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Architectural Psychology as Backbone for Need Orientation: Two Examples From Research and Practice

1 Introduction

Surrounded by ingrain wallpaper, laminate flooring, and thousands of things: In Western societies, we spend large amounts of our everyday time in buildings (80–90 %, e.g., Klepeis et al., 2001). This mere observation calls for a closer look at the relationship between us humans and those built environments and objects. Across the globe, there are various disciplines and schools of thought that address the relationship between people and the environments with which they engage (e.g., [interior] architecture, design, usability, environmental and architectural psychology, feng shui; cf. Schweitzer et al., 2004). Depending on the theoretical perspective, this can also include the notion of agency in humans and non-human elements (e.g., furniture, infrastructure, buildings). Such perspectives span, e.g., social practice theories (Latour, 1996), the ecological approach to visual perception (Gibson, 1986/2015), and priming theory (Chartrand & Bargh, 1996). For instance: Does the weight of a wardrobe affect whether we will take it with us on our next relocation? Does the location of a staircase affect whether we take the elevator? Is there a difference between your childhood bedroom and a room of the exact same size in a different apartment block? Most readers of a handbook on need orientation in interior architecture will probably agree.

In environmental psychology, people and environments are not seen as merely self-contained, mutually opposed entities. Rather, people and environments together form an inseparable whole that changes over time and encompasses physical as well as psychosocial aspects (Altman & Rogoff, 1987; Kruse, 1974; Müller et al., 2018). Hence, spatial elements are endowed with a certain agency and loaded with psychological meaning. Such interplays of humans and non-human elements are not universal but highly individual (Müller & Oswald, 2020). What does that mean for architects and designers, who try to solve people's problems through built environments, objects, or interfaces – not only for individuals but for large and diverse user groups?

2 The Essence of Architectural Psychology

To this aim, architectural psychology – a subdiscipline of environmental psychology – addresses the interactions between humans and the built environment in an evidence-based way (Flade, 2008; Richter, 2009; Vollmer, 2023). It offers approaches for the design of housing, learning, healthcare, and working environments that are tailored to the user's specific needs. Such a process is based on at least three pillars: (a) profound theoretical knowledge on psychological needs, aetiological knowledge on (mental) health problems, and practical knowledge on health promotion, (b) empirical evidence of person-environment interactions, (c) methodological knowledge to assess people's perceptions and preferences. These cornerstones provide a largely untapped potential for architecture and interior design that aims for need orientation. For example, a study with cancer patients (Vollmer & Koppen, 2010) has shown that they have a great desire for light in their living environments, and this often manifested in relocations or enlarging windows. Patients suffering from health problems that are related to a high need of control (e.g., anorexia) might especially benefit from buildings of a human scale (Nilsson, 2021) that offer possibilities to exert control over one's interior environment. However, putting such an endeavor into practice might be easier said than done: "to first study thoroughly the human being in their changing, individual feelings, their experience before one dares to create their environments, their spaces, is a great challenge and needs time" (Vollmer, 2023, p. vi, translated by HM). Despite the aforementioned potential of architectural psychology, there is still pseudoscientific information, which trickles down into our built environment.

One such example is Baker-Miller Pink (Schauss, 1979), a pink color used in prisons and psychiatric facilities with the aim to reduce aggressive behavior in inmates and patients. Unfortunately, methodologically sound studies (Genschow et al., 2015; Gilliam & Unruh, 1988) find no support for the alleged effect of such a color. This represents a fundamental problem in color psychology (O'Connor, 2011), which can only act as a cautionary example and a motivation to do better. While the actual beneficial effect is questionable at best, it becomes the reality of hundreds of prisoners and patients that are confined to those spaces. Hence, with a great potential to influence people's emotions and behavior,

there also comes a responsibility in (interior) architecture and design to consciously adopt scientific evidence and create spaces that cater to the needs of their users. In such projects, architectural psychologists can advise and mediate with those involved, focusing primarily on the psychological needs of the user groups (Rambow, 2003).

Such an architectural psychological approach aims to derive indications for the design phase. After completion of construction, the implementation can be evaluated from a need-oriented point of view (Zimring & Reizenstein, 1980). This allows buildings and rooms to be specifically designed with the psychological needs of the users in mind and the results to be evaluated accordingly. In architecture, this creates the basis for awareness of the importance of quality of life, which takes precedence over pragmatic and aesthetic considerations. In this, the empathic attitude and structured methodology of psychology and the creative solution orientation of interior architecture complement each other. This represents an interdisciplinary collaboration that produces innovative ideas that can be directly incorporated into the design process.

Lately, the concept of evidence-based design is becoming increasingly important, not only in modern healthcare but also in learning or working environments (Hamilton & Watkins, 2009). Such a design aims to use built environments specifically adapted to the psychological needs of the user group as an additional, (therapeutically) supportive element. A design based on architectural psychological insights offers advantages for three groups of people: (a) there is an immediate benefit for users such as patients, students, or staff; (b) this provides an indirect benefit for medical staff, teachers, and supervisors, who will have to deal with fewer complaints, less aggression, and less disorientation, as well as the direct benefit of a high quality working environment; (c) finally, for building owners, need-oriented planning from the beginning can be effectively cost-neutral, as expensive retrofitting may be prevented (Vollmer & Koppen, 2015).

In his widely renowned model, the psychotherapist Klaus Grawe (2004) suggests four basic human needs, which motivate human behavior: the need for attachment, the need for control/orientation, the need for pleasure/avoidance of pain, and the need for self-enhancement. These four elements may serve as a starting point for a deeper exploration and interpretation of individual needs. Depending on the context, single needs might be highlighted in a design. In order to implement such an ambitious approach, interdisciplinary cooperation (e.g., with occupational therapy, educational studies, sociology) is recommended.

Figure 1 gives an abstract idea of different building blocks that can be used from an architectural psychological perspective for need orientation in interior architecture. A theoretical assessment rooted in psychological theory and evidence lays the groundwork. This helps to get acquainted with the overall topic and underlying psychological mechanisms. Questions to be asked include: What is special about this user group? Which needs can

we anticipate/hypothesize from theory and evidence from similar contexts? This analysis informs an empirical assessment through qualitative and/or quantitative methods. Here we ask: What is the actual situation on site? What are the future users' perceptions of the subject? This creates systematic documentation of the current user situation. Following this rationale guides a user-needs analysis that results in a user-oriented program development (Eisenkolb & Richter, 2009) and represents a point of comparison for a post-occupancy evaluation (Rambow & Rambow, 1996). Importantly, the evaluation should take place in everyday use of the building, which allows a realistic impression.

A third building block represents co-creation tools that allow future user groups to actively participate in the design process. Despite certain challenges of co-creation (e.g., unconscious needs that are unable to be expressed, difficulties of transfer between hypothetical scenarios and real-life environments, expectation management), such an approach can add valuable insights and identification with the results. As there is a fine line between avoiding "othering" (Naumann, 2017) and disregarding special needs, we should assume as little as possible and genuinely ask and listen as much as possible.

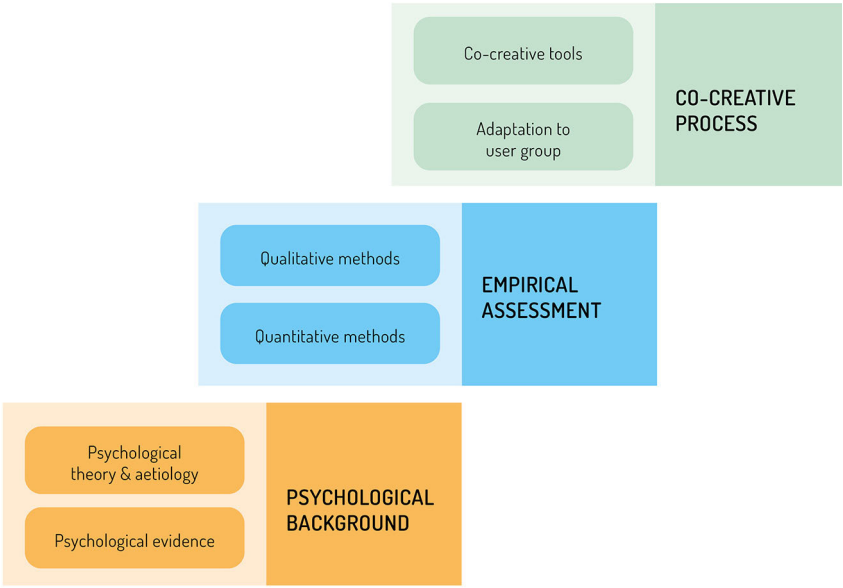

Figure 1: Building blocks of architectural psychology in interior design. (Graphic: created by author)

3 Need Orientation Based on Psychological Theory: Two Examples

Against this backdrop, this section presents two examples that showcase the idea of needs assessment based on psychological theory, translated into quantitative and qualitative methods; this results in indications for interior design that thrives from need orientation. These hypothetical cases aim to exemplify and sensitize for a process rooted in architectural psychology that can directly inform interior design as well as architecture. Apart from the contexts, the briefs differ in the characteristics of the user group in terms of (a) age, (b) access, and (c) fluctuation.

Common Room in Multigenerational Cohousing:
Intergenerational, known, permanent user group

The first brief is to design a common room in multigenerational cohousing.

Theoretical Assessment

From a theoretical perspective, it is important to understand the idea behind cohousing and both the potentials and the pitfalls that go along with it. The term cohousing refers to self-selected groups of people who decide to live together and form a "deliberate neighborhood" (Durrett, 2009, p. 19). Studies show that the desire for community, personal development, intergenerational contact, an infrastructurally advantageous residential location, and generative activity, along with current and anticipated health issues, motivate people to move into cohousing (e.g., Hieber et al., 2005; Müller, 2021). The important difference between cohousing and a shared apartment is that all residents have their own separate apartments alongside common rooms (e.g., lounge, additional kitchen, library) and spaces (e.g., garden, terrace, courtyard). Studies on multigenerational cohousing show that aspects of space appropriation, intergenerational relationships, and a balance between community and solitude are important (Müller, 2021).

Empirical Assessment

To validate such findings from the literature search for our specific user group, different methods can be of service. Getting to know the user group better (e.g., through attending group gatherings) can help to cater to their needs. Here, co-creative methods (e.g., brainstorming, collages, games) offer possibilities to engage future users of the spaces in the design process. Additionally, interviews can help deepen the understanding of requirements, wishes, and needs for the spaces in question. Importantly, all residents should have the feeling of being heard and being able to contribute. Common spaces, such as a lounge in a multigenerational cohousing project, will be used by a diverse set of people in terms of interests, age, gender, and personality. The first thing that may come

to mind is to make the room as multifunctional as possible, without a particular look, so as not to repel anyone. While the resulting space may not repel anyone, it cannot attract anyone either if it is sterile and uncomfortable. From a psychological perspective, we know that it should be a place to come together, to talk, teach, learn, create, and play. It has to be attractive enough to convince people to use this space than rather than to stay in their private apartments – which can happen in cohousing, resulting in deserted common spaces (Deinsberger-Deinsweger, 2007). This connection of theoretical and empirical assessment may result in two new insights for the design: (a) consider not only large groups, but also one-on-one interactions and spaces where one can be "alone among others" for reading, crafting, listening to music; (b) allow diverse people to contribute to the space without dominating it by finding ways to appropriate the space in less permanent ways (e.g., frames, changing art work).

Considerations on Co-Creation

When people of an older age are included, there are several aspects to consider. On a very basic level, attention to possible impairments (e.g., vision or hearing loss, reduced fine motor skills) is required. We should try to make sure that co-creation partners understand the initial idea and allow questions as well as new ideas at any time. If necessary, an accompanying person should be included for support; this should be considered ahead of time, as including an additional person can result in complex scheduling. To avoid time pressure during co-creation sessions, there should be sufficient time for breaks, and sessions should be kept short to avoid fatigue. A mix of different methods – such as group settings and single settings – can be less tiring. On a deeper level, it can also be necessary to reflect on our own stereotypes about the partners. Those may be positive or negative (e.g., "older adults are slow" or "older adults are always nice"), but reflecting on these often-unconscious stereotypes will allow us to minimize their influence on the design. Finally, it can also be helpful to reflect on generational dynamics, especially if there is a big age difference between the people included. At times, these dynamics can be advantageous, as they can result in higher commitment due to feelings of generativity (Erikson, 1968), but they can also be hindering, depending on the respective connotation of a generation.

Patient Rooms in Psychiatric Wards:
Adult, unknown, fluctuating user group

The second brief is to design patient rooms in psychiatric wards. This brief asks for particularly creative solutions, as a multitude of safety regulations limit the possibilities for interior designers, e.g., in terms of materials or objects.

Theoretical Assessment

For people who are suffering from severe mental illnesses and being treated in psychiatric facilities, conflicts appear between the priority of security and the priority of individual control, and these are often skewed towards security. As a result, patients admitted to highly institutionalized psychiatric wards suffer not only from mental illness, but also from loss of control (e.g., not being able to choose where to go), which is a basic human need (Grawe, 2004) and become highly dependent on their immediate social and spatial surroundings. Studies show that spaces that are not planned with the users' needs in mind can lead to psychological resistance among residents, manifesting, e.g., in aggressive or withdrawal behavior (Welter, 1997). In these cases, staff has to work additionally against these preventable symptoms (Vollmer & Koppen, 2015). Yet, depending on their current situation, psychiatric patients may also feel overwhelmed by an excess of choices. However, increasing patients' sense of control by offering them small choices during their stay in a psychiatric environment might increase well-being (cf. Langer & Rodin, 1976). Especially as people with psychiatric disorders are still stereotyped and stigmatized (e.g., as a homogenous group of "the mentally ill"), actively searching for ways to foster control in psychiatric environments may contribute to patients' well-being and individualization (Rehn-Groenendijk et al., 2022). Then, architecture may become an additional therapeutic agent (Haberle, 2016).

Empirical Assessment

In Germany, psychiatric patients spend on average 24 days in the facility (Statistisches Bundesamt, 2022), which means that a user group fluctuates on a regular basis. As future residents are still unknown, the use of proxies is required. Thus, staff members play an important role, as their consistency and experience are of great value for gaining insights into residents' behaviors and preferences. Here, individual interviews and/or focus groups allow the inclusion of these perspectives in the design. To get a first impression of the everyday usage, participants can be invited to narrate typical usage scenarios (Diekmann et al., 1998). This not only provides an easy way to start the conversation; it also shows interest in their everyday reality. In the user needs analysis, methods such as the ranking of aspects (e.g., reassurance, safety, privacy, functionality, materials, colors) for

different spaces and observations on site can be used. Important questions are: Are there certain spaces where patients' reactions are especially strong (positive or negative)? Are there concrete wishes, in terms of colors, functionality, feelings, to convey? If participants struggle to come up with their own ideas (e.g., in brainstorming), options can be presented and discussed in the group (e.g., photo evaluations). The post-occupancy evaluation later allows one to see whether the aspects from previous analyses were adequately implemented in the building or whether there is a need for adjustments. How do patients and staff interact with the environment? Is there any damage to the design? Did users change the design (e.g., cover up windows, take down decorations)? Are there spaces that are not used according to their intended purposes? As an additional advantage, such an opportunity for employees to participate in shaping their own work environment may foster job satisfaction (Rambow & Mozcek, 2002).

Considerations on Co-Creation

Participation of psychiatric patients in co-creation needs to be cautiously planned and administered. It depends on a facility's regulations and the practitioner's evaluation of whether the patient is in an apt mental state – that is, whether the patient is able to participate without being overwhelming and thus destabilized. The challenge that remains is to find a balance between providing choice avoiding experiences of overwhelming. This calls for low-threshold methods and enough space and time to let partners try out forms of participation and explore their own preferences. There are groups of former psychiatric patients and self-help groups who can be contacted for their perspective and evaluation. When including psychiatric staff, workshops and/or interviews should be planned to be as enjoyable as possible without taking up too much time, thus not adding to the burden.

4 Conclusion

This contribution offered insights into the theoretical, methodological, and practical sides of architectural psychology and into the way it supports need orientation in interior architecture. It also pointed out potentials and challenges of such approaches. Especially in healthcare environments, people depend on their surroundings, which have great potential for the well-being of users – if the environments are well designed. At the same time, we must not fall prey to the tendency to conceptually overcharging a design – even with best intentions in mind. For instance, in a context where we aim to stop hiding people with mental illnesses, we still must not put such an urge above patients' needs for privacy and safety.

Despite existing challenges, in order to adequately take users' needs into account when designing environments, a participatory approach is recommended – in addition to a thorough search of requirements and background. Architectural psychology can act as a rationale for need orientation, but no general design proposals should be expected (Dijkstra et al., 2006). Instead, this perspective can help to implement individual concepts and adjustments tailored to the respective user group (Rambow & Moczek, 2002). The main challenge for interior designers and architects remains to cherish users' (expression of) needs and to incorporate these into the design – and to do this as the creative problem solvers that they are.

By addressing architecture and interior design from a perspective of needs – whether on an individual or on a group level – we have the ability not only to be of service to clients, but to really understand them, acknowledge their experiences, and facilitate their engagement with the environments. This would allow us to tap into a deeper psychological meaning that renders interior architecture even more powerful – beyond personal taste or style.

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