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METHODOLOGICAL ASPECTS OF STUDYING THE PERCEPTION OF FAMILIAR AND UNFAMILIAR FACES

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Face perception, one of most important social abilities, can be defined as the ability to perceive the face as a gestalt, along with all its parts and the relations between them. This face specific strategy has been called "configural processing". One of actual trends in face cognition research — using of unfamiliar faces without nonspecific features — leads to controversy, whether this kind of stimulus material demonstrates ecological validity. In present, we propose a verification option using the experimental paradigm "part-whole recognition" (successful detection of face details when presented in the context of a whole face). This classic effect was demonstrated using unfamiliar faces, with nonspecific details, and after the learning phase. After some modifications of this paradigm — using of unfamiliar faces without nonspecific features and without a series of familiarization — the effect disappears. The question is, what for parameter — face familiarity, or presence/absence of nonspecific face features — is the leading predictor of configural processing. Within the framework of our study we were able to show, that the absence of nonspecific face features is this leading parameter: upon presentation of faces of varying degrees of familiarity without nonspecific face features, the configural processing becomes significantly weaker. The results may be helpful for planning future research.

Keywords: face perception, configural face perception, part-whole recognition paradigm, familiar faces, unfamiliar faces, non-specific face features.

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МЕТОДОЛОГИЧЕСКИЕ АСПЕКТЫ ИССЛЕДОВАНИЯ ВОСПРИЯТИЯ ЗНАКОМЫХ И НЕЗНАКОМЫХ ЛИЦ

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Восприятие лица — процесс формирования его визуального дифференцированного образа. Специфичная, именно для восприятия лиц как социальных стимулов, стратегия получила название конфигурационной. Однако в современных исследованиях чаще всего используется стимульный материал в виде изображений лиц незнакомых людей, не имеющих неспецифические для лица детали. Такой подход ставит под сомнение экологическую валидность как самого стимульного материала, так и результатов проводимых исследований. В настоящей работе предлагается вариант проверки валидности стимульного материала с использованием экспериментальной парадигмы «part-whole recognition» (более успешное узнавание деталей лица при предъявлении изображения целого лица). Классический эффект был продемонстрирован при использовании изображений лиц незнакомых людей с неспецифическими для лица деталями, и после предварительной фазы ознакомления с ними. При модификации парадигмы — использовании исключительно изображений овалов незнакомых лиц (без серии ознакомления) — эффект исчезает. Остается открытым вопрос о причине исчезновения данного эффекта в модифицированных версиях и о ведущем параметре, который определяет степень выраженности конфигурационной стратегии при восприятии лиц — уровень их знакомости, или наличие/отсутствие у них неспецифических деталей. Наша экспериментальная проверка показала, что ведущим параметром является отсутствие неспецифических для лица деталей. Результаты могут носить характер рекомендации при планировании будущих исследований в этом направлении.

Ключевые слова: восприятие лиц, конфигурационная стратегия, «part-whole recognition paradigm», знакомые лица, незнакомые лица, неспецифические детали лица.

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Introduction

It is common for the modern experimental psychological, neurophysiological, clinical, and differential psychological literature to consider faces as a special stimulus material, and the face cognition is considered to be specific in relation to more general cognitive abilities. [11; 13; 19; 43]. The specificity of this process is determined by its social nature; face cognition has special role in the incorporation of a person into society. [2; 3; 4; 41; 43]. It all begins almost from the moment of a person's birth, when the very first adaptation to the environment, as well as interaction with it, is carried out through the imitation of various expressions of close adults in "great-we" communication [6; 22]. Such early experiences make it possible to communicate nonverbally, to understand the attitudes and intentions of other people without words [12]. Also, by the face you can determine what the person's attention is directed to, which is also important for social interactions [39]. The face memorization and recognition abilities are related to the processes of extracting biographical information and recalling the name, emotional response to familiar persons, which, accordingly, contributes to the fact that a person will not exist in isolation, namely, establishment of relationships and creation of a family [7].

Such a specific nature of this stimulus material category causes a certain difficulty for researchers, as to how measure various aspects of face cognition as objectively as possible, while maintaining ecological validity. The prevailing approach of using standardized images of unfamiliar faces without non-specific details (such as ears, hairstyle, jewelry, etc.) is debatable, as to whether such stimulus faces retain their special social status among other stimulus material. [45].

Currently, the empirical data is contradictory. For example, a configural strategy is typical for the perception of faces as social stimuli [19]. The configural strategy of face perception includes the creation of its image, starting from viewing it as a gestalt, by highlighting the details (mainly the eyes, nose, mouth), to analyzing the relationships between them (for example, the distance between the eyes). Experimentally, this strategy can be identified in terms of the inversion effect (faster and more correct responses to faces in the normal position, as opposed to demonstrations where the faces are depicted inverted [44], composite effect (perception of the upper and lower face halves as a whole, difficulties, for example, when detecting that the upper half of the face is replaced by another, the stimulus is considered as a new face [46], part-whole recognition effect (faster and more effective recognition of the face details during their consideration in the context of the whole face as compared to the isolated one) [35]).

The authors of this paper learned that, Grit Herzman and colleagues failed to demonstrate a configural strategy of face perception, for example, during practical evaluation of the Berlin Face Test [14], which consisted of classical paradigms for measuring various aspects of the procedure of processing information about a face, using a standardized database of unfamiliar face ovals images.

The purpose of this study is to analyze the parameters of the stimulus material that affect the specific (social) nature of the process of face perception.

Face Cognition: Specification

The stage that starts the process is the face perception. Face perception, according to functional models, can be defined as the process of step-by-step coding, extracting graphic and structural codes and their retention over a short period of time [8]. At the very beginning, when we see the stimulus face, the graphic codes are displayed on the retina. Such codes are relatively raw images. They are the source of the general characteristics of the stimulus-face, however, at this stage, the information is not yet related to our associations, experiences related to this particular face. The so-called structural codes are extracted after reading the graphic codes. At this stage, the details of the face (mainly the eyes, nose, and mouth) and the relation between them, which are unique to each existing face, are processed. So, this process has the function of differentiation, i.e. distinguishing of faces from each other. According to the literature, the stage of extraction of structural codes of the face is also called the configural face perception, or configural strategy. [1; 19]. The ability to see faces as a configuration of their details is often noted as a unique characteristic of perception of this particular category of stimuli [19; 31; 35, etc.].

The stage of structural code extraction is of great importance for the successful memorization and recognition of faces: only in case of successful "reading" of all the information about the unique face configuration, it is possible to store it in long-term memory, the so-called "face recognition unit" (FRU). Later, during the extraction of the structural codes of the face, the "reconciliation" of these codes is carried out along with those, that have already existed. This is the way to decide whether a face is familiar to us or not. If the face is new or unfamiliar, the processing is going to be completed. If the face is familiar, the processes of identification (semantic memory) and name recollection are activated.

At this point, it is worth emphasizing that the literature has repeatedly highlighted the significant correlation between these processes — configural face perception and memory for faces. Individuals, who have a high level of "reading" of the face structural codes (which is operationalized by the extent of such effects as the inversion effect [44], the composite effect [46]), are also characterized by a higher level of memorization and recognition of faces [9; 21; 29; 30; 40]. There is also a reverse trend. Abilities to remember and recognize faces are significant predictors of the configural face perception severity [26; 32].

In 1992, Martha Farah proposed a kind of continuum of different types of information processing strategies depending on the category of stimulus material [10]. So, she determined that the most social stimuli-faces can be processed exclusively in a configuration way; objects, such as houses, which are most often used as comparative material together with faces, can be processed in a configuration-analytical way; letters and words can be processed exclusively in an analytical way. However, based on the functional model of face cognition as well as on the repeatedly confirmed data on the significant association between the configural face perception and the memory for faces; it can also be assumed the presence of such continuum by the type of expression of the configuration strategy, depending on the degree of face familiarity. The more we interact with people's faces (directly or indirectly, in case of media personalities), the more socially significant they become for us, we get well aware of the details of these faces and the relations between them (eye shape, nose size, eye position, etc.). It can be assumed that the more familiar the face, the more pronounced the configural strategy will be. While for the perception of unfamiliar faces, other signs are more likely to be more significant, for example, hairstyle, etc. (so-called non-specific facial details). In 2017, Logan and his colleagues demonstrated, for example, that in the tasks for differentiating unfamiliar faces, subjects rely on the shape of the head. [18].

Thus, that is the face interaction level, as well as the availability of associative connections related to it, fill the face with social meaning.

Contradiction according to the Part-Whole recognition paradigm, and the Aim of this Study

One of the "gold standards" for configural face perception measurement is the previously mentioned "part-whole recognition" paradigm [35]. In 1993, James Tanaka and Martha Farah published the following experiment. Within the first experimental series, they asked the subjects to memorize the faces of strangers (graphical black-and-white images of the faces of male representatives of European race; it should also be noted that the non-specific details of the stimuli were not removed (ears, hair)). The technique of "name-face" association construction was applied. Moreover, the subjects were warned that in the future they would perform a task to recognize these faces. The recognition procedure was arranged as follows. They were presented either one of the faces from the first series paired with another one, which was almost the same, but with one changed detail (for example, a different nose), and the subjects were asked to choose whether the image on the right or left was, for example, "John". In another case, a couple of parts (for example, two noses) were presented, and the subjects were asked which of these parts belonged to "John". It was found that the subjects recognized the details of the face faster and more accurately when presented in the context of the whole face compared to the isolated one. This effect was described by Tanaka and Farah as a part-whole recognition effect, its originality was proved only for stimuli-faces [38], the magnitude of this effect was used to demonstrate the severity of the configural strategy during face perception [35]. This effect was found to be stable for both adult subjects [36] and children [24; 25; 33; 34], and even for patients with autism [15]. It should be noted, however, that all these experiments can be united by application of a series of memorization of unfamiliar faces, as well as by the use of adult or child faces with non-specific details. In 2008, Herzmann and colleagues reported that in case of modifications of this procedure, such as the use of face ovals of strangers and the absence of a series of memorization (the subjects were presented with a face during a limited period of time, a pair of faces or details were presented simultaneously after it, the task of the subject was to determine the face that was presented earlier, or its details), the effect was not recorded. The subjects better coped with the presentations, when the element was presented separately from the whole face. Thus, in case of perception of the ovals of unfamiliar faces, the subjects demonstrated the opposite analytical strategy typical for the face perception (peculiar, rather, for the perception of non-social stimuli).

This finding supports our previous assumption that there may be a kind of continuum of different information processing strategies for different categories of objects and for different types of face-stimuli, depending on their social character. In this work, we pose a research question, which of the parameters - the level of familiarity or presence/absence of nonspecific face features — fill the stimulus faces more with a social character. Thus, within the framework of the present study, our first aim was to find out the leading predictor of perception of faces as social stimuli, what should be demonstrated with more expressed configural face processing. The second aim of the present study was to describe strategies of face perception, depending on charachteristics of face-stimuli.

Method

Subjects

The study involved 30 subjects (50% female) from different age groups (from 18 to 40 years, average age 29,16), with different educational levels (secondary education, higher education, scientific

degree), normal vision (or adjusted to normal) (in accordance with the self-report of the subjects). The subjects are represented by the ratio of right — and left- handed people as follows: left-handed people — 2, right-handed people — 28 (according to Edinburgh Handedness Inventory [23]).

Stimulus Material and Apparatus

For the experiment we used 60 black-and-white photographs (JPEG, 200*300) of female and male faces of young people, aged 18 to 35, with a neutral expression, face forward (taken in the database of the Institute of Psychology, Humboldt University of Berlin (Germany)) (Fig. 1), as well as similar photos of persons known from the media (30 images) (Fig. 2).

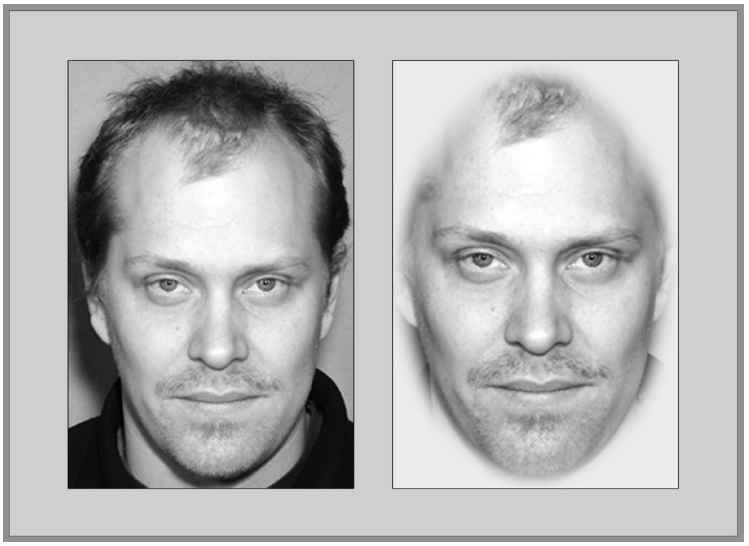

Fig. 1. Example of unknown face

Fig. 2. Example of well-known face

Further, there were two ways to use all 90 photos: the original way and the processed one, by means of a special ellipse that cuts off all the so-called non-specific details — hair, ears, and clothing items.

Inquisit by Millisecond software was used to represent the stimulus material.

Research Procedure

The experiment was started with the facial description procedure [16; 20]. 50% of the images of unknown people (from the total set of stimulus material) were presented sequentially on a computer display. Each face was shown on the computer display for 5 seconds, then it was faded; 15 seconds before the next face was presented, the subject had to make a description. There were no specific instructions on the way to make this description, it was assumed that the subject would write down the most remarkable things (for example, the shape of the nose, the shape of the eyes). The original faces and ovals of the faces were presented randomly, with a total of 60 presentations.

Next, there was interference procedure. The subjects completed a general demographic questionnaire (general questions about gender, age, education), as well as an Oldfield questionnaire to determine the leading side of the body [23].

After the interfering series, there was a task to estimate the number of faces that the subjects managed to remember during their description. The images of the faces (60) were presented sequentially on a computer display, and the subjects answered whether the presented face was familiar or unfamiliar using the keyboard.

In conclusion, the part-whole recognition paradigm task was performed [37]. The task included faces from the first series (60), absolutely new faces in two presentations (with and without non-specific details) (60), and faces of famous people, which were also presented in two variants (60). The faces were presented randomly. The order of presentation was as follows. The fixing cross appeared in the center of the screen during 1000 ms, then it disappeared, and the image of the face appeared in the same place during 1000 ms. According to the instructions, the subject had to try to remember it as much as possible in order to recognize it in combination with another face later, or to guess one of its details (eyes, nose, mouth) in combination with an element of another face. Then the face disappeared, and an interfering stimulus, representing three “X” symbols, appeared for 200 ms. The interference was followed by two faces or a pair of face parts (two noses, two mouths, two pairs of eyes), in the center of the screen, next to each other. Using the keyboard, the subject answered which of the faces, or of the elements, corresponds to the face presented before. The presentations of faces or their elements were allocated equally (180 presentations for each condition). See Fig. 3 and Fig. 4 for examples of presentations.

After the experiment, it was tested whether all the faces of the famous personalities selected for the experiment were familiar to the subjects.

Statistical Analysis

We used a three-way analysis of variance (ANOVA), as a statistical analysis, to assess the significance of the influence of the level of face “familiarity” (factor 1), the presence/absence of non-specific face features details (factor 2), and the interaction of these factors on the main experimental effect of “part-whole recognition” (the prevalence of correct answers when presenting face details in the context of the whole face) (factor 3). Multiple comparison correction was

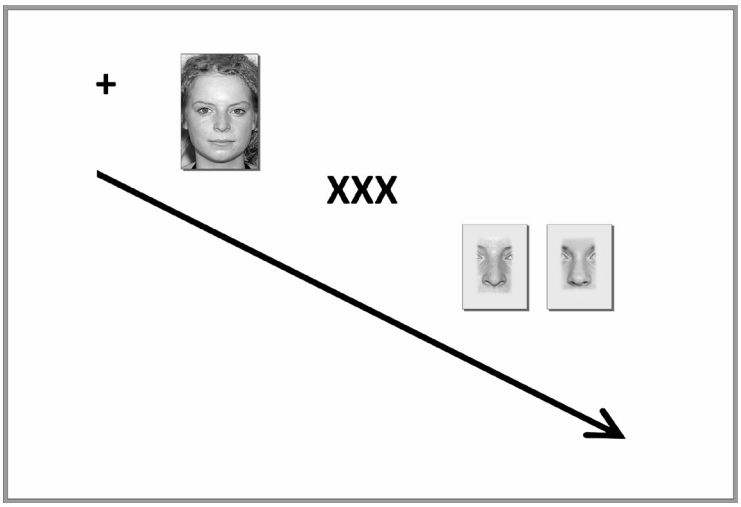

Fig. 3. Example of presentation with an unknown face

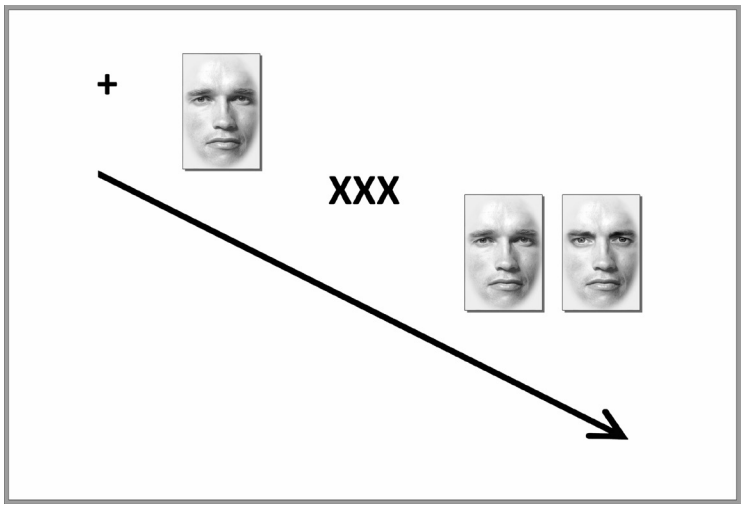

Fig. 4. Example of presentation with the face of a media personality

performed using the Bonferroni method. It should be noted that for analysis, we used only the indicators of performance; we did not analyze the reaction times.

Statistical analysis was performed by means of the open programming language R (R Core Development Team [27]) using the following packages: "psych" — for calculating descriptive statistics in psychological research, "ez" for performing three-way analysis), "ggplot 2" — for graphical data representation [17; 28; 42].

Results

Descriptive Statistics

For each presentation condition (12), the variable was arranged as an aggregate for 30 stimuli, so the responses to the stimuli from each condition took a value from 0 to 1. Then, we

studied the average value of the correspondence of each of the conditions within the whole sampling.

As it is indicated in Table 1, the level of task completion varied depending on the type of stimulus material.

Table 1

The results obtained by the subjects depending on the type of stimulus material

№	Stimulus variant	Face familiarity	«Non-specific details» presence	Average value	Standard deviation
1	Part	Familiar	Presence	0.8129032	0.1127690
2	Part	Familiar	Absence	0.8075269	0.1042467
3	Part	Previously memorized face	Presence	0.7129032	0.1287195
4	Part	Previously memorized face	Absence	0.6784946	0.1069955
5	Part	Unfamiliar	Presence	0.6774194	0.1236444
6	Part	Unfamiliar	Absence	0.6709677	0.1395076
7	Whole	Familiar	Presence	0.8688172	0.1198565
8	Whole	Familiar	Absence	0.8301075	0.1309099
9	Whole	Previously memorized face	Presence	0.8086022	0.1299481
10	Whole	Previously memorized face	Absence	0.7569892	0.1244822
11	Whole	Unfamiliar	Presence	0.7731183	0.1337270
12	Whole	Unfamiliar	Absence	0.6838710	0.1302052

Currently, according to the descriptive statistics, it is possible to make a conclusion that the subjects demonstrated the lowest result during presentation of unfamiliar faces without non-specific face features. It is noteworthy that there is practically no difference in the performance of main experimental conditions when presenting this stimulus material: the subjects correctly recognized details in the context of the whole face in 68% of cases, and they recognized them in a separate presentation in 67% of cases. In other cases, there is a difference in the performance of the experimental conditions, the largest difference is observed during the presentation of unfamiliar faces with non-specific details as well as during the presentation of faces from the memorization series with non-specific details. Further analysis shall verify the significance of the observational data.

Analysis of Variance

"Part-Whole Recognition" Effect

Data analysis, involving all types of stimulus material revealed that the part-whole recognition effect, which is expressed as a greater number of correct responses when presenting details of faces in the context of the whole face (78%) compared to their individual presentation (72%), is expressed at a significant level ($F= 63.64$, $df = 1$, $p \leq .001$).

Thus, at the moment, we can state that there is a configural strategy for information processing for the used stimulus material.

"Part-Whole Recognition" Effect Size depending on Different Types of Stimulus Material

The severity of the part-whole recognition effect was tested in relation to such a parameter as how familiar the face was to the subjects (the face of the media personality, the face seen before

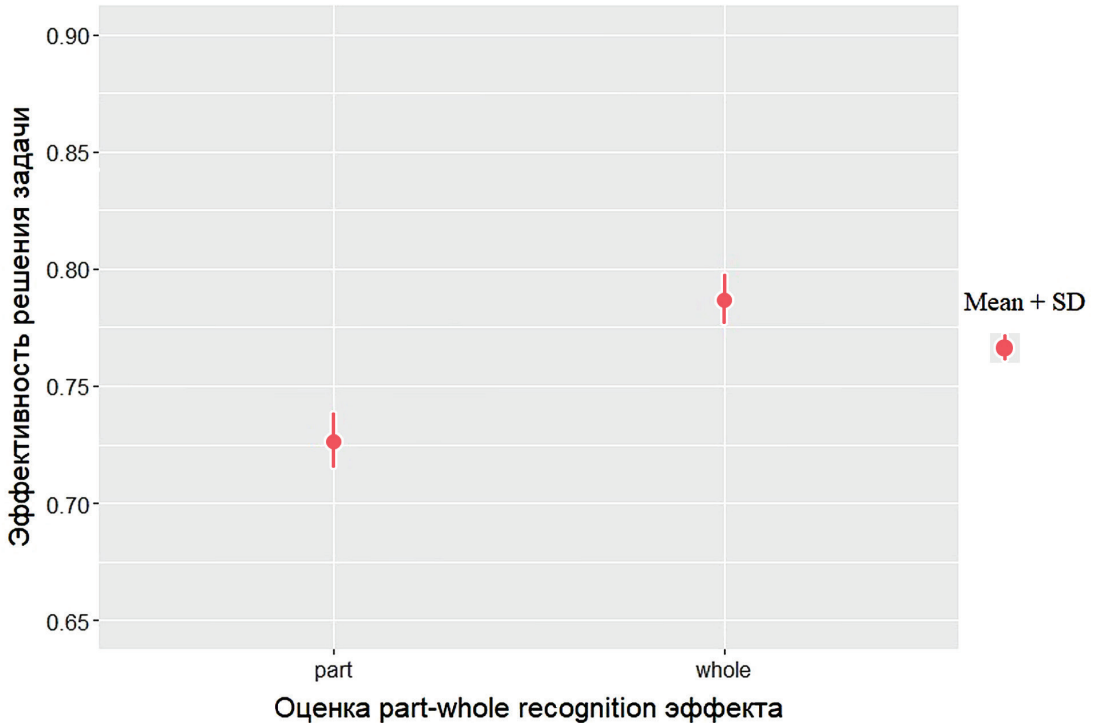

Fig. 5. The accuracy level of the task depending on the type of stimulus material (part — out of the context of the whole face, whole — in the context of the whole face): the horizontal axis indicates the conditions for the presentation of the stimulus material, the vertical — average values

in the series of face memorization, an unfamiliar face), the results can be seen in Figure 6. The correlation between the face familiarity level and the face perception configural strategy severity, represented by the part-whole recognition effect, was statistically significant ($F = 69.18$, $df = 5$, $p \leq .001$). Moreover, as it can be seen in the chart (Fig. 6), the configuration strategy is most pronounced during the perception of previously memorized faces ($F = 37.07$, $df = 5$, $p \leq .001$); it decreases during the perception of the faces of famous people ($F = 10.17$, $df = 5$, $p \leq .01$); and the configuration strategy is least pronounced during the perception of unfamiliar faces ($F = 6.54$, $df = 5$, $p \leq .01$).

As a next step, the dependence of part-whole recognition effect on presentation of face-stimuli with/without non-specific face features was analized. Figure 7 demonstrates that the effect of part-whole recognition diminishes when stimuli are presented without non-specific details. This observation is statistically significant ($F= 20.38$, $df = 3$, $p \leq .001$).

Thus, there is a tendency that both parameters (face familiarity level and presence/absence of non-specific details) affect the configuration strategy level severity in face perception.

Finally, we analyzed the severity of the part-whole recognition effect depending on the combination of face familiarity degree parameters and the presence/absence of non-specific details (Fig. 8). It was found that the effect was always significant for faces of different familiarity levels, if non-specific details were preserved (for unfamiliar faces -$F=13.82$, $df = 11$, $p \leq .001$, for faces of famous people — $F=10.92$, $df = 11$, $p \leq .001$, for persons from the memorization series —

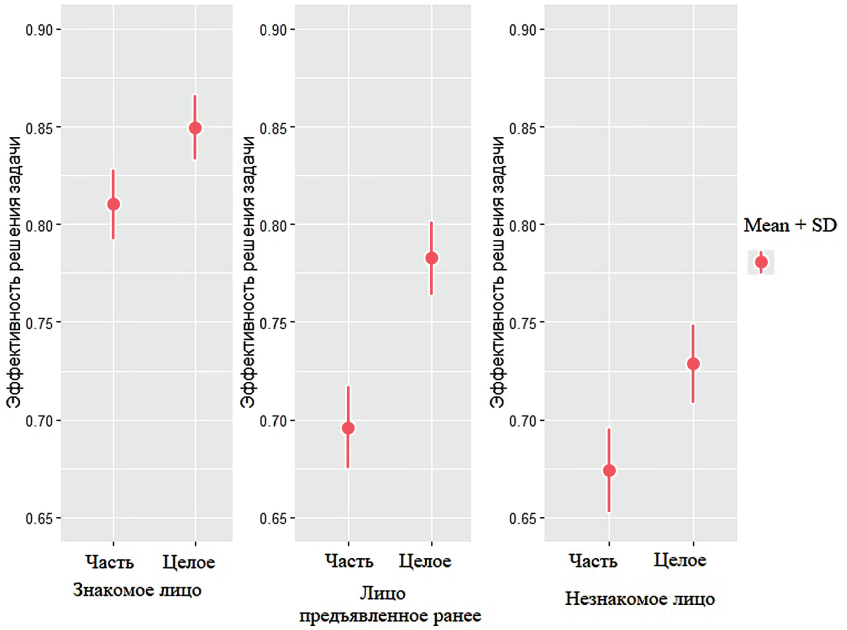

Fig. 6. The part-whole recognition effect depending on face familiarity, from left to right: the part-whole recognition effect for faces of famous persons, the part-whole recognition effect for earlier memorized faces, the part-whole recognition effect for unfamiliar faces. The vertical axes always indicate average values, the horizontal — always the conditions for the presentation of the stimulus material (first condition is always "part" and the second condition is "whole")

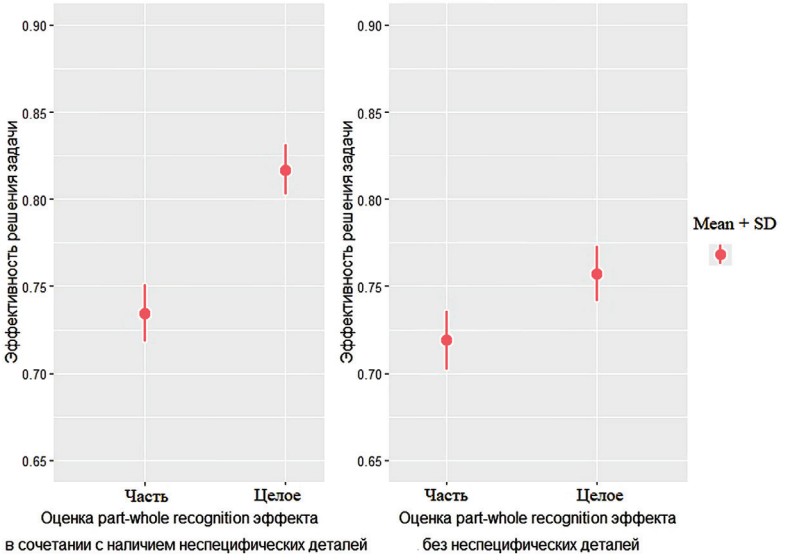

Fig. 7. The part-whole recognition effect for stimulus faces with (see please the left side) and without (see please right side) non-specific details. The vertical axes always indicate average values, the horizontal — always the conditions for the presentation of the stimulus material (first condition is always "part" and the second condition is "whole")

F=23.67, df = 11, p ≤ .001). If there were no non-specific face features, the effect appears differently during presentation of faces of different levels of familiarity: it is significant only for the faces from the memorization series (F=14.23, df = 11, p = ≤ .001) and it disappears in relation to the faces of famous people and unfamiliar faces.

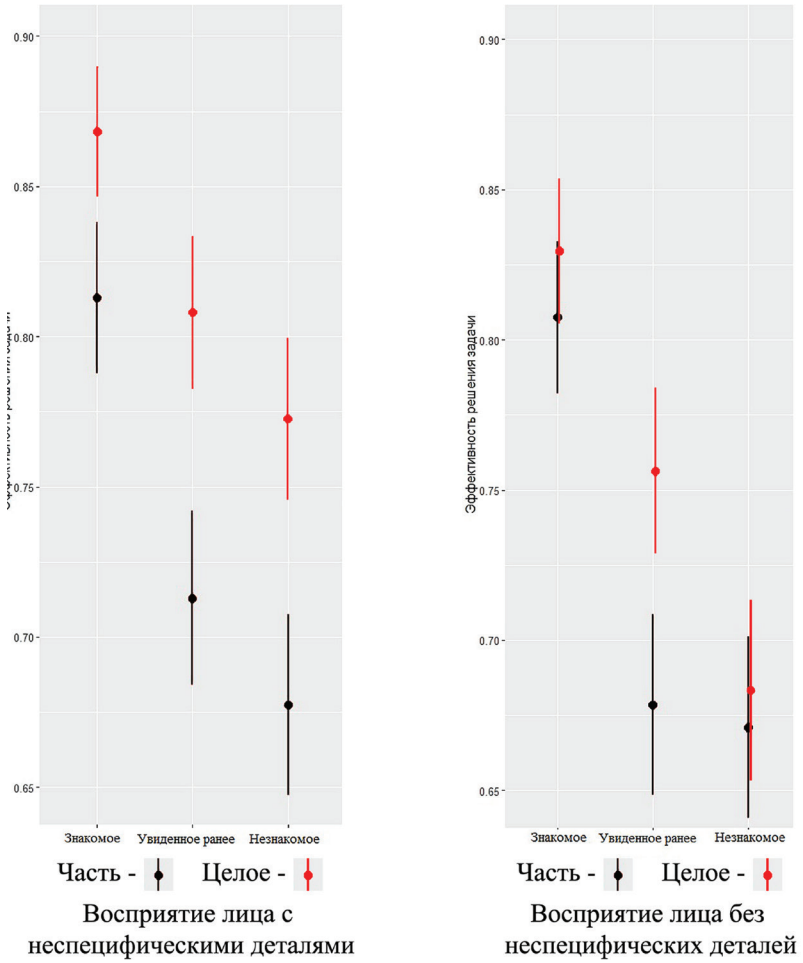

Fig. 8. The part-whole recognition effect during interaction of such parameters as the face familiarity level for the subject and the presence/absence of non-specific details:
In the image on the left, you can see the effect for tasks with faces with non-specific face features. The vertical axis displays the average values, the horizontal axis shows the experimental conditions: to the left of all the condition "familiar faces", above it you can see how the conditions part (black line) and whole (red line) were fulfilled with familiar faces, in the middle the condition "early seen faces" (above it you can see how the part (black line) and whole (red line) conditions were met with familiar faces), to the right of all — the condition "unfamiliar faces" (above it you can see how the part (black line) conditions were met with familiar faces and whole (red line)). In the image on the right, you can see the effect for tasks with faces without nonspecific face features, organized in the same way as the image on the left

Thus, we can see that the presence/absence of non-specific details is the leading parameter for the expression of the configural strategy of face perception.

Discussion

Faces can serve as carriers of various social information such as gender, age, race, person's mood, and focus of attention; we can make our first impressions by the faces, as well as develop our sympathies and antipathies, which lead to the development of various relationships between people. Face cognition is considered a special mental process that has a unique social character in comparison with other cognitive functions. The modern literature actively discusses the ways to study this process as objectively as possible in the laboratory without losing specificity of this process.

The scientists actively began to use standardized images of unfamiliar faces (in addition, with the so-called removed non-specific details) instead of the traditional study of this process, using images of people previously known to the subject (relatives, or well-known personalities), which was criticized for low objectivity, the impossibility of universal selection of such material for large samples of different subjects. However, the question arises as to whether this fact has yielded the expected result. Has the study come closer to a more objective understanding of the face information processing procedure? This is controversial problem, if to take into account the current state of the research.

First, there are different positions in reports whether face cognition is specific, or it can be processed by the same strategies as other non-social objects. And secondly, there is the question about the ecological validity of such stimulus material (faces) [45] — whether it is relevant to the face perception and recognition in real life.

Thus, the actual problem is determination of the point at which a face is perceived as a social stimulus during the preparation of the stimulus material for experimentation, and when does it start to be perceived as a physical object. This issue formed the basis of this study.

We studied the severity level of the configural strategy in the perception of different types of face stimuli (mainly, of different familiarity levels, but also with introduced and removed non-specific details) within the framework of our experiment (since, according to the literature, it is quite well known that they can be a quality predictor of the perception of faces, especially unfamiliar ones). The classical experimental part-whole recognition paradigm was chosen as the main manipulation [37]. As mentioned above, first of all, it was found that the effect of prevailing accuracy when presenting details of faces in the context of whole faces (as compared to their partly presentation) fades away within the specified task with unfamiliar faces without non-specific details [14]. Our aim was to track the moment and the parameter under which this effect will cease to appear to a greater extent.

The results were as follows: with reference to the analysis of all the stimulus material we used, at the average, we obtained a significant part-whole recognition effect that reflects the configural strategy typical for face stimuli. We analyzed the correlation between the part-whole recognition effect and the level of face familiarity, and found that this effect, despite appearing in the perception of all types of faces that were used in the experiment, is more pronounced for familiar faces than for unfamiliar ones. When analyzing such a parameter as the presence/absence of non-specific details, it turned out that the part-whole recognition effect is less when perceiving faces without non-specific details. As a main result, we have shown that the leading parameter is the presence/absence of non-specific details. During the presentation of the faces of famous people, unfamiliar faces without non-specific details, the effect disappears. The matter of whether there is an effect for faces from the memorization

series (without non-specific details) at the moment requires additional analysis, possibly a control experiment.

Currently, it can be assumed that the reason may be in the different mechanisms of memory for the faces from the same experiment and the faces seen before in life. If in the first case we are talking about short-term memory, then in the second case we are talking about long-term memory. The connection between short-term memory and configural face perception has been repeatedly proven [9; 21; 26; 29; 30; 32; 40]. Probably that is the reason why the effect was stable for this particular type of faces, even with removed non-specific details.

Confirmation of the Configural Strategy of Face Perception

Configural strategy is the ability to perceive a stimulus as a complete image, to distinguish its details and to establish relations between them, it is an exceptional characteristic of the perception for such a category of stimuli as faces [19; 31, etc.]. One of the classical experimental paradigms for measuring this strategy is the "part-whole recognition" paradigm of Tanaka and Farah [35], which demonstrates that facial details are better recognized when presented in the context of the whole face compared to their part presentation. This effect was first shown by Tanaka and Farah in 1993, and it was demonstrated to be exceptional only for face-stimuli compared to other objects [37], and further, this effect was repeated in studies on various groups of subjects [15; 24; 25; 33; 34; 35; 36].

Our study continues this series of experiments and proves the presence of a configural strategy in the perception of faces, expressed through the "part-whole recognition" effect.

Continuum within the Configural Strategy Depending on the Type of Stimulus Material

The novelty of this research is in the fact that we have been able to show through the example of the "part-whole recognition" paradigm that the level of configural strategy severity depends on the faces that are used as the stimulus material.

We have demonstrated that the severity of this strategy is related to the level of the face familiarity, and is more pronounced for familiar faces than for unfamiliar ones. At the same time, the part-whole recognition effect is also related to such factors as the presentation of solely oval face, or the inclusion of non-specific details in the presentation. The configural strategy is significantly less pronounced in the perception of face ovals.

Such a continuum within the possible strategies of face perception is certainly a scientific novelty of this paper. Within this continuum, the different types of faces presentation (from the more typical for social stimuli style of information processing, configural, to the more typical for non-social stimuli style, analytical one) could be represented as follows: the faces of familiar people or at least those seen before (the configural strategy is expressed in the maximum possible way); the unfamiliar faces in their presentation with non-specific details (the configural strategy is expressed, but less); the ovals of faces (qualitatively different processing).

Undoubtedly, these results are an important methodological basis for the construction of new models for the experimental study of the face perception processes. Taking into account the role of face perception in the adequate social functioning of a person, we can assume that the selection of stimulus material before the study is important from the point of view of the subject of the study.

Some Limitations of this Study

In the final part of this paper, we would like to note that the described experiment is the initial stage in the study of face-stimuli information processing in different types of presentation, and the continuum described by us is still a conditional model. Firstly, at the moment, the experiment involved not a large number of subjects. The sample size should be increased to ensure the reliability of the results and generalize the findings. Secondly, the further experiments will probably need to control both the experimental paradigm and the stimulus material. The part-whole recognition paradigm is limited by the fact that it is usually used as a holistic process measurement within the framework of the face perception configural strategy [19]. The configural strategy itself is more complex and consists of three stages — face detail perception (the so-called "Sensitivity to first-order relations"), face perception as a gestalt (a holistic process), and perception of the relationships between face details (the so-called "Sensitivity to second — order relations")) [19]. Thus, in order to control the result in future experiments, it is necessary to introduce, for example, paradigms aimed at measuring other components of the configural strategy, or, possibly, an inversion of the paradigm, which, according to some authors, is a possible measurement of the configural strategy as a whole [19]. It is also important to provide better control over the faces familiarity level. As it was mentioned above, some discrepancy in the result for familiar faces occurred due to the difference in the memory mechanisms for these two groups of stimuli. Moreover, it is interesting for the development of the model of the continuum we are discussing, to include other stimulus material, for example, as in the paper of Martha Farah — images of other objects, letters [10].

The further research is also concerned with the analysis of the expression of the configural face perception through reaction times.

Summary

This paper was related to the current topical issue on the face cognition: how to use the stimulus material to study this process as objectively as possible, without losing its specific social character. We have confirmed in our study the existence of a configural strategy for the face perception, which is expressed through the part-whole recognition effect. At the same time, the obtained results indicate that this strategy, which is typical for faces as a special stimulus material of a social nature, is unevenly expressed for different types of face-stimuli. We succeeded in proving that such stimuli as the faces of familiar people with non-specific details have the maximum sociality; the ovals of faces have the minimum sociality. We hope that this data will be useful in future studies.

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