A Transdisciplinary Approach to Hospitality and Habitability in Healthcare Settings

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This article intends to contribute to the theoretical work concerning the relationship between spaces/settings and user's well-being in the context of healthcare organizations. Using a transdisciplinary approach anchored in psychosociology, the article stems from the conceptual contributions of Environmental Psychology – namely, Ulrich's Theory of Supportive Design – and articulates it with the Sociology of engagements. Namely, the aim is to combine the conceptual patrimony from both fields to more acutely identify and differentiate the plurality of evaluative frameworks patients/users mobilize concerning how clinical spaces/settings should be configurated to safeguard their psychological well-being. Namely, two specific concepts from Sociology are integrated into the analysis: hospitality and habitability. We intend, thus, to elaborate the first proposal of a more nuanced conceptual model on person-environment relations that allows mitigating ambiguities identified when analyzing users' evaluations of clinical spaces/settings. A deeper understanding of these relations can, in turn, favor patients' resilience and health organizations' sustainability.

Keywords: Transdisciplinarity, Theory of Supportive Design, Sociology of engagements, hospitality, habitability.

1 Introduction

The relation between spaces/environment and individuals' well-being constitutes an object of questioning that is transversal to several disciplinary areas. Its complexity favors, to this extent, the undertaking of transdisciplinary perspectives, summoning concepts and methodologies from different fields, transcending and integrating disciplinary paradigms, to obtain knowledge progression and advances in the practical interventions on social problems and concerns [1].

Among the transdisciplinary areas developed toward research and action, the intervention of Psychosociology stands out. Indeed, Psychosociology focuses on the relation between person and environment, with

particular focus on the mediating systems between the individual and society – namely, organizations and institutions [2]. The privileged angle lies in the relationship between external conditions (practices/activities and settings) and individuals' psychic processes and experiences. It intervenes, therefore, in the organizational/institutional arrangements to foster an essential function: ensuring a supportive environment for individuals' actions and mental space [2].

The present article is placed precisely in the Psychosociology field, a discipline whose main characteristics are the approach and contextualization of a given phenomenon in which the method of evaluation involves a synthesis of theoretical perspectives [3]. Namely, if Psychosociology is anchored in the contributions of Social Psychology, Environmental Psychology, as well as of Sociology and Anthropology, this article stems particularly from the theoretical-conceptual heritage of Environmental Psychology and articulates it with contributions from Sociology. The purpose is to provide a different outlook on the interaction dynamics between social and psychological processes, in terms of organizational arrangements and individuals' well-being.

With regard to the work developed on the relation between the design of environments and psychological states, gaps can still be identified at a theoretical level [4]. Transdisciplinary perspectives can, in this sense, allow a broader and deeper understanding of the relation between the individual and the environment [4]. In this case, the focus is placed on the clinical/hospital context, namely on the impact of the environment – both spatial (physical characteristics) and socio-functional (social and organizational relationships) – on patients' recovery processes and well-being [5].

Precisely concerning these theoretical gaps, this article aims to contribute to the development of conceptual instruments for evaluating physical and socio-functional environments in the context of health care provision. We chose the *Theory of Supportive Design,* developed by Roger S. Ulrich [6] [7] [8], as a ground-breaking work within Environmental Psychology concerning the impact of hospitals' physical and socio-functional arrangements on patients' recovery and psychological well-being [9] [10].

The effort to expand and advance the analytical scope of this theory is made through the articulation with contributions from the theoretical framework commonly known as *Sociology of Engagements* [11] [12] [13]. Namely, the aim is to infuse two concepts developed within the orbit of this conceptual structure, concerning how social actors relate to their surrounding environment: *hospitality* [14] and *habitability* [15].

Specifically, the article aims at a first exploration of how the analytical dimensions integrating Ulrich's theory – *sense of control, positive distractions,* and *social support* [6] – can encompass *hospitality* and *habitability* as sub-dimensions valued by users/patients in how they evaluate the environment in a clinical context. Particular focus is placed on the dimension sense of control to illustrate the potentialities of combining both theoretical constructions. Data from a research project that comprises the analysis of patients' experience in clinical contexts – namely, within Assisted Reproductive Technologies (ART) – provides the empirical material to achieve this desideratum.

We intend, thus, to contribute, within a transdisciplinary approach anchored in psychosociology, to the development of the conceptual model on organizational environments, in a perspective of the relationship between individuals' *psychic life* and *organizational functioning* [3]. In a hospital setting, space disposition and organizational factors can impact patients' recovery process and psychological *resilience* throughout their therapeutic process [16]. The development of more nuanced conceptual tools concerning the individual-environment relationship can favor more effective clinical practice guidelines towards that resilience and, concomitantly, promote the improvement of healthcare systems' quality in a perspective of *sustainability* [17]. We proceed, therefore, with a description of the theoretical-conceptual framework that guides the analysis, with a specific focus on the *Theory of Supportive Design and Sociology of Engagements.*

2 Theoretical Framework

a) Theory of Supportive Design and its operationalization

The postulate that the physical environment is an important factor for improving the patients' well-being in a hospital environment and, consequently, in the clinical outcomes obtained, has a long bearing [18]. A

fundamental orientation underlies this focus on the relationship between space and the therapeutic process: treating patients not only as *clinical objects* but also as subjects endowed with singularity, by listening to and integrating their needs and preferences in the therapeutic process [19] [10]. It is on this wider perspective about how patients' needs are conceived and attended to that the notion of *patient-centered* care is based [19]. Notwithstanding its different dimensions and manifestations, this guiding concept in the provision of healthcare was built from the 1970s onwards in opposition to the biomedical model in the way of understanding and exercising clinical practice – focused exclusively on identifying and treating typified pathologies in the human body [19].

It is in the research context of *patient-centered* healthcare that Roger S. Ulrich's influential *Theory of Supportive Design* [6] [8] emerges within Environmental Psychology. This theoretical-conceptual framework aims to account for the impact of environmental factors on attitudes and satisfaction of health facilities' users. The notion of *supporting* refers precisely to environmental characteristics that promote or help patients' coping strategies and their recovery concerning the stress that accompanies the illness experience and their therapeutic trajectory [7]. In fact, functionally effective but psychologically adverse spaces are potentially generators of adverse psychic conditions. Hence the importance of promoting spaces that are not only efficient, but also capable of providing psychological support [6].

Concretely, Ulrich's *Theory of Supportive Design* provides a conceptualization of how the physical and socio-functional environments affect patients' well-being – particularly, with an impact on their stress levels. The promotion or restriction of well-being in the context of health care depends, according to this theoretical framework, on socio-environmental factors organized into three major dimensions: *perception of control, positive distractions, and social support* [6].

The *perception of control* is related to the patient's ability to modify aspects of the surrounding physical and socio-functional environment. This dimension corresponds, therefore, to the human beings' need for *self-efficacy* in their relation with the surroundings, with an impact on their psychic processes (i.e., levels of well-being). Situations or external conditions that cannot be controlled therefore constitute stress-enhancing environments [6]. In this dimension, an approach in terms of designing hospital spaces that favors a supportive environment and that reduces stress factors encompasses characteristics such as: the ability to access visual privacy and control personal information; control over amenities of the hospital room (light, temperature, bed position, etc.); access to controllable technology (music, television, entertainment, etc.); access to services (food, beauty services, SPA's, etc.); control over aesthetic elements (e.g., choice of artwork or other ornamentation elements), etc. [6] [9] [10].

In the case of *positive distractions,* this dimension concerns the physical and socio-functional configuration of spaces that responds to stimulation likely to reduce sources of stress for patients. In addition to the patient's control over the characteristics of the surrounding space (in particular, the recovery room), certain visual and sound stimuli included in this category have an impact on patients' well-being: sunlight, ambient aromas, artwork, wall's color, music, suppression of disturbing sounds (e.g. phone rings), etc. [4] [6] [9] [10].

Finally, *social support* is the last dimension regarding the impact of socio-spatial characteristics that mitigate stress in a clinical context. Since a clinic/hospital takes the patient out of their intimate/personal environment, elements such as spaces capable of accommodating hospital visits or the presence/accompaniment of family members are important psychosocial factors with an impact on patients' stress levels [6] [9] [10].

Regarding the relation between physical and socio-functional space and patients' stress, is relevant to mobilize the concept of *resilience* [20], which focuses on contextual, social, and individual variables that can interfere with or disturb the therapeutic trajectories in terms of health problems – particularly, stress-generating factors [16] [21]. These variables are called *promoting factors,* which operate in opposition to *risk factors,* and help individuals to overcome negative results of a specific circumstance or exposure to risks [16] [21].

This psychological resilience of patients, as a fundamental component in healthcare provision, can be fostered, in turn, with the implementation of programs/guidelines (such as those concerning space layouts and architectural elements) that ensure the *sustainability* of the healthcare delivery systems – in this case, at an institutional level. Indeed, *sustainability* constitutes a fundamental element/concept of the functioning of healthcare organizations, referring to programs, forms of clinical intervention or guidelines/strategies

capable of evolving and adapting to the behaviors of the targeted individuals (patients, in this case), and allowing that continuous production of benefits in terms of well-being [22] [17].

Sustainability must therefore be understood from the perspective of unifying ecosystems/organizations and the resilience of their users [23]. And, in this particular case, the flexibility and ability to focus on patients, in a perspective of continuity and holistic attention to their specific needs, constitutes a fundamental vector when evaluating how healthcare is provided and, consequently, the benefits in terms of fostering the psychological resilience of patients [17].

However, regarding this recognition of environmental factors that impact users' stress levels, it is possible to perceive some ambiguities concerning the identification of forms of relation with the environment that contribute, or not, to the well-being of patients in how they evaluate a given clinical/hospital space – hospital room, consultation room, examination room, etc. This ambiguity can particularly be identifiable in the *perception of control* dimension.

Indeed, if well-being is rooted in the *perception of control* over the hospital environment, as one of the dimensions of Ulrich's theoretical framework, the notion of *control* is likely to give rise to different interpretations from the perspective of diverse modes of relation between the patient and the surrounding environment. Namely, in the operationalization of this theory, that concept can mean, on one hand, control in terms of communicational dynamics to meet the patient's expressed *will.* This is the case, for instance, of obtaining informed consent, to ensure effective fulfillment of the patients' will, or also the functional arrangement of a hospital recovery room to allow access and control to certain *commodities/services* (television, internet, etc.). On the other hand, a distinct situation is a modality of control over the environment that attends user's *comfort/ease.* This is achieved through a spatial arrangement that allows a personal appropriation by the patient, in the sense of allowing a design of the surrounding physical environment that favors a personalized relationship of the patient with the space – similar to the spatial arrangement in a domestic context (*home*).

This ambiguity of the aimed good targeted in the individual-environment relation can lead to certain modes of operationalization of Ulrich's theory that can hinder the identification of statistical correlations between the *perception of control* and patients' well-being [9]. A non-clear differentiation of those two distinct forms of relationship with the environment – *functional* and *personalized* – can lead to the construction of operationalization indicators of this dimension of the *Theory of Supportive Design* that do not favor a clear apprehension of the different ways patients evaluate the clinical environment.[1]

It is, therefore, the *type of control* over the environment, ensuring different forms of patient's relationship with it, that can be improved in the operationalization of the *perception of control* dimension of Ulrich's *Theory of Supportive Design.* Contributing each modality of control over the environment in a different way to the patient's well-being – aiming at *comfort/ease* and/or *accomplishment of will* –, this conceptual improvement can allow, hence, the construction of more comprehensive and accurate measurement indicators for evaluating the physical and socio-functional hospital environment according to this dimension.

The theoretical framework commonly referred to as the *Sociology of Engagements* [11] [12] [13] provides conceptual tools that precisely allow greater detail and analytical reach in distinguishing the different socially valued goods in how social actors relate to their surrounding environment. Particularly, we intend to incorporate the notions of *hospitality* and *habitability* as specific normative perspectives in how patients evaluate their surrounding social-physical space (in this case, the clinical/hospital space) in terms of its contribution to their well-being. The description of this theoretical- conceptual framework is exposed below, articulating it with the *Theory of Supportive Design.*

b) Sociology of engagements – for a theoretical deepening of the individual-environment relation

If space, in its architecture and disposition, has an impact on individuals' well-being, *Sociology of Engagements* focuses precisely on how social actors relate to their surrounding environment according to different

[1] This is the case, for instance, of indicators concerning the provision of *Education and support* by professionals, in the sense of providing the patient with information on medical procedures [9]. This constitutes an element of control that can be associated with a perspective of patient empowerment in terms of his capacity for decision-making, therefore, different from an assessment strictly focused on *comfort/ease* in the appropriation of the environment.

normative orientations. The notion of engagement intends, precisely, to emphasize how action depends on the way the environment is formatted – and it is in this formatting that lies the individuals' ability to coordinate their action, with themselves and with others [11].

Namely, this theoretical-conceptual framework focuses on the relationship between actors and the arrangement of *material objects* (technical-scientific objects, furniture, spaces, etc.) and intangible objects (discourses and biomedical categories/classifications, legal rules, procedural norms, etc.) that constitute a given environment. These compositions, which form a given situation, are, in turn, tributary of different *regimes of engagement.* Each regime constitutes a specific format of actors relating with the environment at a cognitive-evaluative level – *cognitive* in the sense that each regime contains a categorization and apprehension of the relevant elements in a situation, and *evaluative* in the sense that each regime contains a normative conception, in terms of a certain socially valued *good* which is aimed [12].

In this way, the cognitive and evaluative dimensions of regimes of engagement can be transposed to studies within the scope of Environmental Psychology – focused precisely on the relationship between the formatting of situations and the actions/attitudes of the actors, with an impact, in turn, on their psychological well- being. It is through congruence in person-environment interactions – therefore, between the actors' normative expectations and the effective formatting of the environment – that individuals' well-being is achieved [5] [2].

Three regimes of engagement can be distinguished according to different socially valued goods aimed at and that, therefore, contribute in different ways to individuals' well-being. These regimes differ according to an analytical axis that goes from the general to the particular – that is, from collective conventions that serve as normative references when acting in the public space to the more local and personal acting references. It is precisely through these different goods as normative horizons – substantiating a heterogeneity of the actor's relationship with the environment [24] – that the surrounding environment supporting action is formatted [11] [12]. The conceptualized regimes of engagement are the *regime of plural orders of worth*, the *engagement* in a plan, and the *familiar engagement.*

In the *regime plural orders of worth,* action is oriented with reference to different conceptions of the common good (expressed by different *orders of worth*). These orders constitute publicly consolidated conventions that actors mobilize to qualify (classify and hierarchize) the different situations composed of different *beings* – individuals, objects, and relational formats [25]. This is the case, for instance, of *efficiency* as a conception of the common good expressed by the industrial *order of worth.* This convention is supported by beings qualified to express this *worth* (e.g. *experts, patients, technicians, technical instruments, procedures/protocols,* etc.).

In the regime of *engagement in a plan,* the space is functionally prepared, with the aimed good being the *satisfaction of accomplishing an action* [11]. The action is, thus, oriented towards the achievement of certain aims, through an environment properly formatted for this purpose. The environment is constituted by beings that support different *orders of worth.* For the case under analysis, associated with the hospital context, the beings endowed with *industrial worth* take a central place – in the form of *performance indicators, parameters, clinical procedures,* etc. However, when inserted in a prepared functioning space, the conception of the common good that these beings express is reduced to the functional properties of an engagement in a plan. Meaning, the evaluation of the situation is restricted to the objective of the plan of action, rather than referring to any characterization of the common good [26].

Finally, in the case of the *regime of familiarity,* the aimed good corresponds to *comfort/ease.* The action takes place in an environment formatted according not to far-reaching conventions or markers for a functional appropriation, but according to localized, personalized references, built by a person or by the set of actors who share a set of personal meanings [24] [11]. This is, therefore, the regime of action associated with the *proximal sphere* [15] – of close family and friends. It is this familiar mode of relation, through the individuals' gradual forging of personal/intimate bonds with the people close to them, the environment, and the objects that compose it, that constitutes the basis of the constitution of the personality of each social actor [24].

It is precisely in the regime of familiar action that the concepts of *hospitality* [27] [14] [28] and *habitability* [15] [29] are integrated as normative principles for guiding action. Namely, both cognitive and evaluative

frameworks [12] focus on the plurality of intimate bonds between actors and space, favoring the recognition of diverse forms of personal engagement with the environment – and which are fundamental to preserving the consistency of the person's personality/subjectivity [30]. Therefore, both concepts presuppose a spatial configuration and relational dynamics with the environment distant from evaluations in generality – oriented, for example, towards *effectiveness* in the evaluation of clinical spaces, organizational norms and practices, or according to functionality criteria.

The grammar of *hospitality,* as a normative framework that can be used to evaluate the arrangement of spaces, procedures, and interactions, concerns the evaluation of an organization's *plasticity* – its ability to accommodate users' particularities and vulnerabilities [27]. *Hospitality* refers, therefore, to the ability of institutions to open up to their users, to welcome them, through an active malleability to accommodate users' singularities [14]. If a healthcare organization is based on conventions and standardized norms that regulate and support all activity and treat people in generality [26], the focus on *hospitality* as a normative reference aims to favor the promotion of spaces, procedures and relationships (also) capable of considering the singularities and differences of each user [31].

Hospitality, as a normative reference for action, arises, then, from asymmetries in how people appropriate places and objects and in terms of their capacity for participating in the organizations. It manifests itself, therefore, in an attention to each person's intimate bonds with the environment (intimate forms of action and meanings, outside the conventions and standardized norms that regulate organizations) and vulnerabilities (which condition an engagement of a person exclusively through conventions and standards) [27]. Through these engagements in proximity, hospitality, as a modality of action, aims, therefore, to obtain from a person a full participation in that space [27] – ensuring, in this case, the patient's engagement in the therapeutic trajectory.

The *grammar of habitability,* in turn, concerns the ability of the environment to involve the human body in a familiar space, favoring *comfort/ease* [15]. It presupposes a spatial and socio-functional configuration that allows personalized ways of acting, intimate traits, and idiosyncratic gestures that constitute the fundamental expression of each person – of their personality. Therefore, fostering *habitability* refers to the intervention in a space that lacks comfort and the capacity for physical and emotional reassurance, resulting from the rupture with the individual's proximal environment (i.e., home, family, friends, etc.) [29]. This disruption results, for instance, from the insertion of the person in a hospital/clinical context, as a space functionally prepared and formatted in reference to conventions (in particular, *effectiveness*).

Habitability distinguishes from hospitality insofar as it is not based on an economy of exchange, of transaction, between those who *welcome* and the *welcomed.* There is an appropriation of space by the person, under a model of familiarity, allowing to create of a close and intimate space that the entrance into the functionally prepared clinical space contradicts [15]. By giving the capacity of familiar appropriation of a space to the person (e.g., a recovery room in a hospital/clinic), *habitability* departs from *hospitality* as a relational dynamic between patient and professionals, relegating it to a mere contingent dimension [15].

Through a *Sociology of Engagements,* stress can, thus, be conceptualized as a disturbance in the actor's relationship with the environment from the point of view of two aimed goods: (a) *ease/comfort,* if an environment limits the presence of persons, objects and forms of relationships that characterize the *proximal sphere;* and (b) the *accomplishment of the will*, when there are constraints in the capacity of the individual to achieve the objective aimed by an action plan (and/or failure to achieve that aim).

Precisely, through this theoretical-conceptual framework, the entry into the clinical/hospital space can have disruptive effects from the point of view of the coherence of the biographical trajectory and consistency of their personality [30], therefore, inducing *stress.* These disruptive effects stem from an oppression of the *engagement in a plan* [26], in the sense that the accomplishment of the therapeutic project in a clinical context – as functionally formatted environment according to an *engagement in a plan* – can overlap other forms of engagement of the actor. This is the case, with particular focus in this article, of the coarctation of the relation with the surrounding environment associated with *comfort/ease* – associated, therefore, with the *proximal sphere* as the base of the actor's personality [15].

Thus, as *hospitality* and *habitability* are central elements in maintaining personality consistency [30] [24], they constitute, to this extent, *resilience* factors [20] for patients in the face of a disruptive context,

like a hospital setting. In particular, these elements can mitigate the stress that the entry into the clinical environment is likely to generate – in particular, the disruptive effect of entering and staying in a functionally prepared context, therefore, potentially oppressive for the patients' *familiar engagement* with their environment [26] [30]. To that extent, both normative frameworks for formatting situations (either in terms of the design of physical spaces and socio-functional disposition) can be factors that encourage patients' permanence in the therapeutic trajectory, threatened by the *stress* that this experience entails.

In service of patients' *resilience,* the *sustainability* of these spaces and situational arrangements is precisely put to the test from an ethical-social point of view. In other words, these environments are also evaluated by their flexibility in terms of focusing on users'/patients' specific needs and singularities. And the application of mechanisms for assessing needs and implementing sustainability strategies [17] depends precisely on conceptual models that encompass this normative plurality in how users evaluate the surrounding environment.

It is precisely this conceptual distinction between normative orientations – in particular, between it *engagement in a plan* and *familiar engagement* – that can be combined with the *Theory of Supportive Design* for a deeper understanding of actor-environment dynamics of interaction in a clinical context. In particular, the *perception of control,* as a dimension of evaluation of the characteristics of physical/spatial design and social atmosphere/ambiance in a clinical/hospital context, can encompass two aimed goods: the ability of the environment to meet the patient's *will,* associated with the engagement *in a plan;* but also the ability of the actor/patient to modify/shape the surrounding space accordingly to his singularities, in a perspective of *hospitality* and *habitability.* The latter form of appropriating the space is, therefore, distinct from that which is based on a functional preparation for achieving a goal.

It is, therefore, based on this articulation of concepts, that we intend to analyze the issues of *hospitality* and *habitability* as normative frameworks that patients can mobilize to evaluate spaces (besides their functionality) in a clinical context. Thus, we seek to explore socio-cognitive processes in a clinical context – specifically, in ART –, analyzing the relationship between social and psychic processes from the perspective of users' well-being [2] from the specific angle of those two concepts.

Indeed, in the scientific literature around the impact of physical and socio-functional characteristics of spaces that promote or restrict well-being, and in the operationalization of Ulrich's theory in particular, little attention has been paid to the incorporation of elements related to *hospitality* [10] [14], as well as *habitability* [15]. Both notions, presenting specificities in terms of modalities of relation between actors and the surrounding environment, are crucial elements in the design of spaces concerning the well-being of users.

The *Theory of Supportive Design* encompasses, as mentioned, three dimensions: *perception of control, social support* and *positive distraction.* The analysis undertaken in this article focuses, however, on the *perception of control* insofar as it is the one that can lend itself to more ambiguities in terms of the different forms of the actor's relationship with the environment from the point of view of the aimed good intended to guarantee his well-being. Indeed, if the concept of *perception of control* refers to the individuals' ability to "change, modify or transform the environment according to their needs" [9: 130], it is imperative to dissociate a capacity for self-efficacy in action allowed by a functional formatting of the space for the achievement of an goal from an appropriation of the same space in terms of the *comfort/ease* provided. For a clear dissociation of these different aimed goods, the incorporation of the concepts of *hospitality* and *habitability*, intends, therefore, to contribute to the conceptual improvement and respective operationalization of Ulrich's theory through a transdisciplinary approach.

3 Methodology

The presented data was collected from a broader research project developed in Portugal. Having as a central issue the plurality of meanings produced by ART beneficiaries and professionals around *in vitro* human embryos, the research encompasses other analytical dimensions related to the experience of ART patients/beneficiaries: experience and conceptions around infertility, experiences and evaluations concerning

the therapeutic trajectory, relationship with health professionals, etc.

To capture these several dimensions, the methodological protocol covers inquiring ART beneficiaries/patients and four ART professional groups – medical doctors, clinical embryologists, nurses, and psychologists. In the specific case of beneficiaries, whose perspective is privileged in this article, the inquiry comprises an online questionnaire and semi-directive interviews. Considering the object under analysis, this article focuses specifically on the empirical material collected from this latter technique for data collection.

A total of 69 interviews were conducted, five of them with couples, corresponding to 74 respondents. The interviews took place between September 2019 and January 2021, and were conducted by the same researcher. The sampling (non- probability for convenience) follows a fundamental methodological criterion: the selection of ART beneficiaries with at least one cycle of second-line treatments – *In Vitro Fertilization* (IVF) and *Intracytoplasmic Sperm Injection* (ICSI) – started or completed. The appeal for the participation of potential respondents was carried out through online forums – social networks or blogs related to infertility –, as well as through associations that support people with fertility problems.

In a brief description of the sample, most respondents are female (approximately 92%). Also, in the majority of interviewees, the resort to ART treatments is framed within a heterosexual parental project (90.5%); only five respondents are associated with homosexual parental projects and in two cases the access to IVF/ICSI is part of a single parental project. Furthermore, most respondents have higher education (81.8%), with a significant percentage presenting also some postgraduate degree – Master's or Ph.D. (35%). Moreover, only five interviewees are of non-Portuguese origin.

The content analysis of the interviews – recorded and transcribed in full – was supported by the computer-assisted qualitative data analysis software MaxQDA (2018 version). The analysis undertaken is of a *categorical* nature, to carry out a comparison between interviewees' discourses and highlight associations and variations of perspectives, according to a set of themes covered by the research project.

In this article, the judgments issued by beneficiaries about their experiences in ART centres – public units or private clinics – are examined. Their evaluations concerning the experience in different spaces in a clinical context (exam room, recovery room, visiting room, etc.) are privileged, covering both architectural and organizational/functional dimensions. In particular, the focus is on how respondents assess the functioning and arrangement of different clinical spaces, in light of a normative plurality in terms of individuals-environment relations. The evaluations captured from the discourses account for not only issues such as *functionality* or *effectiveness* in the functioning of these medical care units, but also the ability of physical spaces and socio-functional features to meet requirements of *hospitality* and *habitability.*

4 Results

In the analysis undertaken of the interviewees' discourses regarding the experience during their therapeutic trajectory in ART, three analytical axes emerge that integrate the dimension related to the patients' *perception of control* in a clinical context: (a)*perception of control over private information,* (b) *perception of control over intrusive elements* and (c) *perception of control over intimacy.*

Each of these analytical axes is explored. We intended to address the extent to which they substantiate evaluations of the hospital/clinical environment from the perspective of the ability to ensure the patients' well-being – particularly, the well-being associated with the *comfort/ease* provided by physical spaces and their socio-functional aspects. *Hospitality* and *habitability* emerge, namely, as normative horizons that guide how the environment is put to the test [11], evaluated, by the interviewees. And it is precisely the fulfilment (or not) of these formats of relation with the surrounding environment that, in turn, has consequences on the interviewees' psychic well-being as patients.

a) Perception of control over private information

The first analytical axis regarding the *perception of control* over the environment concerns the ability to dispose of one's body, more than in the sense of the fulfillment of the conditions of the expression of consent/will, in a perspective of preservation of the personal sphere and hence, the patients' *comfort/ease* – potentially compromised by hospitals' organizational norms. This is illustrated in the first excerpt, in which

the respondent's evaluation of her therapeutic experience focuses on a specific socio-functional element of hospital functioning as an organization:

> **Diana:** Let's imagine, I go to an appointment… Hypothetically, I go to an otolaryngology appointment, at the hospital in [name of the city]… but my card has my hospital user number… has a giant label, with my name and it says underneath Sterility Service… So, I'm going to present that card at every other medical specialty where I eventually have medical appointments… And I believe there are people who feel very uncomfortable carrying this card [Laughter] because this card, later, will be used for all appointments a person may have…

Being a hospital's activity regulated by *standardized norms* [26], the set of rules that guide actions and interactions in this context, suitable for the treatment of individuals in generality (in this case, according to the condition of patients attached to a specific medical specialty) can conflict with the patients' sphere of decision-making in terms of the intimate information to be revealed. It is the excessive production of normative references to ensure the readability of the actors in the functionally prepared space, according to the *regime of engagement in a plan,* that is the object of criticism [29].

The perspective from the perception of control, having *comfort* as the normative orientation, focuses therefore on the prospect of publicizing information regarding patients' clinical situations as personal information. This relates to the right to an *information preserve,* i.e. the set of facts about oneself to which a person expects to control access while in the presence of others [32]. For example, the expectation that control will be maintained over biographical facts about the individual divulged or shared with other people.

Therefore, the interviewee's evaluation addresses the importance of situational configurations that safeguard patients from the exposure of vulnerabilities associated with their medical condition (e.g., infertility and the related social stigma). It is this *control* over the boundary between the public sphere and the intimate sphere that, in the interviewee's opinion, confers to the described situation an *inhospitable* nature [14] – insofar as it consubstantiates a loss of control over the body associated with a violation of privacy [33].

In the context of this control over private information, the respondents' views also include the arrangement of different clinical physical spaces – in particular, the way in which privacy is likely to be compromised by the configuration they assume. This is evidenced by the perspectives conveyed by the two following interviewees, in which the *habitability* of the layout of hospital spaces is evaluated:

> **Diana:** "To make things faster, sometimes there are two people inside a consultation room changing clothes while another is doing an ultrasound, separated only by a folding screen… and the other person is doing the consultation… […] And I think this shouldn't happen. I'm not supposed to be listening to the medical advice someone is giving a patient. So, you're saying, 'You're going to take this to trigger ovulation. You can't have sex in the previous hours'. These are private matters and I'm not supposed to be listening to, even though I'm going through the same thing".

> **Cecília:** "For example, I was going to do a monitoring ultrasound. […] The room was very narrow… The hallway door was sometimes open. […] We undress behind this folding screen. When you move to the examination table you come out of the folding screen. So, people who are passing in the corridor... It's a corridor where not only medical personnel or nurses or auxiliaries pass, but also some couples who are leaving other appointments. And, therefore, you do this little show off for the people who are passing by."

In both cases, the evaluation made is based on the configuration of the space, but also considers the organizational elements (such as managing the presence of patients in a consultation room), as factors likely to favor situations that violate the separation of the public sphere from the private, through coercive advertising to third parties. It is in this perception of lack of control that the *uninhabitable* character attributed to a space or situation can reside [27].

As the first interviewee mentions, the similitude of situations ("going through the same thing") that place both persons in the same equivalence class (as patients), to which standardized medical instructions are attached (such as the timing of sexual intercourse during medication), should not hinder an arrangement of space capable of safeguarding for each patient, as a singular person, control over information that contains elements belonging to the intimate sphere – a control that ensures, in this sense, the patient's *ease.*

On the other hand, in the second excerpt, the *habitability* of the space is compromised by the lack of reservation of the intimate sphere. The space is characterized by an equivocal status of spaces, presenting porous zones between areas for the patient to *inhabit* (assuring her privacy) and space of circulation (where individuals are treated in generality). Consequently, the separation between public/private is neutralized [29]. The ironic comment of the interviewee ("you do this little show off") precisely aims to emphasize her corrosive evaluation regarding a deficient arrangement of space in light of the grammar of *habitability* as a normative reference.

b) Perception of control over intrusive elements

The second analytical axis concerns the interference of intrusive elements, but not in the sense of dispersion in terms of what is the appropriate degree of information made available to – or from – the patient. Differently, the focus is on the control over elements of the surrounding environment that can have disruptive effects on the practical relationship of actors with themselves, also in view of ensuring their *comfort/ease.* This disruptive effect of a hospital context can be generated by failures or uncertainties concerning clinical objectives (within the *engagement in a plan*), but also by failures in creating spaces for intimate atmospheres in a clinical context (associated with the *familiar engagement*).

It is precisely the ability to protect the patient from situations that may expose their vulnerability in a clinical context, in terms of a failure in both forms of relationship with themselves (and which are detrimental to their well-being), which is also evoked by the interviewees. On this issue, the testimonies account, firstly, situations that put emphasis on their vulnerability associated with the therapeutic trajectory (in particular, the context of infertility). It is the perception of control over these elements associated with the layout/configuration of hospital spaces that emerges from the following excerpts:

> **Mila:** "The first thing I heard when I entered the birthing block was a child being born next to me... [...] And that is very difficult for you to deal with. Or you're being transported to the delivery block and the corridor is covered with photographs with newborn babies from the block, you know? There is no tact, there isn't..."
>
> **Valentina:** "A situation that happened at [name of hospital], which at the time really angered me, was having... [...] the pediatrics service in the same room as the medically assisted procreation treatments. I was in the waiting room with mothers and their babies, waiting to know the result of my treatment...
>
> **Ema:** "It's a maternity hospital... You see pregnant women everywhere and that had a very, very negative impact. It was painful. [...] Or to see... For example, I once went for an exam in the hallway where I heard that an abortion had been done..."

Despite the particularities that differentiate them, the different experiences reported, share a common thread in the evaluation made: an assessment of the clinical/hospital space that goes beyond a focus on its functional configuration, ensuring the achievement of the intended goal, in the form of a therapeutic plan, as the aimed good [11].

Indeed, the testimonies refer to the *hospitality* in the arrangement of the clinical environment, in the sense of the ability to attend to the vulnerability of the beneficiaries in a context of uncertainty that characterizes their therapeutic trajectory, namely the moments of failures or setbacks in the accomplishment of the parental project [34]. There is also the coexistence in the same hospital space of users with different (and contrasting) clinical purposes ("an abortion had been done"). These experiences are, therefore, evaluated as *inhospitable.* The arrangement of physical and socio-functional settings does not raise criticisms from a functional perspective; it's negatively evaluated because environmental elements that fail to pay attention

to situations of vulnerability associated with the impact of the infertility experience on the patients' biographical trajectory and, hence, their well-being [30].

Considering precisely the vulnerability that accompanies the experience of couples/beneficiaries in the context of ART, the hospital's recovery room space constitutes, in this sense, a central element in the assessment of the therapeutic experience – particularly, in terms of the capacity of *habitability* provided. This is illustrated in the next excerpt:

> **Lena:** "And they have little rooms, almost like a hotel room, when the person is recovering... While in [name of a hospital] it was... [...] In that area of the sutures, people are only divided by curtains, so you can hear everything... It was the person who had broken his finger or... The person who was doing a suture here or there... And then you hear everything. In other words, you hear... a person who says 'Look, it went really well, we got ten embryos, everything is great'. And then next to us, 'Look, we only got two' or 'We only got three', or 'We didn't get any'. And you hear the couple celebrating or you hear the sad couple. There is no privacy in the treatment..."

The *habitability* of the space resides, more than in the set of services or objects present/available, in the privacy it provides to patients and their family members, in the sense of favoring a singularizing appropriation of space, allowing relational forms associated with the intimate sphere. This *familiar engagement* is, hence, not favored by the sensorial appropriation of elements external to the couple's intimate experience. Elements that integrate the space to ensure privacy as a form of control over one's body (such as "curtains") are, therefore, precarious when put to the test [11] from the perspective of this grammar.

The comparison with a hotel room made by the interviewee is essential to understand the perspective conveyed. Apart from any evaluation from the point of view of the commodities present and the control that the patient has over them [9], the respondent focus is the perspective of control associated with the *familiar engagement,* of recreating a proximal space in a clinical/hospital context that is evaluated in terms of its importance for the patients' well-being. It is through that capacity of protecting intimacy in a clinical context populated by different individuals (with their respective therapeutic plans) that the quality of the space is primarily assessed ("you can hear everything"). The relation between hospital rooms similar to hotel rooms and the well-being of patients [10] is therefore associated with the *habitability* provided – apart, therefore, from an assessment of the functionality of the commodities present, associated with an *engagement in a plan* as a normative reference in the person's relationship with the environment [13].

This capacity of the space to provide *habitability,* as a capacity to favor durable ways of making the familiar/domestic world available for the patient [15], favors, in turn, their *resilience* [18] in the face of the constraints and adversities associated with the therapeutic trajectory. It is through the protection of intrusive elements – insofar as they hinder moments of the patient's relationship with themselves associated with *comfort/ease* – that the space contributes as an element for counteracting the impacts related to the clinical process as a plan of action that disturbs the consistency of the personality [30]. Namely, the space configuration can counterbalance the consequences of the clinical experience as a trajectory that disturbs the actor's relationships with himself and with others within the *proximal sphere* – with an impact, therefore, on the patient's psychic well-being.

c) Perception of control over intimacy

The final analytical axis that stands out from the patients' discourses focuses on the control from the point of view of an appropriation of the clinical space in which there is room for the couple's intimacy – that is, relational forms associated with the proximal sphere of the beneficiary [15], specifically with regard to the couple dynamics. In fact, if resorting to ART represents the transition from the realization of the parental project from the intimate sphere to a clinical context [34], the gaze of the interviewed beneficiaries focuses on the organizational/spatial features that hospital contexts provide to endure this disruptive experience of the couple's intimate dynamics.

In the analysis of their experience in a hospital context as a space functionally prepared for the exercise of clinical practice, interviewees allude to the existence/inexistence of compromises between the *functional*

and *familiar* appropriation of the surrounding environment by the patients – as distinct, but reconcilable, levels of patient control over the surrounding environment. This is illustrated by the following excerpts:

> **Lena:** "And then at [name of a hospital], the entire ART sector... The space is very small. And, therefore, the whole part of being able to be... The men's bathroom doesn't have any privacy... it doesn't... It's not that there's something glamorous about the person having to ejaculate into a cup to do in vitro fertilization, right? But I think there are a minimum of conditions that must and can be created. At least the couple being able to do it together... It wasn't allowed."

> **Matilda:** "One very important thing at [clinic's name], which for me was very important and I think can make a difference for many women, is the way men collect semen, ok? So, even then we had an act of love, because they allow you... unlike all other places I know... they allow the man to be together with his wife in a room. [...] I think that's so, so, but so important detail for the realization of this moment, right?, of having a child. Because, in reality, the woman participates and you are there in a moment of pleasure and love and union with the man, husband, boyfriend, or partner, right?"

Both perspectives converge in the focus on a procedure (ejaculation), whose experience moves from an intimate context of a couple to the clinical context, to illustrate the importance of hospital contexts capable of building settings that integrate relational elements from the *familiar sphere* [15]. Namely, if in a hospital context the collection of semen constitutes a stage of a standardized clinical procedure, this action, carried out in a functionally prepared space, can be combined with relational forms associated with the intimacy of the couple. As mentioned by the two respondents, that compromise is achieved through space arrangements and organizational rules capable of replicating, to some extent, that intimate situation.

It is, therefore, the ability to build compromises between the clinical and intimate context, through suitable architectural and organizational devices, that the clinical experience is equally evaluated by the patients. If strictly for the execution of the therapeutic plan this socio-functional characteristic is negligible, the *habitability* of the space provides another type of control valued by patients: a control based on the regime of familiarity, as a mode of patients' relation with themselves important for their well-being.

Furthermore, these compromises between the*engagement in a plan* (associated with the clinical space) and the *familiar engagement* (related to the proximal sphere) can also be obtained in the context of different therapeutic procedures, as is the case of surgical procedures. These situations in a clinical context are characterized by an intensification of the presence of objects and relationships qualified for *industrial worth* [25] inserted in a functionally prepared space. Despite this configuration, compromises can also be forged that ensure patient control associated with a more intimate engagement with the environment. This is illustrated in the next excerpt:

> **Vanessa:** "We agreed on the day to perform the implantation [of the embryo] and, at that time, the father is invited to be present. We found that weird. And then we reflected for a while and thought, 'Well, it makes some sense, it's a form of participation', isn't it? Trying to recreate his participation in the whole process, even though the biological information is his too, isn't it?"

Again, the control resides not in a perspective of functional formatting to achieve an intended aim, but of (partial) accommodation of clinical procedures attending to the beneficiary's *ease/comfort.* At a first glance, the perspective of participation of the male element of the couple, who has no direct participation in the surgical procedure, is evaluated by the couple themselves as "weird". Being the situation evaluated according to the *regime of engagement in a plan*, any presence of elements devoid of functional utility (i.e., apart from the woman as the *clinical object,* clinical personnel, surgical instruments, etc.) is assessed as inappropriate/misplaced.

However, the presence of the partner/husband is reassessed when the interviewee adopts another cognitive and evaluative format [12]. Namely, it is the combination of the technical act of embryo transfer

with relational activities from the *proximal sphere* that is aimed and valued. This perspective of *habitability* provides the patient a distinct form of control in the relationship with himself and with the environment – not associated with an *engagement in a plan* but centered on *ease/comfort.* The "biological information" of the embryo to be transferred assures the couple's plan to have biological progeny. However, it is the possibility of participation of the father in that surgical act, to "recreate" an intimate moment in a clinic context, that normatively grounds that clinical setting to be oriented towards *habitability.*

5 Discussion

The paradigm of the *patient-centered approach,* which has emerged in recent decades, is based on the fundamental assumption that the quality of medical treatment is not limited to the effectiveness and outcomes obtained; it also relies on the ability to meet the patient's preferences and needs [19]. In addition to the strictly interpersonal dimension in the interaction between health professionals and patients, this holistic perspective in medical care toward the patient also encompasses systemic factors [35], which encompasses the impact of spaces design and socio-functional features on users' well-being [5] [9] [10].

This focus on the patient is a central element, on the one hand, from a *sustainability* perspective – in terms of responsiveness not only to users' decisions, but also to their specific needs in the context of healthcare provision [21]. Also, and in a combined way, that focus is equally important from a perspective of promoting the patients' *resilience,* as the ability to intervene in environmental/spatial factors that promote or restrict users' psychic health [20] [16], with consequences for their health recovery.

Indeed, when individuals evaluate organizations – including spaces and socio-functional features –, it is not just principles related to effectiveness and functionality that emerge as organizing elements of their judgments regarding professional-patient interactions, organizational norms, and clinical procedures [10]. A plurality of normative guidelines, articulated with each other, supports this evaluative work [28]. Transdisciplinary approaches can favor, in this sense, more detailed and broader perspectives that can identify this plurality that meeting patients' "preferences, needs and values" [19: 1087] involves when providing medical care.

The present article aims, therefore, to provide a theoretical contribution to the *Theory of Supportive Design* [6] [8], particularly with the articulation of the sociological concepts of *hospitality* and *habitability* in the context of medical care. The focus is particularly on deepening the dimensions of this theoretical-conceptual framework, in the sense of favoring a more refined differentiation of the diversity of formats of actors' relation with their surrounding environment. With this more nuanced capture of the plurality of aimed goods in how actors relate with space, it is possible to understand more thoroughly the different ways situational settings can impact users' well-being.

In this regard, it is important to emphasize that institutions favoring *sustainability* and *resilience* imply a greater range of normative repertoires in how they function [28]. Capturing this complexity implies, therefore, a detailed look at the plurality of forms of relationship between the actor and the environment according to different normative references. It is precisely in the calibration between these different aimed goods – in particular, in a perspective of *accomplishment of will* and of *comfort/ease* – that the physical and socio-functional space can be evaluated from the point of view of the well-being it promotes.

Thus, a clearer conceptualization of the various dimensions of Ulrich's theory allows for the construction of indicators conducive to a more rigorous assessment of this normative plurality in the person-environment relation. In the specific case of the dimension related to the *perception of control,* it can be associated not only with the ability to use objects that integrate a functionally arranged space [9], but also with a control rooted in a singularized/personalized appropriation. In the latter, this comfort-oriented appropriation is materialized either in a perspective of accommodating the space to attend patient's *vulnerabilities* and *singularities* (according to a *hospitality* perspective), or in a perspective of allowing relational formats anchored in more intimate/personal appropriations of space (associated with *habitability*).

Moreover, if in the remaining dimensions of Ulrich's theory – *positive distraction* and *social support* – this absence of a detailed differentiation of aimed goods (conceptualized through Pragmatic Sociology)

has no implications from the point of view of identifying statistical correlations with the well-being [9], interpretive ambiguities may still emerge, with implications for the analytical scope of these indicators. In the case of *social support,* items/indicators such as *Involvement in social activities* [9] can be associated with different regimes of engagement – oscillating between social activities in the form of critical operations (regime of *orders of worth*), communication with professionals to capacitate the patient for the decision-making about therapeutic protocols (*engagement in a plan*) and interactions associated with the patients' intimate/personal sphere (*familiar engagement*).

Similarly, in the case of *positive distractions,* indicators such as *My attention is directed to interesting things* [9] can be associated with the *exploratory regime* [36]. This regime is oriented towards the *pleasure of discovery* as the aimed good through a constant change in the environment [36]. This type of relationship with space is, therefore, distinct from a construction of crystallized acting references, through more intimate connections to space within a *familiar engagement.*

In this sense, this conceptual distinction with the support of a *Sociology of Engagements* can also provide important differentiation in the construction of indicators and assessment of how space impacts patients' well-being in future iterations in the operationalization of the *Theory of Supportive Design.* The same fruitful conceptual articulation can also be applied to other theoretical constructions focused on the relationship between environment (physical and socio-functional features) and user's well-being.

6 Conclusions

The hospital/clinic is a context in which the patient's relationship with the surrounding space is put to the test according to different normative guidelines. It is precisely this contrast between a control resulting from a space formatted for treatment in generality and other normative expectations oriented towards more personalized relational forms of patients with the environment that this article intends to highlight by articulating theoretical frameworks from different disciplinary areas.

Finally, it is important to stress that the purpose of this article is to build a communication platform through a transdisciplinary attitude that allows, if not the basis for the construction of a single theoretical-conceptual framework, to highlight the need to expose the interstices between disciplines – including the limitations and potential of the respective theoretical frameworks, formulating new problems, generating conceptual models, hypotheses, design interventions and conduct evaluations [37]. In the particular case under analysis, the relationship between environment and well-being is based on a normative complexity that is important to understand and capture through transdisciplinary articulations, thus favoring architectural constructions and spatial arrangements that foster the sustainability of organizations and the resilience of its users.

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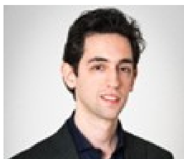

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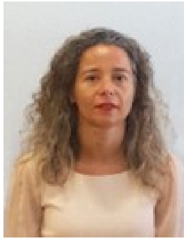

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