

Dependence of the Emotional Experience of Newspaper Photographic Illustration on the Medium of Realization

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Abstract: The paper investigated the experience and emotional reaction of respondents to different newspaper photographic illustrations depending on the media of realization (print in newspaper press, laptop computer screen, and smartphone screen). Due to differences in the formation of basic visual psychophysical reactions in affirmative childhood, the respondents were chosen from two separate age groups: younger from 19 to 23 years and mature from 38 to 49 years. Respondents rated from 1 to 5 the emotional reaction caused by the observed photographic illustration according to the offered reactions: happiness, love, hope, fear, sadness, hatred, anger, envy, shock, sexual attraction, disgust, shame, pride, attraction, and sympathy. Through the research, the difference in experiences and emotional reactions depending on the gender and age difference was monitored. The results of the research indicate that depending on the medium of display, there are significant differences in the experience of photographic newspaper illustrations depending on the age of the respondents, gender, but that previous, but more current, habits of using display technologies also have a significant influence.

Keywords: emotion; experience; newsprint; photographic illustration; screen

1 INTRODUCTION

In this paper, 5 thematic areas specific to newspaper photography are analyzed and the impact it has through the experience of the respondents through visual stimuli through photographic illustrations. The research is based on the visual assessments of the respondents, which are carried out on the basis of photographic illustrations realized on calibrated output units (printing on paper, display on the screen and on a smartphone) under standard observation conditions (ISO 3664:2009) [1].

Newspaper photography is an extremely powerful communication tool that aims to attract attention and provide universally understandable and clear information that can be trusted.

Newspaper photography is realized through different forms, among which there are no sharp boundaries, namely: photo news, photo interview, photo commentary, photo interest, documentary photography, photo sequence, photo story, photo essay and photo reportage.

Photo news is realized through a single photographic image of an event and through a recognizable and convincing photographic image it shows a typical moment of that event.

During a photo interview, the photographer, while with a person, takes portraits showing the characteristic facial expressions of that person.

A photo commentary is a photographic image in which the photographer's attitude towards what was captured is particularly emphasized.

Photo interest is a photographic image that shows an unusual event, meeting, person in an unusual environment, etc.

Documentary photography in the narrower sense shows events, architecture, individuals, groups, natural events, etc. as facts through a completely realistic and objective presentation.

A photo sequence is a series of photographic images that represent an event, person or action in a very short time.

With a photo story, a description is created through several photographic images through the introduction, culmination, and end of a story.

A photo essay is a freer form of photojournalistic expression than a photo story in which a series of photographic images describe an event, their chronology, fashion trends, details from life, natural events, etc.

Photo reportage is the most typical type of newspaper photography, which, in fact, contains some or all of the previously mentioned types of photojournalistic expression and shows a current event through a large number of photographic images. The photos show the people participating in the event, the location of the event and the event itself. It is considered that there is one key photo that is basic for understanding photo reportage (usually photo news).

For newspaper photography, it is especially important that the photographer shoots with understanding, which enables the presentation of the decisive moment of the event. A good newspaper photo must be syntactically as simple as possible, and what is shown must be completely recognizable [2].

For research purposes, test photographic illustrations of selected motifs and specific types of newspaper photography are used. From the very beginning, the goal of journalism was to record and inform the public at the right time, objectively and truthfully, and the biggest role in attracting attention is achieved through visual stimuli, most often through photographs, regardless of whether it is printed or electronic media. Regardless of which segment of the newspaper photo it is about, its goal is to complete the newspaper text in an objective way because it creates public opinion. One of the types of newspaper photography is a very specific war photograph, as a direct link between sheltered civilians and the first lines of the battlefield. War photographs can even be used as evidence of war losses - human or material, victories and other war horrors. War photography can be classified as photo news, photo commentary, photo sequence, photo story, photo report or specific documentary photography, while most often they are photo reportage or photo news. Fashion

photography is a type of newspaper photography that can be documentary or artistic, and most often shows the fashion novelties of its time and is its most popular and most profitable branch that goes all the way to product photography. The black chronicle as a thematic area of journalism includes information related to death, loss, traffic or other accidents, mass damage, injuries and similar events that cause them. It is most often classified under photo news, photo story or photo reportage. Engaged photography is the kind of photography that most often assumes that motives are filled with social charge, and also stems from a critical practice that exposes and investigates the negative aspects of society, where it directly intervenes in the social context and often assumes interaction with the audience. Engaged photography is placed within the framework of modern and contemporary photography as a part of newspaper photography that constantly re-examines its basis and intention, at the same time reflecting the broader political reality of the author's position within its context. It most often belongs to the documentary form of newspaper photography. Sports photography as a part of newspaper photography has the duty to convey all information in a visual form, including emotions and attractions that took place during a certain sports event, but also moments that happened before or after the act of sports itself. It is most often associated with types of newspaper photography: photo news, photo sequence and photo reportage.

As a rule, a photographic image is recorded in the Adobe RGB color space when recording; in the recording with compression as an 8-bit recording per channel, and in the raw recording as more than 8-bit recording, depending on the characteristics of the camera's sensor. Regardless of how the 8-bit file format is defined, which is initially written in the Adobe RGB color space, the color from that space is redefined into the reproducible sRGB color space, from which the majority of output devices, such as monitors, smartphones, printers, projectors, etc. can realistically reproduce colors (Fig. 1).

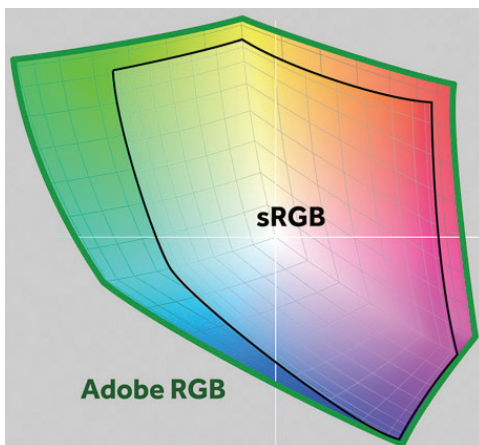


Figure 1 Adobe RGB and sRGB color space in Lab color space [3]

Converting image records from one color space to another color space is called rendering. There are four basic types of rendering: rendering with absolute colorimetric intentions, rendering with relative colorimetric intentions, rendering with saturation intentions, and rendering with

perceptual intentions, which is also called photographic rendering and is used in these examples [4] (Fig. 2).

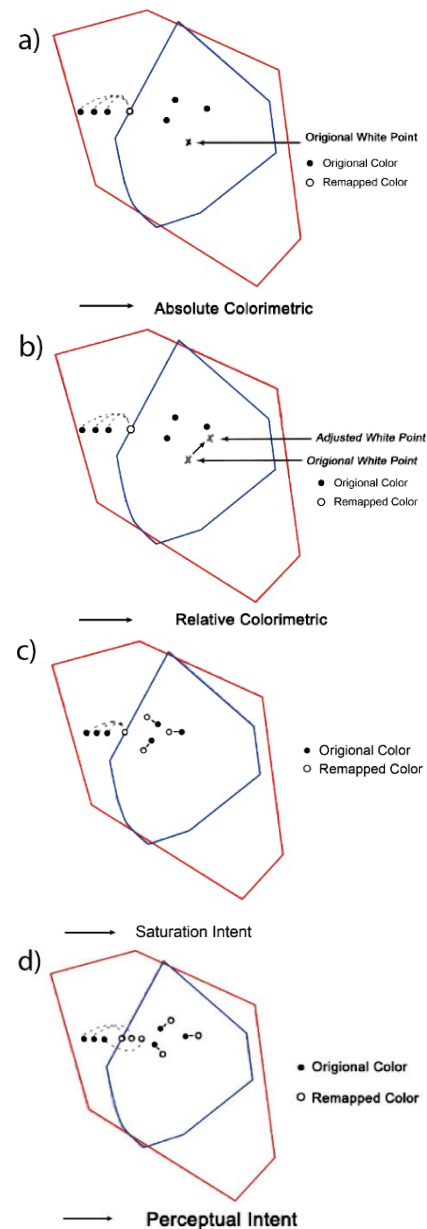


Figure 2 Types of rendering: a) rendering with absolute colorimetric intentions; b) rendering with relative colorimetric intentions; c) rendering with saturation intentions; d) rendering with perceptual intentions [5]

Rendering with the perceptual intentions of color transfers from one color space to another so that the perceptual overall impression of the image changes as little as possible. There are certain colorimetric color changes, whereby less saturated colors change less, and saturated colors more - by "compressing" into a smaller color space, but so that all the colors of the wider space still differ in the narrower color space. This rendering is reversible. For this reason, this rendering is usually used to convert the Adobe RGB record into the sRGB record of a photographic image.

In the presentation of photographic illustrations in modern communication systems, two fundamental principles

dominate. They are technologically, physically, but also communicatively significantly different [6, 7].

The first and older system is the construction of tone and color reproduction by subtractive synthesis of printed inks. This system is used in all printing techniques and in the most common version is with cyan, magenta, yellow and black process colors. The possibilities of reproduction in each printing system depend to the most significant extent on the composition of the printing inks (pigment concentration and size, type of binder), the thickness of the ink coating in the print, the possibility of reproducing details, the type and whiteness (color) of the paper or substrate on which it is printed, the speed of printing, etc. Due to the large number of parameters that affect the quality of reproduction in printing processes, standardized sequences of technological processes for processing photographic illustrations have been developed in recent decades, which, depending on the printing technique, aim to give a predictable result at the end of the communication sequence, i.e. on the print. So far, the standardization of printing techniques has followed the technological, physical, colorimetric parameters of the printed colors. The technique of newspaper printing, which is covered in this paper, is characterized by high printing speed, low printing cost, but due to the use of low-viscosity printing inks with a low pigment concentration, poor color reproduction power. However, in modern printing systems, the most common printing technique is still reproduction of photographic illustrations.

Another system of building tone and color reproduction by active synthesis of emitted electromagnetic radiation from screens, initially cathode screens, and in more modern systems from LCD monitors. In all commercial and more widely used screens, the construction of the image is based on the emission of red, green and blue colors, which, by active fusion, reproduce all other colors that are capable of reproducing that screen. Until the end of the 20th century, depending on the technology and display quality, there were considerable deviations in the colorimetric parameters of multicolor reproductions from the screen, but in modern commercial systems, the physical reproduction parameters are largely uniform. The laptop and smartphone screens selected in this paper are of a higher price range, but the results can be applied to the vast majority of commercial screens.

2 EXPERIMENTAL PART

2.1 Test Samples

The research analyzed the influence of three technologies for displaying photographic illustrations: newspaper printing, computer screen and smartphone screen. According to previous research, the examined technologies in the past 8 years represent the most significant in terms of communication and finance, and in the cumulative of all communication channels, the most represented technologies for the display of photographic illustrations.

All examined photographic motifs were recorded in the sRGB color space, so a standardized adaptation to the examined realization technologies was possible.

Newspaper printing is technologically simulated on an Epson Stylus Pro 7800 inkjet printer (Certified by the Fogra

Institute according to ISO 12647-2 standards) [8]. All photographic illustrations are printed in A4 format. For the purpose of the research, technological, tonal and colorimetric adjustments were carried out, according to the mentioned ISO standard, through the ICC profile for the simulation of one of Croatia's most widely circulated daily newspapers [9].

An HP ProBook laptop was used for computer screen research. Before the research, hardware calibration was performed with the X-rite i1Display Pro colorimeter according to the protocol and standard ISO 14861:2015. All photographic illustrations are viewed in full screen format [10].

The research used a Samsung galaxy S22 ultra smartphone with the colorimetric parameters of the screen display set to the original factory settings. All photographic illustrations are viewed in full screen format.

As stated in the introduction, war photography (Fig. 3) in the media space most often has the role of informing about the suffering of civilians and the negative consequences of war, but often has a propaganda role where a side in the war is glorified or emboldened or people are encouraged to get involved passively or actively in the war. In this research, war photography was chosen, which according to the previous assumptions of the author is globally politically neutral, in order to avoid the influence of political attitude on the emotional experience of photographic illustration in the research.



Figure 3 War photography [Pixel media d.o.o., Photo and video agency, Pixsell catalogue]

The thematic area of fashion photography (Fig. 4) is used to the greatest extent in the media space in order to advertise a brand, style or a certain way of life. As a rule, it is created with the aim of conveying positive emotions and experiences.

The thematic area of the black chronicle (Fig. 5) in the media context, in addition to journalistic information, very often also has the purpose of warning about an accident, accident or natural disaster with the aim of preventing the events presented. Without exception, in the primary context of creation, it aims to convey negative feelings and experiences that will be more strongly conveyed if the photographic illustration meets compositional,

technological, chromatically harmonious conditions. In modern media communication systems, the most significant feature of that thematic area, which is the transmission of negative feelings, becomes a flaw because it deters the potential consumer from continuing to observe the entire content. This too often leads to self-censorship of that thematic area in everyday media communications.



Figure 4 Fashion photography [Accademia Italiana]



Figure 5 Black cronicle [Pixel media d.o.o., Photo and video agency, Pixsell catalogue]



Figure 6 Engaged photography [Pixel media d.o.o., Photo and video agency, Pixsell catalogue]

The thematic area of engaged photography (Fig. 6), in its fundamental role in the media space, is the most diverse in terms of motives, pipes, semantics, target consumers, and the like. Basically, it aims to encourage the consumer to some form of action, to create new and maintain positive patterns of behavior. Therefore, the largest amount of controversies in the media space is related to this thematic area, according to earlier research, mostly among mature respondents.

The thematic area of sports photography (Fig. 7) is the most diverse in terms of shooting techniques and conditions, choice of motifs, dynamics and composition. The diversity comes from the wide range of different sports events and the specifics of each of them, but also from the authors and photographers themselves. In sports photography, the most up-to-date photographic equipment is used, which really pushes the boundaries of shooting possibilities, and is most often identified with the term professional photographic equipment.



Figure 7 Sport photography 'The Left Uppercut' by Alexius van der Westhuizen [Pixel media d.o.o., Photo and video agency, Pixsell catalogue]

2.2 Respondents

All respondents who took part in the research passed the Ishikara color recognition test, according to their own testimony they do not suffer from or are being treated for any form of psychological disorders and are thoroughly familiar with the conditions of the research [11].

84 respondents participated in the research. Due to different media habits, and mainly due to the media environment and the availability of information in the affirmative age (approx. from 3 to 12 years old), the respondents were chosen from two age groups [12]:

- 1) Respondents between the ages of 19 and 23 (hereinafter referred to as younger respondents). 45 (54%) participated in the research
- 2) Respondents between the ages of 38 and 49 (hereinafter referred to as mature respondents). 39 (46%) participated in the research.

There are 55 women (65%) and 29 men (35%) among the respondents.

When examining media habits, 84% of respondents, according to their own testimony, use the screen (monitor or

smartphone) as the primary visual information technology. In accordance with expectations, 100% of younger respondents state the screen as the primary information technology, while 64% of mature respondents. Only 8% of the respondents use daily newspapers as the dominant source of information, while the majority of respondents indicate, in varying proportions, the use of all the examined information technologies. 17% of respondents from the group of younger respondents never use print media for information.

2.3 Test Methodology

The research was conducted on five photographic illustrations of different thematic areas of newspaper photography. All photographic illustrations were published in some prominent media newspapers or internet portals before the research, but none of the respondents had seen the photographic illustration before the research.

Before the research, each respondent is thoroughly familiar with the evaluation methodology and the meaning and difference in the interpretation of the evaluated feelings and experiences [13].

Respondents rated each offered feeling or emotion from 1 to 5, where the meaning of each rating is:

- 1) no experience
- 2) weak experience
- 3) expressed experience
- 4) a very pronounced experience
- 5) extremely strong experience.

Each subject looked at the evaluated photographic illustration for 30 s, and then in 120 s filled in the table with the offered emotions and experiences. Each respondent was recommended to rate at least 3 emotions/experiences. Only one display technology was always tested in continuity, and a minimum time interval of 45 min was defined between the tests of different display technologies in order to avoid emotional saturation with the subject or the test.

Emotions were evaluated: happiness, love, hope, fear, sadness, hatred, anger, envy. They represent primary human emotions and are related to all aspects of human activity.

Evaluated experiences: shock, sexual attraction, disgust, shame, pride, attraction, sympathy. They were added to the research because the literature related to the vision of newspaper photography states that the mentioned experiences have a significant and often the most intense influence on the perception of photographic illustration [2].

3 RESULTS AND DISCUSSION

In this paper, in the presentation and interpretation of individual research results for individual experiences, grades four and five are combined, as an indicator of a strong individual experience or emotion. Through the discussion part, the most attention was paid to verifying the most expressed experiences and emotions depending on the gender or age of the respondents. The tables show the five most pronounced emotional reactions for a certain age or gender group for each examined photographic illustration. In certain

thematic areas, the more significant emotional reactions are differences in age, and in some in gender, so when presenting the results, the groups of respondents with a significant difference in the emotional experience of the examined photographic illustrations are shown.

Some results emerge from the research, which, although in a smaller proportion, are completely contrary to earlier predictions or expectations, and in some cases are completely contrary to the target message of the thematic area. Although these results are not shown in the tables, they will be mentioned in the discussion section.

3.1 War Photography

Tab. 1 and Tab. 2 show the results of the emotional reaction to the examined wartime photographic illustration. There are significant differences in emotional reactions depending on the age of the respondents. For the interpretation of the results, it is important to note that all the mature respondents lived through a war experience in their own country, and none of the younger respondents lived through any war experience. Fear and shock are the most pronounced among younger respondents, and anger and shock among mature respondents. In all gender and age groups, shock is the most pronounced experience in the examined photographic motif, while other emotional experiences can be attributed to the lived war experience. Younger respondents have similar emotional reactions to any photographic motif that depicts misfortune, suffering, etc. while more mature respondents have a greater dose of empathy and compassion. Regardless of the emotional reaction in both age groups, the emotional reaction from the newspaper print is stronger, and the weakest reaction is from the smartphone screen.

Table 1 Representation of strong experiences/emotions in younger respondents of the observed war photographic illustration depending on the display technology

Display technology	Fear	Shock	Sadness	Hate	Anger
Newspaper	83%	74%	64%	57%	55%
Laptop	74%	57%	64%	64%	64%
Smartphone	64%	57%	57%	47%	43%

Table 2 Representation of strong experiences/emotions in mature respondents of observed war photographic illustrations depending on the display technology

Display technology	Anger	Shock	Sadness	Fear	Shame
Newspaper	91%	74%	71%	64%	64%
Laptop	83%	64%	64%	64%	64%
Smartphone	57%	57%	43%	47%	43%

3.2 Fashion Photography

Tab. 3 and Tab. 4 show the results of the emotional reaction to the examined fashion photographic illustration. There are significant differences in emotional reactions depending on the gender of the respondents. Although fashion photography is primarily intended for female consumers in terms of aesthetics and content, from the results of this research, as well as from previous research [14-16], it follows that the emotional experience is significantly greater

among male respondents. In this and earlier research in fashion photography, photographic motifs with a female model were used, so the primary emotional experiences of male respondents are love and sexual attraction, while happiness dominates as the most expressed emotional reaction among female respondents. Not a single negative emotional reaction was recorded in the male respondents, while in the female respondents of a more mature age, envy, sadness and hatred were present in a smaller percentage. In fashion photography, along with other aesthetic criteria, color composition plays the most important role in conveying the desired message to consumers. In this research, the photographic motif of the entire female figure was chosen in predominant red colors, which are reproduced with the lowest saturation by subtractive synthesis in print systems. This can be attributed to the fact that in all examined gender and age groups, this photographic motif has a significantly stronger emotional experience from the laptop screen.

Table 3 Representation of strong experiences/emotions in the male respondents of the observed fashion photographic illustration depending on the display technology.

Display technology	Love	Sexual Attraction	Attraction	Happiness	Sympathy
Newspaper	74%	57%	64%	57%	55%
Laptop	83%	74%	64%	64%	64%
Smartphone	64%	57%	57%	47%	43%

Table 4 Representation of strong experiences/emotions in the female respondents of the observed fashion photographic illustration depending on the display technology.

Display technology	Happiness	Love	Sympathy	Pride	Envy
Newspaper	64%	57%	53%	37%	32%
Laptop	74%	64%	64%	57%	32%
Smartphone	57%	57%	43%	32%	22%

3.3 Black Chronicle

Tab. 5 and Tab. 6 show the results of the emotional reaction to the investigated photographic illustration of the thematic area of the black chronicle. There are significant differences in emotional reactions depending on the age of the respondents. In younger subjects, the most pronounced emotional reaction is fear, and in mature subjects it is shock. In the selection of the photographic motif for this research, the photographic motif of a serious traffic accident was chosen, because it follows from earlier research that previous life experiences play a crucial role in the thematic area of the black chronicle. A traffic accident is an experience that the majority of respondents have encountered directly, which is more pronounced in the case of mature respondents, or indirectly, so emotional reactions are based on what has already been experienced. The photographic motif itself was chosen because it is primarily intended for printed editions. After the technological adjustment described in the experimental work for each medium of realization, the results show that with the selected motif, regardless of age and gender, the smallest difference in emotional reaction is from newspaper print, laptop screen and smartphone screen. The results indicate that the initial photographic motif was captured aesthetically, compositionally and technically with

high quality before technological adaptations to the medium of realization.

Table 5 Representation of strong experiences/emotions in the younger respondents of the observed black chronicle of the photographic illustration, depending on the display technology.

Display technology	Fear	Shock	Anger	Sadness	Disgust
Newspaper	83%	74%	74%	57%	55%
Laptop	83%	64%	64%	64%	64%
Smartphone	64%	57%	57%	47%	43%

Table 6 Representation of strong experiences/emotions in mature respondents of observed black chronicle of the photographic illustration depending on the display technology.

Display technology	Shock	Anger	Sadness	Fear	Hate
Newspaper	91%	74%	71%	64%	64%
Laptop	83%	74%	64%	64%	64%
Smartphone	57%	57%	43%	47%	43%

Table 7 Representation of strong experiences/emotions in the male respondents of the observed engaging photographic illustrations depending on the display technology.

Display technology	Love	Happiness	Attraction	Hope	Sympathy
Newspaper	83%	64%	64%	57%	43%
Laptop	91%	57%	57%	64%	54%
Smartphone	64%	46%	43%	47%	36%

Table 8 Representation of strong experiences/emotions in mature respondents of observed engaged photographic illustrations depending on the display technology.

Display technology	Happiness	Attraction	Love	Sympathy	Hope
Newspaper	91%	74%	71%	64%	54%
Laptop	83%	74%	71%	54%	54%
Smartphone	57%	57%	43%	47%	36%

3.4 Engaged Photography

Tab. 7 and Tab. 8 show the results of the emotional reaction to the engaged photographic illustration. There are noticeable differences in emotional reactions depending on the age of the respondents. It follows from earlier research that respondents show the biggest differences in emotional reactions in the thematic area of engaged photography. For this research, a motive was chosen that was assumed, and the results of the research confirmed that this photographic motive, regardless of gender and age, gives positive emotional reactions. The photographic motive was taken for the needs of a large European campaign that encourages care for children. Love is the most pronounced among younger respondents, and happiness among mature respondents. To interpret the results, it is important to note that no one from the group of younger respondents is a parent, and in the group of mature respondents 83% of respondents are parents. Although in both age groups the most pronounced positive feelings are the same, they differ in intensity. Although it is a black and white motif, the group of younger respondents shows a stronger emotional reaction on the laptop screen, which is the primary medium of realization for all younger respondents. Although the most expressed emotional reactions are uniform and positive in the group of younger respondents, fear and disgust appear in a small percentage, and in the case of mature respondents, sadness, envy and shame also appear in a small percentage.

3.5 Sports Photography

Tab. 9 and Tab. 10 show the results of the emotional reaction to the examined sports photographic illustration. Contrary to earlier predictions that the biggest differences in emotional reactions will be in age, there are significant differences depending on the gender of the respondents. In male respondents, fear, hatred and envy are the most pronounced, and in female respondents, attraction, fear and sexual attraction. In this research, a black and white photographic motif with two male figures was chosen. Throughout this research and earlier research [14-16], the greatest differences in emotional reactions were obtained on this photographic motif, both by age and gender, but also by media habits and the primary medium of realization used by the respondents. The emotional reaction from the newspaper printout and the laptop screen is uniform, and the experience from the smartphone screen is much weaker.

Table 9 Representation of strong experiences/emotions in mature respondents of observed sports photographic illustrations depending on the display technology.

Display technology	Anger	Hate	Envy	Pride	Shock
Newspaper	83%	74%	64%	57%	43%
Laptop	83%	67%	64%	64%	54%
Smartphone	54%	46%	43%	47%	36%

Table 10 Representation of strong experiences/emotions in the female respondents of the observed sports photographic illustration depending on the display technology.

Display technology	Attraction	Anger	Sexual Attraction	Shock	Sympathy
Newspaper	83%	71%	71%	64%	54%
Laptop	74%	74%	71%	54%	54%
Smartphone	57%	57%	57%	47%	36%

4 CONCLUSIONS

The applied research method verifies and quantifies with great accuracy the differences in emotional and experiential reactions of photographic illustrations depending on the medium of realization.

In most of the examined thematic areas, respondents show a stronger emotional experience on the primary medium of information, except when it comes to shock in the photographic illustration.

In the thematic area of war photography in all age and gender groups, shock is the primary emotional reaction, and other emotional reactions significantly depend on the lived war experience.

In the subject area of fashion photography, the emotional reaction is greater among male respondents. Regardless of age and gender, the emotional reaction on the laptop screen is stronger due to the greater power of color reproduction.

In the thematic area of the black chronicle on the investigated photographic motif, there are significant differences in emotional reactions by age group, but in all age and gender groups the strongest experience is from the newspaper print.

Based on this and earlier research, respondents show the biggest differences in emotional reactions in the subject area of engaged photography.

Based on the results of this and earlier researches, it can be concluded that black and white motifs in younger subjects show a stronger emotional reaction regardless of the medium of realization, with the exception of fashion photography.

In all examined photos, in all experiences on the smartphone screen, the experience is of lower intensity compared to the laptop screen or newspaper print.

We can conclude with great certainty that the emotional and experiential reaction of photographic illustrations fundamentally depends on the age and gender of the consumer, but that previous, but more current, habits of using the medium of realization also have a significant influence.

Given that photography can also be used as a manipulative element, the obtained results show to what extent it influences and whether it can be manipulated to some extent on consumers, and how important it is to adhere to journalistic ethics when publishing an article.

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