

The Interpretation of Human Emotion Through the Camera Lens: Psychological and Aesthetic Frameworks

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ARTICLE INFO

ABSTRACT

Research Article

DOI:

[10.70651/3041-248X/2025.11.13](https://doi.org/10.70651/3041-248X/2025.11.13)

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The article presents a comprehensive investigation into the mechanisms underlying the interpretation of human emotions in photography, integrating psychological, aesthetic, and neurocognitive approaches. The focus is placed on how a photographic image elicits, models, and transforms the viewer's emotional states, as well as on how contemporary technologies (including algorithmic emotion-recognition systems and visual analytics) influence these processes. Research methodology. The study draws upon an analysis of a wide range of scholarly sources, including works in experimental psychology, neuroaesthetics, cognitive science, and contemporary photographic theory. Results. The findings indicate that the interpretation of emotions in photographic images is a multilayered process shaped by the interaction of several components: neurocognitive mechanisms that govern the encoding of facial cues, attentional dynamics, and affective resonance; aesthetic properties of the image – such as composition, lighting, color, and symmetry – which significantly modulate emotional impact; and cultural-semantic codes that frame meaning and guide the viewer's interpretive pathways. The study demonstrates that positive facial expressions (particularly smiling) statistically enhance the aesthetic appeal of portrait photography by activating mechanisms of social trust and emotional resonance, whereas negative expressions tend to prompt deeper and more attentive visual engagement. Photography is shown to function not only as a representation of emotion but also as an active affective trigger that interacts with the observer's bodily and perceptual systems. At the same time, algorithmic emotion-recognition systems reveal considerable limitations when interpreting multilayered and context-dependent expressions, underscoring the necessity of combining technical and humanities-based approaches.



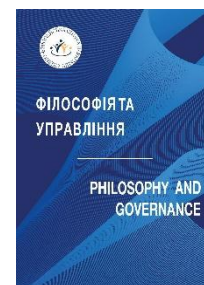
KEYWORDS

emotion, photography, aesthetic perception, affect, neuroaesthetics, facial expression, portrait, cognitive mechanisms, image interpretation, phototherapy.



e-ISSN 3041-248X

Філософія та управління

<https://www.eu-scientists.com/index.php/fag>


Інтерпретація людської емоції через об'єктив: психологічний та естетичний вимір фотомистецтва

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СТАТТЯ	АНОТАЦІЯ
Дослідницька DOI: 10.70651/3041-248X/2025.11.13 Авторське право © 2025 авторів Цей твір ліцензовано на умовах Ліцензії Creative Commons «Із Зазначенням Авторства – Некомерційна 4.0 Міжнародна» (CC BY-NC 4.0).	Стаття присвячена комплексному дослідженню механізмів інтерпретації людських емоцій у фотографії через поєднання психологічного, естетичного та нейрокогнітивного підходів. У центрі уваги те, як фотографічний образ викликає, моделює та трансформує емоційні стани глядача, а також яким чином сучасні технології (алгоритмічні системи розпізнавання емоцій, візуальна аналітика) впливають на ці процеси. Методологія дослідження. Проаналізовано ряд наукових джерел, серед яких праці з експериментальної психології, нейроестетики, когнітивних наук та сучасної теорії фотографії. Результати. З'ясовано, що інтерпретація емоцій у фотографії є багаторівневим процесом, у якому взаємодіють: нейрокогнітивні механізми, що визначають кодування міміки, уваги й афективного резонансу; естетичні характеристики зображення – композиція, світло, колір, симетрія, які значною мірою моделюють емоційний ефект; культурно-семантичні коди, які задають рамки значення та впливають на інтерпретаційні сценарії глядача. Доведено, що позитивні вирази обличчя (зокрема усмішка) статистично підвищують естетичну привабливість портретної фотографії, активуючи механізми соціальної довіри та емоційного резонансу. Натомість негативні емоції стимулюють глибше та уважніше прочитання зображення. Установлено, що фотографія є не лише репрезентацією емоції, але й активним тригером афекту, який взаємодіє з тілесними та перцептивними механізмами спостерігача. Водночас алгоритмічні системи розпізнавання емоцій виявляють суттєві обмеження при інтерпретації багатозарових і контекстуально залежних виразів, що актуалізує потребу поєднання технічних та гуманітарних підходів.



КЛЮЧОВІ СЛОВА

емоція, фотографія, естетичне сприйняття, афект, нейроестетика, міміка, портрет, когнітивні механізми, інтерпретація образу, фототерапія.

1. Introduction

In the XXI century. Photography is increasingly seen as an affective structure capable of provoking bodily, cognitive and aesthetic reactions of the viewer. Modern research proves that the emotional impact of an image occurs earlier than its rational comprehension, and therefore the interpretation of photographic emotionality cannot be reduced to the analysis of facial expressions or individual visual markers. At the same time, the aesthetic characteristics of the frame, for example, such as composition, light, color, balance of elements, often determine no less part of the emotional content than facial expressions or plot. The ethical aspect is also important, especially when it comes to the development of technology, in particular its ability to recognize emotions in public and commercial environments. Automatic interpretation of a person's internal states without his consent creates risks of manipulation, stigmatization and the formation of new forms of social control. In this context, photography goes beyond treating it as an example of art, acquiring signs of social responsibility, since the emotion captured can be used as an instrument of influence.

In general, the problem of interpreting human emotion through photography is the gap between three dimensions – psychological, aesthetic and technological. Psychological mechanisms of perception of emotions do not coincide with algorithmic models of their recognition; aesthetic parameters of the image form emotional reactions that go beyond the limits of facial expression; Technological tools, in turn, are not able to fully take into account the contextuality and layering of photographic emotionality. Such complexity of the relationship necessitates a comprehensive, interdisciplinary study aimed at identifying patterns of emotional interaction between the image, the viewer and technological means of fixing and analyzing emotions.

2. Literature Review

The study of the psychology of perception of fine arts has a long history and covers a wide range of theoretical and empirical approaches. The classic works of Fechner [8] laid the foundations of experimental aesthetics, highlighting the patterns of influence of visual characteristics on aesthetic assessments and subjective experience of contemplation of art objects. Further development of this tradition can be traced in the works of Arnheim [1], who considered the perception of art as an active cognitive process of organizing sensory material, where composition, visual patterns and structural elements form a holistic image.

A significant contribution to the formation of art psychology was also made by the study of Berlyne [2], who developed a psychobiological theory of aesthetics, linking aesthetic preferences with the mechanisms of stimulation and the optimal level of excitation of the nervous system. Subsequently, Goodman proposed a symbolic concept of art analysis, where artistic images function as systems of signs that need to be decoded in the process of interpretation [9]. A similar approach was followed by Wollheim [18], who emphasized the role of the phenomenology of perception and intentionality in the interaction of the viewer with the work of art.

Modern neurophysiological studies initiated by Zeki supplement psychological models with an empirical evidence base [19]. The author shows that the aesthetic experience is accompanied by the activation of individual neural systems responsible for evaluating the harmony, novelty and emotional significance of the image. Newer work continues the line of neurocognitive analysis. Thus, Kathofer, Lamm, Leder, and Crone demonstrate that the experiences of aesthetic responses in real perception and the imaginary representation of stimuli are behaviorally almost identical, but neurally distinct, which highlights the complexity of the cognitive and emotional mechanisms of aesthetic experience [10].

A special place in modern research is occupied by the problem of emotional response to visual images and photographs. Brown and Phu consider photography as a medium capable of not only capturing events, but also evoking deep affective states thanks to personal and cultural contexts of interpretation [3]. Similar findings are shared by Cartwright and Wolfson, who emphasize the role of boundary experiences and internal emotional reactivity in the process of interaction with the image [4].

Empirical studies of emotions in the perception of faces confirm that facial expressions are a powerful modulating factor in aesthetic evaluation. A large study by Dores et al. demonstrates high accuracy and stability in recognizing emotions by facial markers, suggesting universal mechanisms for processing emotional signals [5]. Similar results are shown by Kobayashi, Enomoto, and Matsuda, proving that the perception of emotional images activates both perceptual and neural systems that form an emotionally rich aesthetic experience [11].

Current studies also confirm the influence of the emotional tone of the image on aesthetic assessment. Valuch, Pelowski, Peltoketo, Hakala, and Leder show that positive facial expressions

statistically increase the aesthetic appeal of portraits [16]. This is quite consistent with the theory of cognitive fluency by Reber, Schwarz and Winkielman, according to which the ease of processing information increases the subjective experience of “beauty” [15].

Thus, the modern literature demonstrates a shift in emphasis from psychophysical models to integrated approaches that combine psychophysiology, cognitive mechanisms, emotional responses, cultural codes, and semantic contexts of visual perception. This confirms the systemic nature of aesthetic experience, its dependence on individual experience, information processing mechanisms and the neural organization of visual analysis.

3. Problem Statement

Despite the significant development of art psychology and modern achievements in the field of computer vision, the problem of interpreting human emotions in a photographic image still does not have a single theoretical explanation. Psychological models prove that the emotional reaction to a photograph is formed on the basis of perceptual mechanisms, bodily response and cognitive evaluation. Aesthetic concepts, in turn, consider photography as an artistic image that operates through composition, visual code, and cultural context. At the same time, modern technological systems for recognizing emotions seek to algorithmically identify feelings by facial signs, but often neglect the context, ambiguity and subjectivity of perception. This creates an interdisciplinary gap: photography conveys emotions in a complex and multi-layered way, while algorithms mostly work with reduced models based on fixed categories. Thus, there is a need to integrate psychological, aesthetic and technical approaches, which will explain the mechanisms of emotional interpretation of photography as a cognitive, cultural and algorithmic process at the same time.

Within the framework of the presented study, the following main scientific tasks are set:

1. To carry out a comprehensive review of psychological models of interpretation of emotions;
2. To analyze the aesthetic dimension of photography, in particular the influence of composition, symbolic systems, cultural narratives and artistic styles on the formation of emotional perception.
3. To assess the capabilities and limitations of modern algorithms for automatic emotion recognition, identifying factors that complicate accurate interpretation (context, cultural differences, ambivalent or mixed emotions, non-verbal subtexts).
4. Compare human and algorithmic reading of emotions, highlighting what remains “imperceptible” to artificial intelligence, but accessible to a psychologically and culturally trained observer.

4. Methods and Materials

The study is based on an interdisciplinary approach that combines theoretical analysis, content analysis of scientific sources and a conceptual comparison of psychological, aesthetic and technological approaches to the interpretation of emotions in photography. Such a design allows you to evaluate the emotional perception of a visual image at the same time as a mental process, an aesthetic phenomenon and an object of algorithmic recognition.

Content analysis involved highlighting key concepts, patterns of emotional interpretation, and ways to explain how photography stimulates the viewer’s sensory response. Comparative analysis has been used to compare psychological theories of perception with theories of visual representations and neurobiological explanations of aesthetic experiences.

The technical and algorithmic aspect of the study is represented by an assessment of modern emotion recognition systems described in empirical works using automated image processing and analysis of mimic patterns. Accuracy indicators, model types, conditional emotion classes, and toolkit limitations (standardized expressions, dependence on training datasets, low sensitivity to ambivalent emotions) were used for comparison.

The applied methodological approach made it possible to determine how different scientific traditions describe the same phenomenon (emotional response to photography) and to identify their points of intersection and contradictions.

5. Results and Discussion

In psychological science, there are several key areas of research on art and aesthetic perception, including experimental aesthetics, art psychology and neuroaesthetics. All these fields are interdisciplinary in nature and rely on the achievements of related sciences. For example, the origins of

experimental aesthetics are associated with the works of G. Fechner [8], who proposed the concept of “bottom-up” and developed methods for empirical research of aesthetic preferences – the method of selection, the method of creation and method of analyzing the use of objects. At the center of his approach was the idea that aesthetic experience is based on the emotional response of the subject. At the beginning of the twentieth century, Gestalt psychology made an important contribution, emphasizing that perception is always structured and gravitates towards “good forms” – symmetry, simplicity, closure. Psychoanalytic approaches, in turn, considered art as a symbolic manifestation of repressed desires, and I. Arnheim, based on Gestalt theory, proposed to analyze images through the concepts of visual balance, tension and spatial organization [1]. Another belief of Gestalt psychology states that certain forms and objects have their inherent emotional expressiveness. A radical turn in the study of aesthetics was made by D. Berleyn, who considered aesthetic behavior as a manifestation of basic neurophysiological mechanisms [2]. The development of neuroscience and psychology of perception in the 1990s contributed to the emergence of neuroaesthetics. For example, according to the ideas of S. Zeki, aesthetic judgments are formed thanks to the activity of specialized brain modules tuned to process individual parameters of visual images; That is why artistic styles can reflect the activation of certain visual zones of the cortex [19], and an image element evokes a stronger aesthetic response when it resonates with visual processing mechanisms. In other, already modern theories, in particular in the model of perceptual fluence (R. Reber, N. Schwarz, P. Winkielman), it is emphasized that aesthetic pleasure depends on the ease of cognitive processing of the stimulus: the simpler the image is perceived, the higher the positive reaction [15].

In the twenty-first century, the interpretation of emotions through photography is undergoing significant transformations. Earlier, we mentioned that such a transformation is primarily associated with the development of algorithmic facial recognition systems. Automatic detection of emotions has become one of the key areas of application of artificial intelligence, although its reliability and accuracy are still controversial. Modern algorithms rely on models that classify expressions into basic emotional categories, but such systems face a number of methodological problems: data heterogeneity, cultural differences, variability in lighting, lack of context. Despite technological advances, algorithmic systems show significant errors in recognizing “subtle” or mixed emotions. For example, emotions that do not obey clear facial patterns (melancholy, irony, inner tension) are often lost or recoded into categories available to the algorithm. In this sense, photography turns out to be too complex and contextually rich for algorithmic interpretation, which indicates the need to combine machine analysis with humanitarian approaches. A separate aspect is the ethical dimension of the problem, since the use of automatic emotion recognition systems in public space or commercial products raises the issue of privacy, manipulation and “control over emotions” [4]. Public debates focus on the risk of forming new forms of social monitoring and moral restrictions on interpreting a person’s internal states without his consent. In this context, the photographer’s work acquires responsibility: the emotion captured in the image should not become an instrument of control or biased interpretation.

It is worth noting that in the context of modern humanities and social sciences, photography is increasingly interpreted not as a simple representation of reality, but as a complex affective structure that forms certain emotional modes of interaction between the image and the viewer. Studies of the last decade demonstrate a paradigm shift from the analysis of purely visual characteristics of an image to the study of how photography “evokes” emotion, directs the gaze, creates tension or, conversely, harmonizes perception. In this context, the concept of “affect” is key, which appears as an intermediate space between imagery, bodily reactivity and psychological interpretation. The affect theory, presented in the works of researchers of modern photography, emphasizes that the emotional sensation that photography forms arises earlier than conscious rational comprehension. The image comes into direct contact with the viewer’s bodily and perceptual mechanisms, generating a complex set of reactions: from momentary delight or disgust to subtle aesthetic movements. This approach allows us to consider photography not as a static object, but as a process – a dynamic interaction between the photographer’s intention, image properties and the recipient’s experience.

Today, the concept of affect occupies a central place in modern photography research. Affect is seen as a bodily-perceptual reaction that precedes conscious comprehension. Thus, Brown & Phu analyze photography as a complex of interactions between artist, object, viewer and curatorial practices, emphasizing that it is through the involvement of theories of affect that photography can be considered not only as a technical or aesthetic object, but as a social and cultural event. The authors also drew attention to the long-term underestimation of affect in the history of photographic studios. In this context, they emphasize: although in the twentieth century photography was increasingly integrated into museum and academic discourse, the theoretical approaches of the period tended towards a political, structural and materialistic interpretation of the image. On the other hand, modern affective

studies, continuing the intellectual line initiated by feminist and queer studies, focus on the bodily, emotional, and sensual aspects of photography, offering a broader vision of its cultural functions [3].

Modern psychological theories of emotions consider them not only as innate reactions, but also indicate that they are constructed by the brain through prediction and categorization. This approach helps to understand that the viewer “creates” emotional meaning from photographs, and not just “reads” the finished emotion. Studies on recognizing emotions through facial demonstration show that people can accurately identify seven basic emotions: joy, anger, sadness, fear, surprise, disgust, and contempt from photographs, provided that they are shown validated stimuli [5]. The study by S. Kostić, T. Todić Jakšić, O. Tošković examines how the type of visual representation (photo, drawing, emoticon) affects the accuracy of emotion recognition, showing that the context of a visual image can significantly alter perception [12].

Research in the modern psychology of visual perception confirms that emotions play a fundamental role in how a person interprets faces and fixed images. For example, a study by Kobayashi, M., & Ichikawa, M. shows that experiencing certain emotions changes both the speed and the nature of perceptual processing of facial expressions. In particular, states of anxiety or fear increase sensitivity to threatening signals and accelerate the cognitive identification of negative emotional expressions, while neutral or positive states promote a more balanced analysis of the face. This allows us to assert that the photographic image is not a passive carrier of information – it enters into a dynamic interaction with the emotional state of the observer, actualizing various cognitive-emotional mechanisms [11]. Parallel experimental results demonstrate that even a minimal change in facial expression – primarily the appearance of a smile – significantly increases the aesthetic assessment of the portrait. The authors prove that positive facial expressions automatically activate the mechanisms of social attractiveness and interpersonal security, which makes the portrait “warmer”, “closer” and psychologically accessible to the viewer. Thus, the researchers come to the conclusion that emotional expression models not only the interpretation of the content, but also the aesthetic quality of the image itself, confirming that the perception of beauty in portrait photography is inextricably linked with the emotional codes embedded in facial expressions [16].

Complementing these experimental directions, S. Palladino analyzes photography as a tool for working with uncomfortable or painful emotions, emphasizing its therapeutic potential. Within phototherapy techniques, the image becomes a mediator between internal experiences and their external representation: through the analysis, reconstruction or re-experience of the depicted situation, the person can integrate complex emotions, reduce the intensity of anxiety and form a more adaptive interpretation of their own experience [14]. Thus, photography plays the role of a kind of psycho-emotional tool that reveals the mechanisms of interaction between the social gaze, personal experiences and the processes of emotional regulation.

In general, we can say that the psychological dimension of photographic art is based on the assumption that photography can reflect and construct the emotional states of the subject. The viewer interprets the photographic image based on universal patterns of face perception, visual attention, and cognitive processing of emotionally significant signals. Neuropsychology research suggests that responding to emotional photos activates the same brain structures as direct contact with a living person. This means that the photographic image works as a kind of “empathic mediator”, capable of causing real psychological reactions: increased arousal, emotional involvement, feelings of discomfort or empathy. Portrait photography occupies a special place, because the human face is the most powerful carrier of emotional information. Several works in the field of cognitive psychology prove that the viewer recognizes emotional states not only by static characteristics, for example, the position of the eyebrows, the tension of the cheekbones, muscle activity around the eyes, but also by secondary visual signs that form the general “emotional field” of the image. For example, even minor changes in lighting or the ratio of light and shadow can significantly transform the emotional reading of the image.

Special attention should be paid to the phenomenon of “emotional reinforcement”, that is, situations when the viewer evaluates facial expressions in combination with compositional and contextual elements of the frame. Several empirical studies confirm that positive emotions (such as a smile) systematically increase the overall aesthetic appeal of a portrait. At the same time, negative emotions (fear, anger) can stimulate a more intense and attentive perception, causing a deeper immersion in the content of the image. This shows that the psychological interpretation of emotions is inextricably linked with the aesthetic reaction – the viewer experiences the emotion simultaneously on the cognitive and aesthetic levels.

In parallel with the psychological perspective, the aesthetic theory of the photographic image is actively developing. The focus is on the issues of compositional organization of the frame, “visual correctness”, and the ratio of form and emotional content. The aesthetic reactions of the viewer are

formed under the influence of harmony, balance, contrast, literary or cultural narratives, as well as technical characteristics - sharpness, saturation, and lighting.

Fundamental to the analysis of photography as a visual practice is also the notion of aesthetics. Aesthetics encompasses not only the philosophical understanding of the nature of beauty, but also modern ideas about the psychological mechanisms of response to the artistic image. In art history and cognitive sciences, aesthetics is considered as a holistic system that includes the laws of visual perception, features of sensory evaluation and criteria for the expressiveness of the image. That is why photographic art, as a branch that combines technical precision and emotional expressiveness, cannot be understood without resorting to the aesthetic dimension.

Classical philosophical concepts, initiated by Plato, Aristotle and Kant, eventually formed two key positions: objective, which assumes the existence of universal principles of beauty, and subjective, emphasizing the dependence of aesthetic assessment on the observer. In the context of photography, these positions are manifested in discussions about the "correctness" of the composition, symmetry, light, color, or, conversely, about the individual, emotionally colored interpretation of the frame. In the twentieth century, humanitarian studies led to a deep rethinking of the aesthetics of the image, emphasizing the semantic and cultural aspects of photographic vision. For example, Goodman N interpreted art as a system of symbols that form "worlds" constructed through practices of interpretation. The analysis of photography, in his opinion, involves reading the visual codes and cultural conditions in which they function [9]. W. Mitchell pointed out the interaction of the visual and the verbal, which in photography is manifested in the narrative of the frame [13], and R. Wollheim emphasized the importance of psychological context and the author's intention for the correct reading of the image. J. Elkins, proposing a two-level model of interpretation, showed that photography combines similarities to reality and socially formed rules of vision, making aesthetic experience both natural and culturally mediated.

More current empirical and neurocognitive studies confirm that the perception of a photographic image is a complex multi-level process that combines visual evaluation, emotional reactivity and semantic interpretation. In particular, Kathofer, Lamm, Leder, and Crone found that the aesthetic response to a photograph and to its imaginary reproduction exhibits similar behavioral patterns but activates different neural networks, suggesting the autonomy of aesthetic experience as a mental construct. This neuropsychological approach allows us to consider photography not only as an external visual stimulus, but as a trigger for complex cognitive operations related to the formation of mental images, emotional evaluation and integration of previous experience into the interpretation process [10]. At the same time, considerable attention is paid to the psychological mechanisms through which photography constructs aesthetic and emotional content. Thus, the study of Vissers and Wagemans demonstrates that aesthetic judgments about artistic photography are formed not only based on the perceptual characteristics of the image, but also through semantic attribution, which moderates the intensity of the emotional response. The authors prove that the photographic image causes a complex interaction of affect and interpretation: positive or negative assessments depend on what cognitive meanings and cultural codes the viewer activates during perception [17]. These approaches are also joined by studies on the influence of emotions on the aesthetic judgment of the photographic image. Thus, M. Kobayashi, H. Enomoto and G. Matsuda showed that the intensity of experiencing basic emotions (in particular, fear) directly changes the way visual information is processed, enhancing selective attention and modifying the assessment of facial expressions towards their greater significance and expressiveness [11]. On the other hand, in another study, it was found that positive facial expressions (primarily a smile) statistically increase the aesthetic appeal of portrait photography, as they trigger the mechanisms of emotional resonance and enhance socially oriented interpretations of the portrait [17]. As a result, it has been proven that facial photography functions as a multi-level communicative act that combines biological indicators of emotions, social meanings and aesthetic expectations of the viewer.

6. Conclusions

Summing up, we conclude that modern approaches to the analysis of photography as an aesthetic and psychological phenomenon show that the interpretation of human emotion through a photographic image is the result of the interaction of three key dimensions: neurocognitive, which determines the mechanisms of visual information processing; affective, which forms emotional reactivity; and semantic, which provides a culturally mediated interpretation of the image. Photography in this context appears not as a passive fixation of reality, but as a complex interactive medium that activates multi-level processes of aesthetic judgment, empathy and interpretation. That is why its research requires an

interdisciplinary approach that combines the methods of cognitive psychology, philosophy of aesthetics, visual communication and art history.

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