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THE IMPORTANCE AND EFFECTS OF COLORS IN ACCOMMODATION UNITS FOR HOMELESS PEOPLE

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Abstract. Designing accommodation for homeless people requires a specific approach based on analysis, based on knowledge of the mental and physical condition of a person, their needs, and demands. The color of the living space can play an important role in a person's social inclusion, a faster and more continuous return of a person to a full life. The research aimed to verify how much the preferences for the use of color in the interior match among the homeless people and to draw recommendations for the color application. The theoretical analysis deals with the influence of architecture on our senses. Special attention is paid to the effects of sunlight, especially on the visible light spectrum, the originator of color vision. In the research methodology, the article defines the target group of homeless people using social service accommodation and data collection procedures. The results and discussion provide an overview of color preferences among respondents and the interpretation of findings. It has been shown that homeless people form a relatively homogeneous group for which it is possible to define general color selection requirements and to set key recommendations for the application of color schemes in social services accommodation units.

Keywords: accommodation unit, homeless people, color, interior, psychological effect, architecture.

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1. Introduction

Housing is one of the basic needs, an integral part of a person's daily life. The right to housing is considered one of the fundamental human rights. Universal Declaration of Human Rights in Article 25, says: "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing, and medical care and necessary social services, and the right to security in the event of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control" (Universal Declaration of Human Rights, 1948, Article 25).

Nevertheless, even in the 21st century, there is a large group of homeless people. In 2005, FEANTSA created a European Typology of Homelessness and Housing Exclusion (ETHOS), the main aim of which is to create the right conditions to improve the collection and comparison of national data and move towards a uniform "language" in the field of terminology. ETHOS categories attempt to cover all living situations that amount to forms of homelessness across Europe:

- To create Rooflessness (people living rough and people in emergency accommodation);
- Houselessness (people in accommodation for the homeless, in women's shelters, in accommodation for migrants, people due to be released from institutions, and people receiving long-term support due to homelessness);
- Living in insecure housing (people living in insecure tenancies, under threat of eviction or violence);
- Living in inadequate housing (living in unfit housing, non-conventional dwellings, or in situations of extreme overcrowding) (European Federation of National Organisations working with the Homeless, 2004).

The problem of homelessness not only affects developing countries, but also developed countries, including those in Europe and Slovakia, within which the presented research was carried out. The report on the social situation of the population of the Slovak Republic in 2020 states that there are more than 2377 homeless people accommodated in shelters, and in dormitories, it is 1201 (the data represents only registered homeless people). For the most part, the issue of homeless people is a social rather than an architectural issue. In the context of homeless people, it should be realized that homelessness is usually not a permanent state for the person concerned. Most homeless people have a permanent residence, but extreme family, economic, or other conditions have led them to extreme exclusion (Hradecký & Hradecká, 1996).

This extreme exclusion from society, from a shelter, food, drink, clothing, through health care, cultural activities, social security, to the social network has an impact on their lives (Beňová, 2008). In developed countries, society generally has sufficient resources to provide at least a basic shelter for homeless people who are interested. The adequate quality of the shelter can be essential for the reintegration of these people into society. Adequacy is a broad concept ranging from providing minimal needs to creating an environment where all people can lead meaningful lives (Bilchitz, 2007). According to Nina Beňová and Maroš Matiašek, adequate housing must be accessible to all due to the vulnerability of the most vulnerable groups (Beňová & Matiaško, 2018).

In meeting the requirements of adequacy, the key human needs must be monitored in particular. Maslow introduced a hierarchy of human needs organized into five basic groups. Individual groups are ranked from the most basic needs to the highest. If the satisfaction of needs is achieved at a certain level, the person will need to meet a higher need, which reduces tension. Growth motivation occurs (Maslow, 1970). The first, basic group is physiological needs, followed by safety needs. The feeling of safety and emotional confidence largely depends on the image of the environment in which one lives (Norberg-Schulz, 2010). Architectural creation has a fundamental impact on the image of the environment. From the perspective of urbanism, it is important to situate emergency accommodation in suitable localities, and from an architectural point of view, to design suitable buildings. Architectural objects are bearers of values; in the exterior, they transfer values to residents, in the interior to users. These values are based on the architectural composition, the organization of indoor and outdoor spaces, the use of materials, colors, and so on. "The architect-creator, through the properties of the elements of form and their combination in the synergistic effect of the architectural composition, creates the preconditions for a certain effect of his work on the perceiver. We can say that he encodes the message – the information. The information is usually coded by the creator of the composition into different qualitative characteristics of the work, which are perceived by different sensory organs of the perceiver (eg, space size, wall surface structure, color, smell, noise level, etc.)" (Finka, 1994, p. 25). It is known that objects and individual spaces evoke aesthetic information that arouses certain feelings. These feelings are significantly influenced by the socio-psychological status of the perceiver. The architectural work also transmits semantic information, "... which conveys a certain meaning to us, tells us something. Based on it, we accept certain conclusions and then guide our behavior according to them. It is thus created with a certain goal, logical and understandable" (Finka, 1994, p. 26). When transferring these assumptions to the issue of homelessness, we can identify the interior of social services accommodation as the bearer of values and homeless people accommodated in the facilities as the recipients. Due to the limited resources that society is willing to invest in such forms of housing, architectural and urban means are significantly limited. In Slovakia, the most frequent social service accommodation facilities are abandoned halls, old warehouses, modular container units, container spaces, etc., which are temporarily adapted for clients' overnight stays or longer accommodation. These large-scale accommodation units do not meet the requirements of clients, which affects their senses and, consequently, their mental state (Czafík, 2015). Nevertheless, we have a range of options for improving the living environment. One option is to focus on the interior of the housing units in which clients spend most of their time. One of the key attributes of the perception of the interior is its color, which the presented research focuses on.

In the theoretical background, the article discusses the influence of architectural means of expression on our senses. The emphasis is on the color attribute. The article also pays special attention to the influence of sunlight (daylight) as an important attribute affecting the perception of color, as well as the health and mental state of a person. In the research methodology, the article defines the target group of homeless people using social service accommodation facilities and data collection methods. The results and discussion of the research provide an overview of the color choices of the interviewees and the interpretation of the findings from the point of view of the current state of knowledge, and propose recommendations for the application of color schemes of social services accommodation units.

2. Theoretical background

Homeless people using social services accommodation spend a significant part of the day in accommodation units. The environment of these facilities consists of buildings that have been mostly abandoned for a long time, on the outskirts of the city, in a secluded environment, as far as possible from the general population living in the city. These are buildings and land owned (tenant) by the local government or a non-profit organization. The construction and technical condition and typology of these buildings are unsatisfactory from the point of view of housing. They provide shelter and basic hygiene needs, but their architectural design does not provide enough incentive to motivate their inhabitants to overcome the difficult stages of their lives. The theoretical background aims to point out how appropriate architectural means of expression could contribute to overcoming these problems. Specific emphasis is placed on the color and natural lighting of the interiors of accommodation units. Interiors in which we spend on average up to 80% of our time have a major impact on the quality of our lives (Hronský et al., 2006).

2.1. Architecture and its influence on the senses and behavior of a man

The Norwegian architect, historian, and theoretician of architecture Christian Norberg-Schulz (1965) distinguishes three types of environment: social, physical, and cultural.

All three components of the environment are important for the social inclusion of homeless people. According to the research in the context of Maslow's hierarchy of human needs, the primary component is the physical environment and its ability to satisfy, especially physiological needs. "Physiological needs, security, love, respect, information are often inconveniences for many people, creators of mental health problems, especially for those who have had negative experiences of their satisfaction and for those who cannot now count on their satisfaction" (Maslow, 2000, p. 57).

"The physical environment represents all material and measurable components of the environment, such as temperature, humidity, but also the nature of materials, surfaces and objects that define or fill the environment" (Keppl, 2011, p. 3). From the point of view of architecture, the material or physical environment can be segregated into an external and internal form. In this environment, man performs various activities. In the case of homeless people, it is the only space in which they move, in which they live, and which they share and use with each other. "The environment in which a man moves lives and carries out his activities is of a dual nature – the physical environment and the social environment. These two environments exist in interconnectedness and influence each other" (Petelen et al., 2013). The physical and social environment are interrelated as a result of the effects of the elements of the environment: natural elements, man-made artificial elements, and human-social relations. This interaction of elements is intended to help homeless people to re-social inclusion and to create an environment adequate for this group, which is often marginalized today.

During his life, a man oscillates in a certain space in which he has built his background, inhabits it, adapts it to his needs, and completes it according to current feelings, and perceives it through the senses. "The ability to judge through the senses is taste in the broadest sense" (Harries, 2011, p. 29). Man has 5 senses at his disposal: sight, touch, taste, hearing, and smell. "Life-enhancing architecture must be determined by all the senses at the same time and must combine the image of ourselves with our experience of the world. An essential mental role of architecture is adaptation and integration. Architecture articulates "being in the world" and strengthens our sense of reality and ourselves. It doesn't just create worlds of simple fiction and fantasy" (Pallasmaa, 2012, p. 16). "The psychological level begins with the reworking of the energy impulse (feeling of light, color, visual or tactile sensation, etc.) into a mental reaction in the form of perception, association, memories, the imagination of feeling, etc., which ends with a certain psychological state-mood" (Hronský et al., 2006, p. 7).

Hearing conveys the surrounding sounds and the reproduction of our voice. "Sound is a mechanical vibration of particles in a flexible environment, noise is any undesirable, disturbing, unpleasant or harmful sound" (Chmúrny, 2006, p. 49). Acoustic standards in social services accommodation units are often unsatisfactory. The problem is especially the excessive number of people accommodated in one living space. There are various disruptive and hostile contacts. The feeling of privacy disappears, and the relaxing function of the living environment weakens.

We obtain information about temperature, cold, pain, or vibration by touch. Tactile sensation is especially important for people with physical disabilities or other sensory impairments. The human body can haptically recognize surfaces in spaces, orient itself according to them, and draw attention to potential risks and dangers.

Smell can convey different scents to us, which retrospectively remind us of different situations when we came into contact with a specific scent. When creating interior spaces, architects and designers have the opportunity to make the surroundings of a person more pleasant through the scents of individual materials and thus achieve a feeling of satisfaction or motivation. Unpleasant odors, on the other hand, cause dissatisfaction, which results in nervousness, demotivation, and reluctance to enter the space.

Taste is largely related to smell; it is also affected by touch (temperature) and sight (color and other surface characteristics of the material). We do not perceive it exclusively when consuming drinks and food, but also when inhaling particles into the air. Interior elements should take this fact into account when choosing materials and avoid toluene-containing materials, especially thinners, toxic additives, impregnated with cheap wooden elements, and thus prevent undesirable situations.

A healthy man receives most of the information about the space around him through sight. This sense also significantly affects the mental and physical health status of the individual. Architectural means of expression aimed at visual perception, therefore, have the highest potential in the effort to improve the parameters of the living environment. The achieved feelings and impressions are evoked mainly by the visual side of the physical space (color, materials and their texture, size, and shape of the space, arrangement of interior furniture and other aspects), physical properties of the space (natural and artificial lighting, glare, humidity, and others) and the immediate social environment (family, friends, acquaintances, unknowns and others).

2.2. Light, man and color

Light is essential for human existence and the perception of the world. Daylight, which affects our health, work productivity, and perception of space and color, the most important source of information perceived by the eye, is particularly important.

Daylight that exceeds 1000 lux in the eye plane for at least 1–2 hours can be described as biologically effective. Typical manifestations of low daylight exposure include vitamin D deficiency, high blood pressure, depression, immune disorders, rheumatism, multiple sclerosis, diabetes, arthritis, and various forms of cancer (Hraška, 2013; Chen & Holick, 2003). It is generally known that higher light

intensity stimulates the production of serotonin, which has a positive effect on mood and a sense of satisfaction.

"The quality of lighting and satisfaction with lighting depend on several factors; it is largely a subjective feeling based on experience with artificial lighting. Lighting quality is not just about providing an adequate amount of light; other factors that potentially contribute to lighting quality include, e.g., uniformity of lighting, brightness distribution, color characteristics of light, and glare. The quality of lighting can be judged either by the level of visual comfort and performance required for our activities, we are talking about the visual aspect. We can also evaluate the quality of lighting based on the pleasantness of the visual environment and its adaptation, the type of room, and activities. We are talking about the psychological aspect. Last but not least, there are long-term effects of lighting affecting human health, ..." (Králiková & Džunová, 2020, pp. 14–15). Experience and physiological knowledge confirm that the appropriate intensity and color of light can affect our body ergotropic (working condition) or hystotropic (resting condition) (Lichardová, 2006). In social services accommodation, where depressed people with difficult lives are often placed, it is important to take into account the aspect of sufficient natural lighting of interiors. In addition to psychological and health aspects, the provision of daylight is also of economic importance (saving costs for artificial lighting).

Light makes it possible to perceive space, its shapes, and colors while creating a light atmosphere that directly affects a man (Lichardová, 2006). Not all components of light are perceived by our eyes. Daylight is a component of electromagnetic radiation, which, depending on the wavelengths, can be divided into ultraviolet radiation (100–380 nm), visible radiation (380–780 nm), and infrared radiation (above 780 nm) (Legény & Morgenstein, 2015). Isaac Newton discovered that seemingly homogeneous visible sunlight can be decomposed into a color spectrum of different wavelengths through a glass prism. Through human eyes, one can perceive light at a wavelength of 380–750 nanometers, which contains the following colors: purple (395–455 nm), blue (455–492 nm), green (492–575 nm), yellow (575–585 nm), orange (585–645 nm) and red (645–750 nm). Due to the impact of light on a certain surface, depending on its characteristics, part of some wavelengths are absorbed and some are reflected. We then perceive the captured light reflection as a color. Color can be simply defined as a property of matter based on the absorption of light of different wavelengths. The perception of color is highly subjective and depends, for example, on the intensity of light. "At very low light levels, blue and green objects appear brighter than red ones compared with their relative brightness in stronger illumination, an effect known as the Purkinje shift for its discoverer, the Czech physiologist Jan Evangelista Purkinje. At higher levels of illumination, there is a related shift in hues, called the Bezold-Brücke effect, such that most colors appear less red or green and more blue or yellow as the intensity of illumination increases" (Nassau, 2021, p. 23). The human eye is most sensitive to green (550 nm). This probably stems from the phylogeny of eyesight, as our ancestors were forced to effectively identify subtle shades of green in the treetops in search of food so that we could distinguish fruits from leaves and young, fresh leaves from old ones (Lucas et al., 2003).

2.3. Color and its psychological effect

Life without color is unimaginable for most people. Color from ancient times to the present has shaped the environment in which we live (Caivano, 2006). Color has not only a practical significance (distinguishing the characteristics of space) but also an aesthetic, psychological, and potential health impact. "We recognize the colors: achromatic – white, gray, black and chromatic – yellow, red, blue and others derived from them. Color is determined by its hue, saturation, and brightness" (Petelen, 2013, p. 61). "However, color is very often defined as a property of color perception, and so it also depends on the physiological and psychological socio-cultural characteristics of the perceiver" (Zervan, 1994, p. 45).

The interaction of colors in the composition of space can affect perceptions positively or negatively. Man perceives colors in the environment and influences him regardless of whether they were intentionally composed (Cejpková, 2019). Some colors can make a very positive impression on a person. As Nassau (2021, p. 25) states: "When an affectively positive, or pleasurably perceived, color is viewed after a less-pleasant color, it produces more pleasure than when viewed by itself, an effect known as affective contrast enhancement." People are also influenced by the colors of objects, furniture, and furnishing elements, which they bring to their interiors. "This means that color in design cannot only be an artistic aspect conditioned by the artistic feeling of the creator but rather represents a very important tool influencing the consumer's perception and the success of the product on the market" (Otiepková, 2021, p. 34).

The perception of color and the subsequent reaction to it (popularity or unpopularity) is, to a large extent, a subjective phenomenon, influenced by culture, age, education, environment, etc. Johann Wolfgang Goethe, who laid the foundations of the knowledge of the effect of colors on the human psyche, says that "... emotional life does not always have to be just something subjective, arising from our nature, beyond any superpersonal order, and therefore also unpredictable. It shows that individual colors evoke legitimate and unambiguous, predictable emotional reactions" (Goethe, 2004, p. 20).

"The choice of color affects a person's mental balance, stimulates his activity to higher performance, evokes visual, sound and thermal illusions, contributes to orientation, or disorients, calms or excites, evokes the appearance of space, affects its shape and proportions" (Lichardová, 2006, p. 3). The psychological effects of colors on a man's feelings are diverse.

Colors in terms of psychological effects can be divided into warm (red, orange, yellow) and cold (purple, blue, green) (Figure 1). These can be arranged in a colored circle divided into a semicircle of warm and cold colors. Nassau (2021), especially among the warm colors, mentions brown and cold gray. As the intensity of the light increases, warm colors gain in expressiveness and vividness, the decrease in intensity emphasizes the cold colors (Lichardová, 2006). It is interesting to observe the effect of colors on the subjective feeling of warmth in the room. "A room painted in a pale blue (cool color) requires a higher thermostat setting than a room painted a pale orange (warm color) to achieve the same sensation of warmth" (Nassau, 2021, p. 25).

By vertically dividing the color circle, we obtain calm and exciting color spectra. According to most experts, the central color of calm is green, and the excitement is red. In addition to redness, Nassau (2021) considers orange and yellow to be exciting, which he also attributes to the effect on cheerful mood, stimulation, or aggression. He considers blue and green to be the colors of peace and quiet. He associates brown and gray with sadness, depression, and melancholy. Lichardová (2006) argues that from the point of view of calm and excitement, blue, yellow, white, black, and gray are neutral colors, while they can become calm or exciting by approaching red or green. "We use achromatic colors (white, black, gray) as neutral, using their mildness, which emphasizes other colors, alleviates the hard contrast of complementary colors, etc." (Lichardová, 2006, p. 3).

"Color is also reflected in its hue transformations. The richest hues appear different as less saturated. Similarly, shades of light and shadow appear in their expression. Roughly speaking, the lightened grades look happier, they are lighter and softer in impressions, while the darker grades appear heavier and more serious. By increasing the saturation, the color gains in liveliness; On the contrary, reducing saturation soothes and calms the color expression. Too low a saturation, on the other hand, can be dark and gloomy" (Hanuš, 1969, p. 64).

When we look at space, we usually see more colors, not just one, so the common result of the composition makes the emotions more difficult. Sometimes it seems chaotic, sometimes repulsive, sometimes motivating, which is extremely important for the social group of homeless people that research focuses on. Therefore, in color architectural design, it is essential to apply the dominance of one color in the composition with a clear compositional goal. "Each color affects a person differently and thus reveals its essence to both the eye and emotion. It follows directly from the fact that color can be used for certain sensory, moral, aesthetic purposes " (Goethe, 2004, p. 81). Color affects a man even if he does not perceive it with his eyes. In the color laboratory of the Faculty of Architecture and Design STU in Bratislava, 21 volunteers were alternately exposed to red and green light. When they were exposed to red light, their pulse frequency was on average 11 beats higher per minute than with green light (Cejpková, 2019).

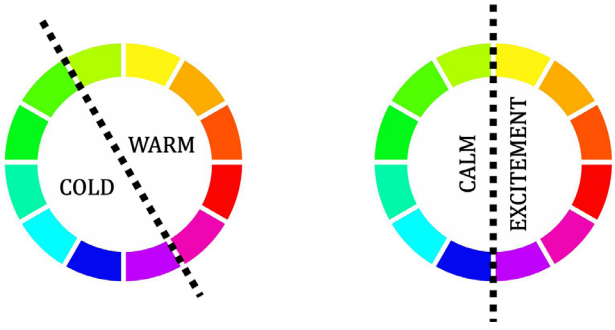

Figure 1. Colors in terms of psychological effects (source: authors)

There are several conclusions in the literature that point to indications of the therapeutic effect of colors on mental health, but so far, not enough objective methods have been presented to assess these effects.

Finally, the spatial effect of different colors and their combinations cannot be forgotten. As is generally known, white and light shades emotionally increase space, while black and dark shades do the opposite.

2.4. Color and its application in accommodation units for homeless people

Colors affect a person's feelings, creating moods, feelings, and impressions. "When used purposefully, colour is a powerful tool that can not only enhance the aesthetics of a design but can greatly help adults feel independent and safe" (Hencová & Kotradyová, 2023, p. 21). When choosing the color solution of the architectural space, a man (or social group) and his subjective feeling, special characteristics, and experiences from the previous period of life act as important determinants. A man marked by deprivation from the past needs a different color solution of spaces than a man who saturates his needs every day. The architectural design of shelters and their dispositional and operational solutions have an impact on human behavior and their senses. The environment in which a person exists, in which a person resides, should motivate the individual, stimulate him to activity, but also suppress the negative habits and manifestations of the current way of life.

The architectural object primarily affects the perceiver and the user, respectively. A homeless person, who should become a determinant of the choice of color, especially in the interior, to achieve such socio-psychological well-being that allows for social inclusion again. A homeless man comes to the facility as a client, mostly marked by a previous negative life experience and without permanent housing. The question arises as to how a color solution can deform and degrade a negative mental state and, conversely, motivate and graduate interest in renewed social inclusion. "The environment should create additional motivation to find permanent housing, which is the intention of temporary housing of this type" (Davis, 2004, p. 104).

Although there is no clear evidence and especially a universal conclusion about the psychological or health effects of colors on humans, the authors of scientific articles (Lichardová, 2006; Nassau, 2021; Schwarz & Brent, 2005)

agree on the importance of individual user preferences depending on their experience and socio-cultural factors.

The color in the accommodation unit should create a feeling for a homeless person that will cover the negative psychological problems from the previous period of life and contribute to personal motivation and thus to personal growth. It is, therefore, necessary to find out which colors homeless people prefer in the accommodation unit interior so that they feel comfortable. The research applied in this way reveals the emotional effect of colors in space on the target group. Thus, it can be stated that due to the appropriate color solution, an important aspect helping to humanize the living environment in social services accommodation for homeless people can be created.

3. Research methodology

As demonstrated in the theoretical background, color has a significant effect on the human psyche. At the same time, it has been proven that the colors are significantly individual, depending mainly on individual life experiences. Among these life experiences, we can include mainly cultural and social background, but also age, gender, or immediate state. It can be assumed that homeless people have many similar life experiences, which has led us to hypothesize that they will tend to prefer the same favorite colors. The research aimed to verify, based on a survey of homeless people living in social services accommodation, how their preferences for the use of colors in the interior match, and at the same time, to draw recommendations for different variants of interior color schemes in practice.

The target group of the research was individuals living without permanent housing status, living in social services facilities from the age of adulthood to retirement age, excluding persons with previous unwanted social intervention (prisoners, drug addicts, emigrants, immigrants, etc.). This group can be named „hidden homeless people". Hidden homeless people do not have the required possibility of permanent housing, but instead of living on the street, they choose another strategy. Although they have a place to sleep, they are legally homeless because they do not sleep in official housing and their way of life is similar to homeless people – they resort to hostels, dormitories or to acquaintances (Marek et al., 2012). The target group is often referred to as a group of homeless people with a higher standard of living. "People are generally unaware of this group because its members do not differ significantly from the majority society in terms of external features. The group is characterized by high personal motivation and a greater ability to integrate. People from this group can keep their jobs and housing. They most often sleep in commercial hostels, garden cottages, and self-made dwellings. Their hygiene is relatively good" (Kadlečík, 2013, p. 21).

For the research, the basic tool of data collection was the questioning method implemented in the form of a questionnaire. The questionnaire was purposefully designed for the target group (homeless people living in social services accommodation). To guarantee a greater relevance of the answer, an anonymous questionnaire was chosen. The main principle in creating the questions became clarity. Technical terms and expressions were replaced by simple expressions, phrases, and short sentences. The questionnaire consisted of 20 simple questions divided into four basic sections: introduction, written questions, graphic questions, and demographic data (the full text of the questionnaire, including the answers, is part of the dissertation theses by Michal Czafík entitled Humanization of Accommodation in Social Services Facilities for People in Material Need, 2014b, p. 150):

1. Introduction of the researcher, the research task, the formulation of the objectives, the evaluation scale, and the method of completing the questionnaire;
2. Written questions and subgroups of statements in the positive wording of the sentences. For example: Is it satisfactory? Does it act pleasantly? etc.;
3. Graphic questions were situated in the second part of the questionnaire. The answers were chosen based on the respondent's own decision. The graphic part of the questionnaire was aimed at determining the preferred color of the walls, ceiling, and floor in the accommodation unit of the social services facility.

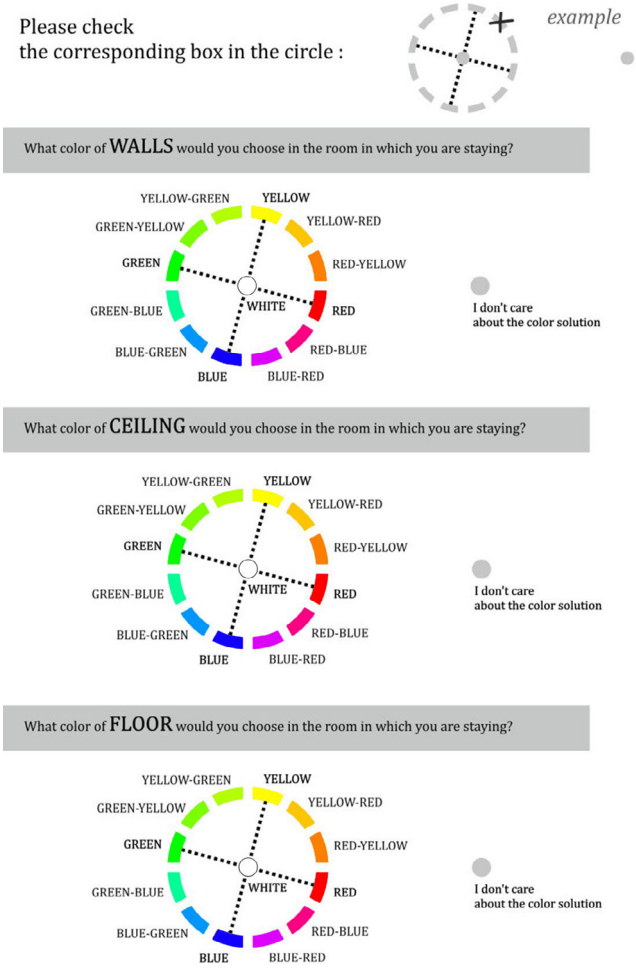

Figure 2. The graphic questionnaire focused on color issues (source: authors)

Figure 3. Social service accommodation units in which the research was carried out: 1 – Shelter "Home for everyone" in Bratislava; 2 – Shelter "Mea Culpa" in Bratislava; 3 – Shelter "Vincent de Paul" in Bratislava; 4 – Nitra City Shelter Figure 2. The graphic questionnaire focused on color issues (source: authors)

Table 1. Results of the breakdown of the age structure by economic activity ot the population (source: authors)

Breakdown by economic activity of the population	18–24	25–44	45–64	65+
Percentage	8.00%	37.33%	53.34%	1.33%

Breakdown by 5-year interval	18–24	25–29	30–34	35–39	40–44	45–49	50–54	55–59	60–64	65+
Percentage	8.00%	13.33%	5.33%	6.67%	12.00%	12.00%	20.00%	14.67%	6.67%	1.33%

Simple circular graphic diagrams with only one option were used for the graphic questions (Figure 2). The deliberately monochromatic presentation of the questions was intended to avoid distracting respondents.

4. The demographic data were located in the questionnaire at the end. Their goal was to achieve greater objectivity in comparing the results. We asked about gender, age, length of stay in the social services accommodation facility, and the number of replaced facilities.
5. To increase the reliability of the answers, we required that each respondent fill out the questionnaire independently. Researchers proceeded to explain the question in case of its interpretation difficulties

The research was carried out in four social services accommodation facilities in Slovakia: Shelter of St. Vincenta de Paul, Mea Culpa Shelter, Shelter Home for Everyone, and Nitra City Shelter (Figure 3). The shelters were chosen based on the same criteria: location in the city – outer or inner city, detached building, and a building with the same provided residential social service (Czafík, 2014a). The residential form of social service in the facility is provided if the social service includes accommodation (Národná rada Slovenskej republiky, 2008).

4. Research results and discussion

A total of 75 respondents (clients of social services accommodation facilities) participated in the questionnaire survey. Of these, 66.67% were men and 33.33% were women. The age structure according to the economic activity of the population was the following: the most numerous groups of clients, up to 53.33% (40 respondents), are the group aged 45–64, ie, middle-aged people (Table 1).

The structure of respondents according to the length of stay in the current facility is dominated by a group of people living in the facility for more than 1 year (28%) followed by a group of clients living in the facility for less than a month (22.67%), which indicates a relatively high rate of fluctuation between facilities. As a reason, clients cited dissatisfaction with accommodation conditions in the facility (insufficient privacy, unworthy conditions, unattractive environment, walking distances, etc.). An important finding of the interviews is that clients tended to choose or use the social services depending on the quality of accommodation provided. This suggests that the right choice of color in interiors can potentially contribute to customer satisfaction.

In the graphic part of the questionnaire, the respondents gradually expressed their preferences for the color scheme of the walls, ceiling, and floor in the interiors of the accommodation units of social services.

4.1. Wall color

The most common color choice of the walls was green – 21.33%, 18.67% chose white, 12.00% green-yellow, and 10.67% blue color (Figure 4).

In terms of psychological perception, we can say that almost half (47.99%) of respondents prefer cold colors, less than a fifth (18.67%) neutral white, and only less than a tenth (9.34%) prefer warm colors. The choice of color

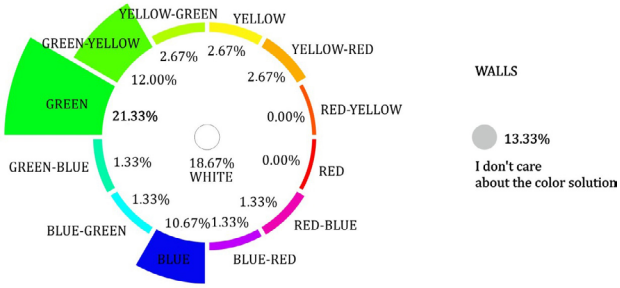

Figure 4. Wall color selection graph (source: authors)

could result from the need to achieve a feeling of fresh (cool air), which would make sense in terms of overheating of the accommodation during the summer months and poorly ventilated air due to overcrowded accommodation units. The calming effect of the green color will probably be of more fundamental importance. The statement is based on the assumption that homeless people, after previous negative life interventions, prefer calm colors. An important fact is also that the individual rooms in social service accommodation serve mainly as bedrooms. Lichardová (2006) recommends applying green, blue, and white colors to the bedroom walls, which are intended mainly for rest and sleep. In our case, homeless people have chosen mainly these colors, which correspond to the functional use of space.

4.2. Ceiling color

When choosing the color of the ceiling, almost half of the respondents would choose white (49.33%), followed by green (21.33%) and yellow (5.33%). The other colors in the circular graphic reached only an insignificant percentage (Figure 5).

From a psychological point of view, the neutral white color dominated. Cold colors were preferred by 27.99% and warm by 12% of respondents. Among the chromatic colors, green, with its calming effect, dominated again. The choice of white color was probably stimulated by the knowledge and experience of sensory perception from other interior spaces, where it is mainly used for ceilings. "White, on the other hand, symbolizes innocence, purity, and truth. It is clean, hygienic, and sterile, and creates a soothing environment. White contains an equal balance of all the colors of the spectrum, representing both the positive and negative aspects of all the colors" (Ćurčić et al., 2019, p. 870). The choice of the white color is also justified in terms of optimal space perception. Therefore, to perceive the height of the interior space, the ceiling should be painted in the brightest possible color. According to research, hue and saturation are of little importance for the perception of the height of space and thus the perception of congestion (von Castell et al., 2018). This means that if we choose the green shade of the ceiling color, it should be as bright as possible.

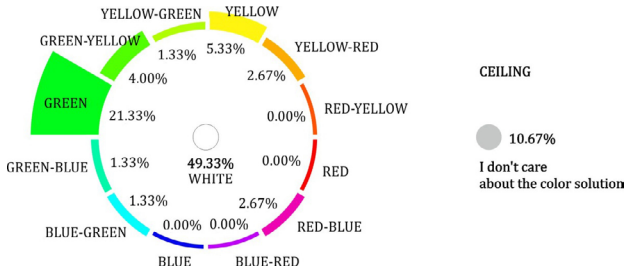

Figure 5. Ceiling color selection graph (source: authors)

4.3. Floor color

The most common choice of floor color was yellow-green (20.00%), followed by white (16%), green and yellow (6.67%), and over 5% was also blue (Figure 6).

Respondents considered the choice of floor color to be the least important of all areas in the space (up to 24.00% did not consider the color of the floor). The choice of color could have been influenced by the current floor design in social services facilities, where green and green-yellow linoleum is often used. Respondents stated that the color is also justified in terms of the visibility of floor pollution.

33.33% of respondents chose warm colors and 26.67% cold colors, 16% of respondents chose neutral white. The preference for the feeling of warmth seems to play a role in the choice of floor color, as warm colors predominate in the floors as the only ones. From the point of view of excitement, the selection again approached the calm color green (yellow-green).

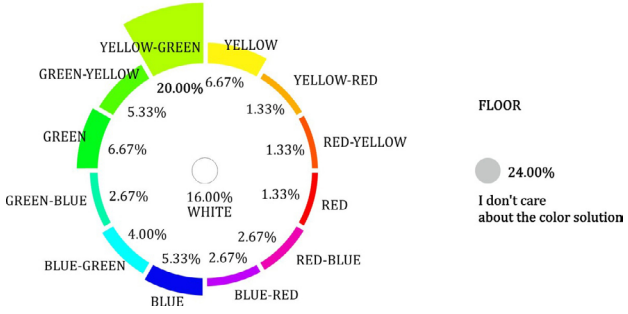

Figure 6. Floor color selection graph (source: authors)

5. Summary of knowledge, recommendations for practice and discussion

The above results (Figures 4, 5, 6) and respondents' answers may vary depending on the type of room, its geometry, location in the building, orientation to the cardinal points, view of the surroundings, and other influencing factors. The choice of color scheme for a space can help people in material need feel better in their living environment, avoid subconscious stress, and feel safer and happier. Despite these partial findings, it is important to note that the influence of colors on human psychological well-being is still an evolving field and has been the subject of several studies (Davis, 2004). It is also important

to emphasize that the results of the color choices reflect the feelings and current state of the clients. A significant factor, and in fact the winning influencing factor, was the room in which the questionnaire was conducted. When completing the questionnaire, clients often looked at the walls of the rooms in which they were located. Although the preferred space for conducting the questionnaire was always a room with white walls and a ceiling, it could have influenced the respondents' decisions in some way.

Spending time indoors currently depends on the physical quality of the indoor environment, the texture of surfaces, light, sunlight, and the application of smart solutions (Puskar et al., 2019). According to Samani and Davoodi (2024, p. 53), "the use of architectural elements such as form, water features, ventilation, and the thoughtful application of colors serve as tools to reduce anxiety and foster a sense of security and stability" (Samani & Davoodi, 2024, p. 53). At first glance, the use of smart technologies may seem too economically demanding, but the opposite is true. Most financial resources are spent on the operation of facilities and the provision of social and healthcare systems. This also involves a larger number of caregivers, social workers, and nurses, who are in demand in almost every country. "Therefore, solutions are being sought that will help people in need of care and at the same time relieve the burden on care staff through technological innovations" (Rollová et al., 2023, p. 10).

The deinstitutionalization of social service facilities would certainly also have an impact on the research results, as it undoubtedly affects people in material need, people suffering from various psychological and psychiatric diagnoses, and cognitive disorders. "Cognitive and mental disorder is a complex phenomenona with both medical and social dimensions" (Kacej & Čerešňová, 2023, p. 256). Deinstitutionalization is a process that involves changing the system of providing support and care for people who are dependent on the help of others. It allows homeless people to live in smaller residential units and be more independent. In essence, it negates living in large-capacity social service facilities.

The choice of colors also influences the perceived dimensions of a space, its perceived temperature, cleanliness, airiness, and so on. According to Daniel et al. (2017, p. 112), people from natural environments have a natural model of color gradation, which, when applied to interior spaces and the color of floors, ceiling, and walls, means that the floor should generally be the darkest, while the ceiling should be the lightest surface, which we rarely perceive separately in a space. From this point of view, the walls delimiting the space can be described as moderately dark, but greater diversity is naturally permissible here. This raises the question for architects of whether they want to use color to psychologically influence the users of the space and possibly change their behavior, as research shows that long-term use of a space can influence us (Babakhani, 2017). Or, conversely, do they want to apply the colors that clients prefer and thus satisfy their needs? In any case, it is necessary to combine these two principles in favor of social inclusion.

From the point of view of the hypothesis that homeless people will prefer the same favorite colors, it can be stated that the hypothesis has been confirmed. The choice of one or, maximum of two colors significantly dominated in each of the examined parts of the interior. When choosing the color of the walls, green and white-dominated, white on the ceilings, followed by green at a greater distance, and yellow-green dominated the floors, followed by white. From the point of view of the perception of space, the choice of ceilings and walls is logical, but the high preference for white for a floor is surprising. The reason may be a feeling of cleanliness and hygiene related to the white color.

Overall, homeless people preferred cold and calm colors, especially green. The reason is probably to find and achieve the desired peace and eliminate stress from the previous period of life. Hanuš (1969) states that the choice of green color is a return of man to nature because it was the first that begin to manifest itself in the development of our eyesight. "Our eye finds real satisfaction in it. If both mother colors (yellow and green) are exactly in balance when they are mixed, so we do not observe either of them more than the other, then our eyes and mind rest on this mixture as something simple. We do not desire more. That is why the green color is most often chosen for the rooms in which we still live" (Goethe, 2004, p. 46).

In the social services accommodation units, it may be recommended to adhere to the standard principles of applying color in the space. "From a construction point of view, we mainly deal with the color of the floor in the most intense hues, as it is the base of the space structure, the walls – lighter, and the ceiling in the lightest hues, or white. This color distribution also corresponds to the human field of view. The areas delimiting the space and their surfaces form the background for the other equipment of the space" (Lichardová, 2006, p. 3). It is suitable to apply the green color in the cold hue on the walls. It is advisable to choose rather cold colors on walls and ceilings, and rather warm colors on floors. Creating a feeling of cleanliness is also important for the floor.

The research was limited to choosing one color for a specific area (walls, ceiling, floor), so it is not possible to conclude on color combinations. However, as Lichardová (2006, pp. 3–4) states, "It is necessary to avoid hue overload and many significant colors, especially in quiet spaces, which has a bad effect on the human psyche – it is tiring. Also, the color, solved in muted, indistinct colors without gradation and contrast, evokes undesirable psychic sensations."

6. Conclusions

The article aimed to establish a color preference for a group of homeless people living in social services facilities and to establish the basic principles of color design of the interiors of accommodation units. As indicated in the introduction to the article, the right to housing is one

of the fundamental human rights. Nevertheless, even in developed European countries, there is still a large group of homeless people. Part of this group uses social services accommodation facilities.

The architectural level of these buildings is often very low. An alternative solution for interior surfaces is a quick-to-implement and low-cost housing intervention that can have a significant effect on the human senses. By appropriate stimulation of the sensory organs, we can have a positive effect on the psyche of the individual and motivate him to return to normal society. Sight, as the most important sense in terms of receiving information from a healthy individual, plays a particularly crucial role. Sight works on the principle of capturing reflected waves of visible light. The light, especially natural light, has a crucial meaning. Light is essential for stimulating physiological processes in the human body, and its qualitative aspect is reflected in the physical and mental health of a person. The visible component of light plays a specific role. It allows us to perceive colors. Colors are not only carriers of information about space, but can also have a significant effect on the human psyche. We recognize especially warm, cold, calm, and exciting colors. None of the theories about the effects of color has been proven so far. The problem with the generalization of the effect of colors lies mainly in their subjective perception by individuals, depending on their life experiences.

Research has shown that for homeless people forming a relatively homogeneous group, it is possible to define general preferences for the choice of colors in the accommodation unit. Green and white-dominated when choosing the color of the walls, white at the ceilings, and yellow-green at the floors. The stronger preference for green is probably related mainly to its calming effect. White on ceilings is more important in terms of spatial perception, where it is generally recommended to switch from darker to lighter colors up to white in the direction from floor to ceiling. The choice of cold colors dominates the walls and ceiling, and warm colors dominate the floor. By generalizing the findings, it can be said that the optimal color scheme in accommodation units of social services would be: a floor of warm colors in a material design evoking cleanliness, a calming green color of the walls, and lightening the pure white color of the ceiling. From the point of view of the clientele, it can be stated that the presented color scheme suits especially men in the middle working age of 45–64 years. In the case of a significantly different clientele, a different color scheme may be preferred. This color solution also does not apply to other spaces of the social services accommodation (hygiene, common, and communication areas).

For the full effect of the color solution, it is necessary to ensure sufficient access to light (especially natural). In future research, we find it interesting to examine in more detail the material solution of surfaces and meeting the lighting requirements of the studied accommodation units, as well as their solar potential for water heating or electricity production to ensure their self-sufficiency and sustainability.

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