Modern assessment of social psychological sustainability and urban environment quality

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Abstract. The study is based on an interdisciplinary approach and integrates psychological methods and approaches to the urban environment assessment. The authors describe the concept of social psychological sustainability of urban environment and determine methodological foundations for study thereof, define assessment criteria for social psychological sustainability of town-planning projects as indicators of the urban development quality.

1. Introduction

At the current stage of town planning development, more and more attention is paid to the study of what an individual and the whole society need. Historical functions of the urban environment which provide to people safety and comfort are being studied today within the framework of an interdisciplinary approach, and their content has gained increased awareness. Diverse needs of individuals as well as of the whole community, reasonable and livable urban planning solutions indicate high quality of the urban development. Quality assessment of urban development deals with a wide range of issues including the social psychological sustainability of town planning projects as the key indicator which determines the quality of urban development.

The scientific background for the assessment of the social psychological sustainability of town-planning projects can be found in a number of scientific studies:
• design of residential areas taking into account specific territorial unit (district, quarter, etc.), cultural and ethnic traditions, as well as personal needs (privacy, personal space, choice of areas, etc.) and psycho-physiological features of people (Levin K., Petrenko V.F., Arakelyan R.G.);
• design of residential areas based on the “man and living environment” dyad as a single system focused on the difference between the “objective environment” and “environment of behavior”, which is built by the people themselves and to which they react (K. Kraik and I. Altman, S.D. Deryabo, V.A. Yasvin);
• design based on dyadic interactions of “living environment and natural environment”. This approach implies interdependence of the living environment and the natural environment which most significantly affects human behavior (reactions of different people to identical environment show rather common than different features) (R. Barker, J. Gibson, K. Levin, M.N. Mankovskaya, P.V. Pipunyrov);
• design which provides for application of common colors and space-planning solutions, fits into the local landscape and conforms with natural conditions and climate (L. Zusena, K. Michels, VA Filin);
• design ensuring psychological comfort and security, preventing a dull uniformity and inexpressiveness in architecture (V.I. Iovlev, K. Lynch, A. Titova).

Assessment of the social psychological sustainability of development projects provides a key focus on needs and abilities of people having their individual psychological and psycho-physiological characteristics.

Current urban planning lacks a system of social psychological assessment of development projects. It is necessary to define methodology, develop principles and methods of assessment of social psychological sustainability of development projects to establish correlation between the urban performance and various psychological characteristics of people, in particular, their psychological conditions, behavior, and specifics of people’s activity, which is important to take into account at all stages of town planning activities (assessment, use, construction and design, working out of a general program).

2. Materials and methods

A system of psychological characteristics which ensure livability of areas and improve the quality of residential development allowed us to specify two
groups of factors: factors of social psychological security and factors of social psychological comfort and satisfaction with the living environment.

All factors of social psychological security integrate various interests of people from different points of view. On the one hand, taking into account public (social) importance, from the point of view of an individual as a representative of a certain age, social cultural, gender, professional or ethnic group. On the other hand, taking into account individual (psychological) interests, from the point of view of an individual having his own peculiar perception of living space, color sensitivity, proximity preferences, motivations and values, demand for social interaction and so on. Factors of social psychological security allow us to identify the following criteria for planning solutions analysis of historical sites.

The best studied factor that determines external influence on a person’s mental state is the space-planning solutions for residential areas (O. Newman, Van der Wurdt, Van Wegen, R. Taylor and D. Brooks, D. Jacobs, L. V. Smolova, H. E. Steinbach, VI Elensky). Different space planning solutions act as external stimuli causing varying personal perception of security (ranging from a feeling of insecurity and diffidence to a feeling of complete confidence and security when being in a residential area). Varying perception of security is determined by certain spatial characteristics, for example,

1) clear boundaries and marks, symbolic and real barriers, the demarcation of public and private space, at the psychological level they excite a feeling of being a part of the place, of a host available, and as a result cause a feeling of security;

2) planning residential areas based on the principle of “closed spaces”, void of through-passages, splits the area into “mine” and “not mine”, and, as a result, causes varying perception of security;

3) providing for proper observation of the whole area, street oriented facades (which is a criterion of "openness and visual accessibility provided for by planning solutions for residential areas") stimulates unconscious social control (J. Jacobs), reduces de-individuation symptoms that potentially occur in the process of social behavior, which in its turn contributes to self-awareness, responsibility for their own behavior, fear of nonconstructive criticism given by other people, and, as a result, activates the manifestation of signs of psychological security;

4) neighborhood improvement (benches, small architectural forms, outdoor lighting, gardening and other amenities) is one of the conditions providing opportunities for people to unite, which maintains their interactions, establishes public relations, and performs the social psychological function of “it is not the desert place, apparent order or
silence that provide harmonization, but the tumultuous outdoor activities of people”. Other people around contribute to the satisfaction of social needs and constitute one of the attributes of social psychological security.

The aesthetic appeal of planning solutions of residential areas (H. E. Steinbach and V. I. Yelensky) significantly impacts personal perception of security. The aesthetic appeal, perfection and harmonious combination of various aspects of the object, tidy buildings and facades evoke aesthetic pleasure, which in turn affects the sphere of emotions. The experience of positive emotions harmonizes the people’s behavior, while the experience of destructive emotions triggers deviant forms of behavior. Behavior deviations lead to the manifestation of external and internal insecurity, both at the psychological and social levels.

Factors of social psychological comfort and satisfaction with the living environment are developed in the context of the environmental psychological approach (A.V. Krasheninnikov, E.A. Soloveva, Arakelyan RG, Dyuev K.A.). In contrast to the factors of psychological security of residential development, they are more affected by the peculiarities of people’s lifestyle, their social position, place of residence, climatic conditions, and national traditions. The main criteria of social psychological comfort and satisfaction with the living environment are the functional indicators: floor area per person, number of rooms per person, a set of amenities, location of parking lots, driveways in the yard, landscaping, sports grounds, availability of social and engineering infrastructure, location within the city, population density. Implementation of poly-functional principles and the expansion of a range of functions of residential area structural components is the main indicator of increasing social psychological comfort and satisfaction experienced by an individual consumer. Differentiating the area according to different needs and opportunities, as well as historical continuity contribute to the increasing social psychological comfort and satisfaction experienced by communities.

When comparing factors of social psychological security and factors of social psychological comfort and satisfaction with the living environment in terms of their level and degree of impact on basic human states, priority is given to the first group of factors. Ensuring the social psychological security of residential area within historic sites acts as a basic principle of ensuring the livability of these areas, since this factor is directly related to the maintenance of a harmonious life based on the laws of human psyche.

Thus, such factors as social and psychological security, social and psychological comfort and satisfaction with the living environment determine the livability of urban development projects and accordingly, allow to define the typology and morphotypes of historical residential
quarters. Systematization of signs of social and psychological security, social and psychological comfort and satisfaction with the living environment based on the analysis of historical residential quarters allows to identify psychologically adaptive, psychologically depressed and psychologically neutral morphotypes of historical residential quarters in a modern city.

3. Results

Psychological assessment of architectural and planning solutions is based on principles developed in the context of the gestalt-psychological approach. The concept of the holistic perception of the “figure - background” spatial interaction, their mutual complementation, is the key principle for assessing the holistic perception of space planning solutions. Qualities of a living environment are shaped on the basis of such characteristics as spatial depression or compression, closure, openness.

Psychological assessment of the architectural and planning solutions for residential areas is stipulated by the basic human need for safety and comfort. Space-planning characteristics, the planning structure of the site, the arrangement of boundaries and intensive functional use of the space act as external factors affecting individual perception and provoking the experience of basic psychological security. Enclosed spaces void of passageways are designed to ensuring social and psychological security.

Social psychological assessment of the architectural and planning solutions is based on proximity principles. Proxemics allows to estimate personal space of an individual, which consists of a microspace (about 10 m), mesospace (about 50 m - 70 m), macrospace (from 70 m to 100 m). Space structuring based on proximity principles allows to meet people’s basic need for social communication. Assessment of architectural and planning solutions are taken into account to consider whether the need for social relations and communication is satisfied. Proximity evaluation is based on the following indicators “a gap between residential units and functional elements, availability of semi-private, private and public areas and their size within the development site”.

To identify and objectivize criterion indicators of a humane living environment, it is necessary to provide a comprehensive approach and study the aspects of the impact produced by the architectural and space environment on people: explore aspects of the visual environment perception, peculiar features of the impact produced by the geometry of living “empty spaces” on the spatial distances of communication,
interrelation and interaction of spatial forms and forms of human behavior. Taking this aspect into account, the authors have applied the methodology of “expert assessments” aimed at studying and building a system of theoretical and empirical data taken from related scientific fields, including medicine, cognitive psychology, videocology, sociology and proxemics.

As a result of the research, within the framework of the “inhabitant ↔ spatial characteristics” interaction system, the total theoretical and empirical data were split into three groups according to basic aspects of perception:

1) the social psychological aspect of perception of the living environment;
2) the visual aspect of perception of the visible environment;
3) the behavioral aspect of perception of the living environment.

4. Discussion

The following underlying theories were used to determine the design principles for social psychological sustainability of urban development.

Any person is greatly influenced by the surrounding space and objects. K. Lynch laid the foundations for a person-centered approach to the design of urban space. In his research, he puts emphasis very much on the relationship of human values and the city. In this area, one of the most important topics for a research dealing with object and spatial environment is the study of psychological foundations for the residential development, the relationship of people and their living space as a primary personalized territory (M.V. Galimzyanova). At the same time, the living environment means the environment, the material content, the filled space, the sphere in which a person’s life flows (AM Kantor). In the context of our research, the concept of the living environment is applicable to the objects of urban architecture, i.e. residential house, mansion, religious and household buildings, structure and spatial organization of the settlement itself.

Integration and differentiation of scientific knowledge, the establishment of dynamic interdisciplinary and intradisciplinary relations, the interpenetration of concepts and methodological borrowings is vividly displayed in various branches of knowledge accumulated in psychology, ecology, ergonomics, design, architecture and those devoted to the study of a person, his ways of survival and life in the natural, social and material (art and object) environment. This integration resulted in a number of new research areas which emerged in the second half of the twentieth century such as Ecological psychology and Environmental psychology, which is
translated in Russian publications as Environmental Psychology; Psychology of a human interaction with the environment; Psychology of interaction with the architectural and spatial environment; Engineering Psychology (Yu.G. Abramova, E. V. Lapin, E. G. Epifanov, V. I. Panov, S. D. Deriabo, V. A. Yasvin, T. Niit, M. Raudsepp, M. Heidmets).

A.V. Stepanov, G.I. Ivanova, N.N. Nechaev carried out analysis of modern architectural and psychological studies of living environment and distinguished two main approaches. The first one studies psychological mechanisms of space perception, the interrelation of the architectural environment structure and quality and people’s activity and behavior, people’s contacts in certain surroundings (EL Belyaeva, GB Zabelshansky, GI Zosimova, A. Ikonnikov, V.I. Iovlev, K.Lynch, I.A. Strautmanis, etc.). The second one implies research focused on the study of professional activities of an architect, associated with a comprehensive vision of the category of "artistic creativity" (V.P. Zinchenko, M.K. Mamardashvili).

Yu.I. Filimonenko in his works attempted to identify a number of studies aimed at the analysis of the role of the unconscious mind in the surrounding space perception, **including residential space** (italics EV, OV). The researcher draws attention to the name of the well known anthropologist who worked in the second half of the twentieth century E.T. Hall. He defined the structure of space through distance between people in everyday communication, through space organization in residential houses and public buildings and, finally, through the urban planning. To date, various authors have established four forms of a person’s relationship to space: personal space, individual distance, territoriality, and personalization of the environment. Territoriality is the fundamental concept, of course., Territoriality means that people tend to perceive some surrounding space as belonging to them only. It is assumed that the psychological basis for territoriality is laid in the genotype (Ryzhikov AI).

Any person, when interacting with the living environment experiences its influence on the one hand, on the other hand people themselves transform it. This dialectic interaction of people and living environment is determined by a number of conditions:

- external natural (geographic, climatic, temporal physical and phylogenetic);
- internal natural (individual-genetic, biological, physiological);
- external cultural (cultural, historical, social cultural);
- internal cultural (spiritual, ideological) factors.

Each level of living space arrangement produces its own languages: verbal, expression language of the external body, language of emotions, pathological language of internal organs, language of the conscious and
unconscious. To maintain its integrity, it is necessary to establish an information exchange at its various levels, which should be aimed at interpretation and understanding of the transmitted information. Signs and symbols are acts that feature the information of the external and internal in the living space of a person. Having a different nervous organization, together they make one language structure, which provides harmony to the living space of people.

The idea of fusion of people with their environment (including material), was first clearly presented in Kurt Levin’s “field theory”. Thus, an integrated approach to the analysis of residential (living) space of a person, together with the information-cybernetic approach in modern scientific thinking, the theory of synergetics applicable to social and biological objects and systems, the cybernetic theory of interests, motives, emotions which emerge when an living being collides with new environment, build a theoretical foundation and allow to feature the residential (living) space of people as a complex information system (Krasikov Yu.V. Frolova S.V.).

In his study, Iovlev V.I. points out that modern pressure on a living space is about to hit its maximum: spatial resources are decreasing, overcrowding, excessive intensification, and pollution of residential areas are observed; there is a tendency to preserve no man’s lands, degrading, extreme, pathogenic, hazardous spaces for people’s health; nature and man are forced out from the city by technology, utilities infrastructure, equipment, buildings. Physical pollution causes deterioration of the sanitary and hygienic state of the environment. Visual, acoustic and energy-informational ones produce a negative effect on the mental and social well-being of people and cause stress. Increasing density associated with filling the space with buildings, equipment, people, has physical and psychological limits. Modern cities show the following trend of development – a yard turns into a well, streets into a gassed gorge, any free space is filled with machines and equipment and their auxiliaries (parking lots, equipment, road junctions), personal and community space is compressed due to the increased number of residents. As a result, abnormal states of urban development occur, which go beyond the psychological reasonability, thus posing a threat to people’s life and health.

5. Conclusion

The current state of urban development requires elaboration of principles for improving the quality of urban space planning. Elaboration of such
principles can be based on a social psychological approach which allows to assess the social psychological sustainability and livability of urban spaces.

Indicators of the social psychological security of the urban development, its social psychological comfort and satisfaction can be used as criteria for assessing the social psychological sustainability and livability of town-planning projects.

Optimization of social psychological sustainability and livability of residential areas is enabled through analysis of integrative indicators, which include architecture and planning solutions, visual and spatial organization, hierarchy and space arrangement taking into account their impact on the psychosocial state of people.

The assessment of the architectural and planning solutions is based on the calculation of humane parameters of the area development, taking into account proximity needs and aesthetic appeal. The visual-spatial organization of space is assessed according to indicators of communicative appeal, space markings, the manifestation of symbolism and identity signs. The hierarchy and order of space is achieved through setting clear boundaries and a proper ratio of private and public, the ability to provide visual openness and social closeness of the living environment as well as the expanded network of functions polarization.

Thus, the methods of social psychological assessment of urban planning projects can be applied in order to improve the quality of urban development. The methodology of assessment of the social psychological sustainability and livability of residential areas may be introduced in the process of decision making regarding urban planning and development, and may also be used as an additional method for determining guidelines applicable to urban planning activities.

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