuals to a greater degree than the facial expressions of the right half, which also suggests the prevalence of right-brain mechanisms in the processes of communicating emotions. Severe asymmetry indicates that a person experiences a feeling of insecurity, a sense of imbalance, has poor control, and his or her behaviour may be characterized by hyperactivity and excessive spontaneity [44].

The above can be supported by the opinion of Shulgovsky: It is suggested that the psychosensory sphere is organized in two spaces (times) – past and present, while the psychomotor sphere – in the real space (present and future) of the external world. Omitting the details of the description of patients' mental states in this literary source, the author makes a thorough conclusion: all this may mean that normally two sides of the brain work simultaneously: the right brain is based on the past, while the left brain is based on the future [45].

However, the opinion of [46–49] is of interest in terms of the brightness of feelings of an event in the case of the right-hand position of the drawing. In this case, the drawing is accented on the lower right side of the face, which indicates current reality. In the authors' opinion, this is very interesting in terms of social psychology. It may be suggested that when choosing a sexual partner, the respondents do not see the future, it does not have a clear shape, i.e. the "here-and-now" paradigm is the main paradigm of being for them. Most likely, they have not developed the option of necessity, according to system administrators. The option of necessity is understood as the need to have a sexual partner, spouse, friend, authority, etc. They do not see the real future, including in matters of choosing a partner. What is the future for them in today's realities? How is it structured? How is it coloured? How is it formed ideologically? As strange as it may sound, there is a certain explanation for this phenomenon. The fact is that in the world, there has been a tendency associated with an increase in human life expectancy. This tendency apparently prolongs some stages of ontogenesis, in particular, the duration of childhood. As a result, "adolescent infantilism" began to manifest itself more and more. In addition, due to the tendency of life expectancy, traditional marriage with a lifelong partner is also undergoing a transformation.

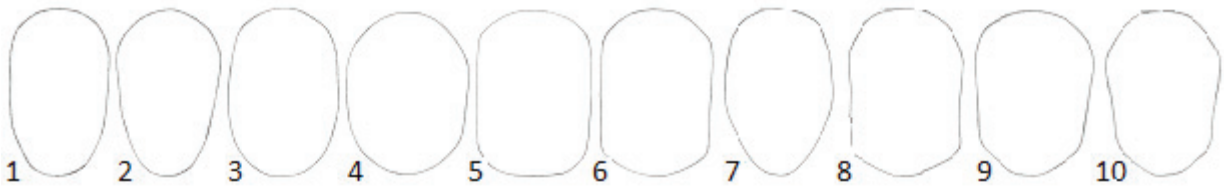


Figure 1. – Stimulus material. Corrected general outline of the head and face

(according to Phe-Martin)

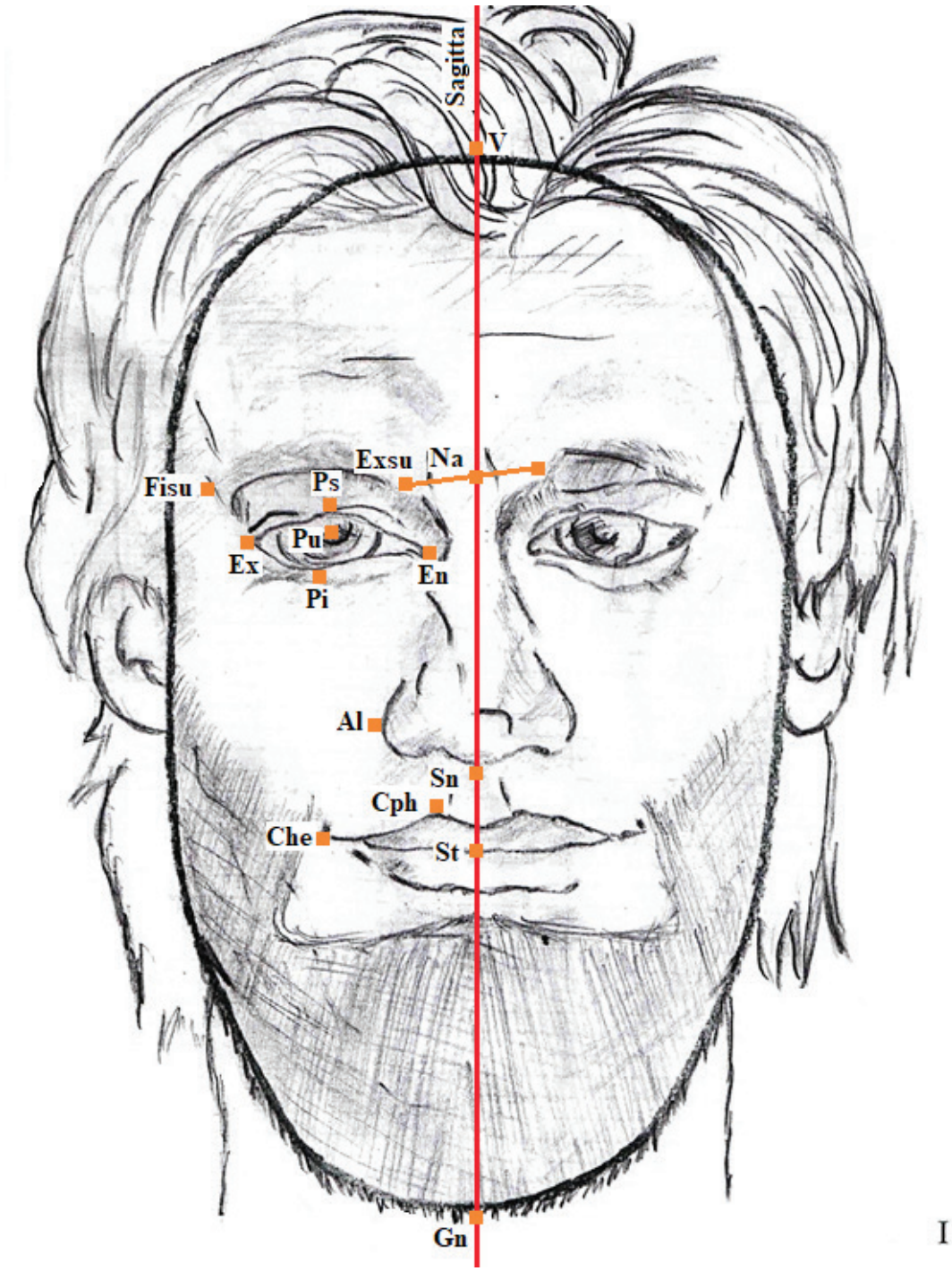
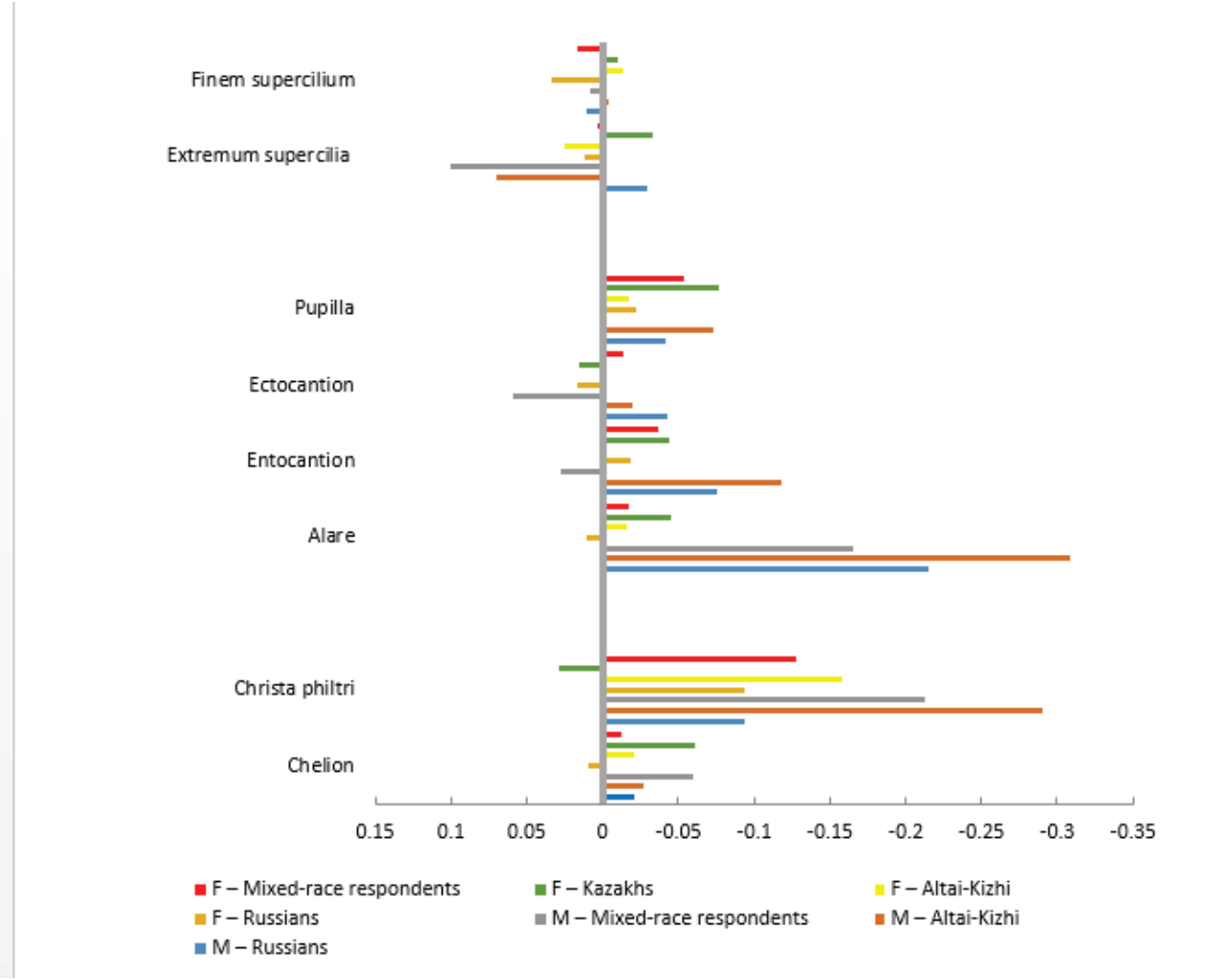


Figure 2. An example of test material obtained during the experiment



*F (female), M (male). The diagram covers adolescent individuals.

Figure 3. Asymmetry coefficient of facial structural elements in the drawings of respondents from different ethno-gender groups inhabiting the Republic of Altai

Conclusion

The results of the experimental part of this study made it possible to establish a pronounced directional asymmetry of the lower face height in the structural elements of the drawn face of an imaginary sexual partner. The right visual field, functionally involved in this process and perceived by the left brain, most likely reflects students' positive emotional reactions. The nature of the spatially presented asymmetry of the face drawing indicates the lack of any prolonged-in-time prospects for choosing a partner and does not depend on gender and ethnicity. In this regard, drawing the face of a sexual partner can be a reliable indicator of social ties among young students in terms of their attitude both towards marriage in general and towards the choice of a sexual partner.

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Ethical Clearance: The ethics committee of the Gorno-Altaisk State University approved the research program of students. No contradictions with Declaration of Helsinki (1964 and with further amendments) appeared during the research.

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