

COMPATIBLE SPACES FOR EMOTIONAL SUPPORT OF CHILD AND ADOLESCENT PATIENTS

Design of in-between and outdoor spaces in healthcare settings

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i ABSTRACT

This thesis addresses the importance for child and adolescent patients to have contact with such outdoor spaces that conform with their emotional state and promote well-being while being at healthcare settings. In some contemporary hospitals, holistic approaches to patients' health are used in such a way that they may be beneficial for the whole healing process. Holistic healing goes way beyond the technological development and medicinal treatment and is helping the individual to achieve a positive emotional state, encouraged by the design of healing outdoor environments. Unfortunately, such landscapes are not always available. Children and adolescents are dependent on adults' decisions while their capabilities to sustain emotional balance are still developing. That is why this group of patients should have an easy access to intentionally designed outdoor environments for supporting their emotional balance.

Landscape architecture can benefit from including a connection between emotions and design. Emotions have, therefore, been studied through the field of psychology and environmental psychology to inform about requirements regarding spatial qualities which contribute to positive emotional experiences for child and adolescent patients. Further, a method triangulation including participation of child and adolescent patients has been used to study the experiences of the focus group. A theoretical bridge has been needed in order to link emotions with landscape architecture. The theoretical bridge has been supported here by the Self-perception theory while for design issues the concept of emotional design and the practices for psycho-social support have been considered.

As a result of this thesis, I compiled guidelines which I tested through a design for a case hospital later in the process. The guidelines are based on the aspects found as important such as architectural communication, compatible spaces and in-between spaces. Five space types have been identified to be compatible with the emotions of child and adolescent patients.

To my son Adrian

ii TABLE OF CONTENT

i ABSTRACT 3

ii TABLE OF CONTENT 5

1. PERSONAL BACKGROUND 7

2. INTRODUCTION 8

- 2.1. Problem formulation 8
- 2.2. Complications regarding design for child and adolescent patients 10
- 2.3. Towards a holistic philosophy 11
- 2.4. Optimal Healing Environments 11

3. AIMS 13

- 3.1. Purpose 13
- 3.2. Objectives 14
- 3.3. Impact 14

4. THEORETICAL FRAMEWORK 15

- 4.1. Compatible spaces 15
- 4.2. In-between spaces 16
- 4.3. Self-perception and emotions 18
- 4.4. Emotional design 18
- 4.5. Self-regulation 19

5. METHODOLOGICAL APPROACH 21

- 5.1. Research for design 22
- 5.2. Methodological framework for research 22
- 5.3. Data collection 24
 - 5.3.1. Strategies and tactics for objective 1: emotions 24
 - 5.3.2. Strategies and tactics for objective 2: emotions and landscape 25
- 5.4. Analysis approaches 30
 - 5.4.1. The bridge 30
 - 5.4.2. The bridging strategy 31

| | |
|---|------------|
| 5.5. Guidelines and Design | 32 |
| 5.5.1. Guidelines | 32 |
| 5.5.2. General design strategies | 33 |
| 5.5.3. Design in context | 35 |
| 5.6. Critical assessment of the design against playground design assessment | 42 |
| 5.7. Ethical issues | 42 |
| 6. CHILDREN'S AND ADOLESCENTS' EMOTIONS AND HEALTHCARE SETTINGS | 43 |
| 6.1. How work emotions | 43 |
| 6.2. Emotional intensity | 45 |
| 6.3. Emotions related to hospitalization | 47 |
| 7. PRACTICES FOR PSYCHO-SOCIAL SUPPORT | 50 |
| 7.1. Play and place exploration | 50 |
| 7.2. Psycho-social support and physical environment | 52 |
| 7.3. The current situation in the Hospital of Ystad, Sweden | 56 |
| 8. KNOWLEDGE FOR DESIGN | 57 |
| 8.1. Compatible spaces in terms of the focus group | 57 |
| 8.2. Healing Gardens for children | 60 |
| 8.3. A Dream Garden | 62 |
| 8.3.1. Results from literature review | 62 |
| 8.3.2. Results from patient's participation | 63 |
| 8.4. Examples from practice | 66 |
| 8.4.1. Play therapy | 66 |
| 8.4.2. Landscape architecture | 67 |
| 8.5. State-of-the-art healing gardens for children's hospitals | 68 |
| 9. FIVE EMOTION GROUPS | 70 |
| 10. GUIDELINES FOR EMOTIONAL SUPPORT | 72 |
| 10.1. Design aspects | 72 |
| 10.2. Space types | 73 |
| 10.2.1. Joyful spaces | 73 |
| 10.2.2. Spaces for self-esteem | 73 |
| 10.2.3. Palliative spaces | 74 |
| 10.2.4. Cosy spaces | 75 |
| 10.2.5. Spaces for motivation | 75 |
| 11. DESIGN IN CONTEXT | 76 |
| 11.1. Spatial analysis | 76 |
| 11.2. Design concept | 78 |
| 11.3. Evaluation | 80 |
| 12. DISCUSSION | 82 |
| 13. CONCLUSION | 86 |
| iii LIST OF REFERENCES | 89 |
| iv APPENDICES | 102 |
| iv - A. Environmental personalities | 102 |
| iv - B. Information sheet for participation | 104 |
| v ACKNOWLEDGEMENTS | 106 |

1. PERSONAL BACKGROUND

Some years ago, I happened to stay in the Hospital of Ystad, South Sweden for a week. Although it was a traumatic experience for me, the doctors kept encouraging me to go out for walks. Unfortunately, there was no place to go to, except the parking lot around the building. There was, however, an inner garden which was visible from the main entrance but seemingly not accessible. It drew my attention and curiosity, so I walked along the glass facade of the inner garden until, finally, I found a small door which was lockable but not locked at the moment. In the garden, I found a small artificial rill with koi carp and goldfish. Birds were flying over to drink water and to play with it. Sun rays were coming from above and refracted through the tree leaves creating interesting lighting effects and shadows. The vegetation was diverse - from the smallest ground creepers to the tallest trees. After my visits, I found out that the garden was for personnel only, and I just got lucky to be able to experience it. I visited the garden only twice during this week and it surely made my stay more bearable. The hospital itself is a very special and emotional place for me because it is where I lost a son during pregnancy 6 years ago but 3,5 years later I gave birth to another son at that same hospital. Hospitals are, indeed, emotionally charged places, while at the same time a lot of the psychological experiences remain unaddressed.

This experience has probably influenced my decision to apply for the master's program Outdoor Environments for Health and Well-being, and later, two courses have defined my interest to the topic of my thesis: Health Promoting Outdoor Environments and Outdoor environments for Children and Youth. Besides my interest in people and environment studies, I've been working as an architect in parallel with my master's thesis which helped me realize the importance of the interdisciplinary point of view, especially concerning healthcare facilities and projects concerning children and adolescents.

2. INTRODUCTION

2.1. Problem formulation

This thesis is focusing on the design of outdoor spaces in healthcare settings with a focus group of children and adolescents, revisiting the particular case of The Hospital of Ystad in Scania, Sweden. The design of most of today's hospitals is mainly focused on the function of medicinal care, neglecting benefits of psychologically healing architectural qualities and nature elements (Ulrich, Zimring, Quan, Joseph & Choudary, 2004). Therefore, hospitals are often not designed to provide access to outdoor spaces which could contribute to psychological well-being, or if such exist, they are not optimally utilised. In contrast, research increasingly shows that psychological well-being is also important because built environments affect how people feel and behave (Horsburgh, 1995; Hutton, 2005; Ulrich, 1991; Ulrich, Zimring, Zhu, DuBose, Seo, Quan & Joseph, 2008). Koller and McLaren (2014) further argue that negative emotions and psychological challenges can hinder or delay successful healing.

The theories within environmental psychology inform that green outdoor spaces are an important part of the child's healthy development (Björklid & Nordström, 2012; Bell, Wilson & Liu, 2008). Also, access to outdoor environments contributes to the mental health of the children and adolescents while supporting the different stages of their development (Korpela, Hartig, Kaiser & Fuhrer, 2001; Korpela, Kyttä & Hartig, 2002). However, children and adolescents who go through illnesses which require hospitalization often stay indoors for long periods. In some cases, the healthcare facilities become a second home but the access to outdoor spaces is limited. Children and adolescents with chronic illnesses, on the other hand, visit the hospitals often and spend long hours in waiting rooms.

Whitehouse et al., (2001) recognize that most decision makers do not consider resources for holistic approaches which include health promoting outdoor environments. Their study is also giving a strong argument for considering healing gardens in hospitals and health centres. They prove that patients and their families are perceiving higher quality of healthcare if a proper healing garden is available for them (ibid). The assessment of the healthcare provider is measured by healthcare satisfaction, quality appreciation, intentions to return and willingness to recommend the hospital to others (ibid.) Which can

be seen as one of the strongest arguments for reconsidering outdoor environments in healthcare settings.

Children and adolescents are an especially vulnerable part of the population when hospitalized because they do not have control over the adult world. Numerous studies show that emotions are not without importance for the youngest and yet, in terms of architectural/landscape architectural design children's emotions remain overlooked (Koller & McLaren, 2014). Perhaps it is due to difficulties in studying the phenomenon. As Cele (2005) states, the fact that adults have been children in the past, does not mean that adults can fully understand children's motifs and desires. Researchers often have difficulties at "understanding children's complex realities" and also the children "have difficulties, due to their psychological development, in expressing their views" (ibid., p. 86).

It is known from the literature, though, that children and adolescents interact with the environment irrationally, i.e. through feelings (Dovey, 1990; Kirkby, 1989; Korpela et al., 2002). Children have different perceptions of the physical environment and their experiences are primarily sense-oriented (Björklid & Nordström, 2012). On the other hand, adolescents experience the environment through social interaction, solitude for mental processing and also spontaneous desires, e.g. for play with gadgets (muf, 2004), or laying claims over territoriality and training bodily skills, e.g. through skateboarding, parkour, and wall climbing (Nilsson, 2010).

Korpela et al. (2002) support the view that children's preferences of places are directly linked to their emotions. For instance, they mean, children who are cheerful and happy choose places where they can socialize, whereas children who experience negative emotions search for quiet, solitary places; also, certain environments, e.g., wild fields, can provoke fear and confusion in moody children. Therefore, the emotions of children and adolescents need to be taken into consideration as early as possible in planning, and later during designing of healthcare settings. Identifying this general problem, the study will review the specific case of the Hospital of Ystad in order to test the findings of this study. The hospital of Ystad is a hospital that lacks outdoor environment to contribute towards emotional balance. Currently, the hospital does not have a single outdoor environment for child and adolescent patients nor for the other patients, besides a small garden arrangement next to the main entrance.

In this study, I want to stress the importance of the possibility for child and adolescent patients to be able to interact with the physical outdoor environment in order to maintain emotional balance while staying at healthcare facilities. Outdoor environments themselves are not considered a remedy, rather, the aim with them is to contribute to the main health treatment.

2.2. Complications regarding design for child and adolescent patients

During design process for hospitals, considering outdoor spaces which can facilitate various psycho-social activities for children and adolescents is essential. Exposure to natural light, nature and art can enhance the feeling of pleasantness and calmness (Hartig et al., 1995; Ulrich, 1991; Van den Berg et al., 2003). Emotions provoked by uplifting activities or coping with tragic events related to hospital situations are important for self-healing, as Ghazali et al. (2013) state.

Emotional processes are part of the human healing process so in the case of hospital environments there is an even stronger reason to pay attention to them. Children and adolescents benefit of contact with nature in many ways: “better concentration and impulse control; better academic achievement; better coping with challenges; reducing stress, depression and aggression; greater physical activity; more imaginative and socially cooperative play; and stronger sense of connection and care for nature” (Chawla, 2015, p. 5). As described by several researchers, enhancing the emotional state of children in healthcare facilities is essential for their healing (Lindeke, Nakai & Johnson, 2006; Papalia, Olds, Feldman & Kruk, 2004; Salmela, Salanterä, Ruotsalainen & Aronen, 2010)

Successful design for child and adolescent patients with focus on emotions could afford possibilities for achievements and satisfaction because “...a vivid anticipation of a future willed achievement or satisfaction can give joy even while one feels pain” (Assagioli, 2010, p.144). In that sense, it seems that the environment may influence children’s and adolescents’ well-being through their emotions and that is why I would like to see how we can apply this into the practice of design.

While there are a lot of landscape, architectural and environmental psychology studies of children and adolescents, based on behaviour, very few are based on emotion. It is probably because it is easier to perform the research on behaviour, since it is observable. However, behaviour-focused methods may misjudge driving forces like motifs and desires. On the other side, psychology researchers may not be interested into studying emotions in relation to the physical environment, because environmental psychology is not part of the central core of psychology, as Gifford (1997) states. Within psychology research the environment is usually referred to as the social context like family, friends, schoolmates, colleagues at work etc. (Thurber & Malinowski, 1999).

So far, some relation between emotions and physical environment has been explained by the environmental psychology regarding physical possessions and place attachment (Steg, Berg & de Groot, 2013) but regarding design of outdoor spaces in healthcare the connection is not that clear. From there, the practice turns into guessing or activity without a greater purpose. For the benefit of practice, then, it is important to build a theoretical bridge based on what is known from environmental psychology in order to implement in the design.

Considering the above, there are some specific aspects, that should be considered. Hospital environments are different than other public spaces in the sense of striving for maximum elimination of risk factors. This leads to overloading the design decisions with adults’ concerns while the role of children’s and adolescents’ perspectives is let aside. As Jansson (2016) puts it, children’s perspectives should be a leading aspect during design and building of environments for them.

Bengtsson and Grahn (2014, p.879) support the idea that “outdoor environments intended to support health need to consider risk factors as well as salutary factors.” By including salutogenic perspective (efforts to create, enhance and improve physical, mental and social well-being and to move toward optimal well-being) along with pathogenic perspective (focus on avoiding, managing or eliminating disease and infirmity), there is an opportunity to include children’s and adolescents’ perspectives in order to achieve holistic healing environments for them.

2.3. Towards a holistic philosophy

The journey of this quest goes through a lot of references outside of the landscape architecture’s field, such as environmental psychology, architecture and interior design, industrial design and psychology. Psychology texts have been, sometimes, challenging to deal with, since I do not have a background in this field. However, their inclusion has been a necessary step in order to get a clearer picture of what emotions and feelings are. Thus, some specialists in psychology may view this attempt as rather shallow, while, at the end, my main focus is on a holistic approach towards design. For that, I reserve my competence to the fields of architecture, landscape architecture and environmental psychology and at the same time I hope that this work can inspire a larger interest into interdisciplinary and interpersonal design approaches.

2.4. Optimal Healing Environments

In 2004, the Samueli Institute in Costa Mesa, USA, established the term Optimal Healing Environment (OHE) which describes a healthcare system that stimulates and supports the capacity of the individual to self-heal (Sakallaris, Macallister, Voss, Smith, & Jonas, 2015). The term includes seven elements to work on as follows:

Internal factors:

1. Conscious development of intention, awareness, expectation and belief in healing;
2. Transformational self-care practices that facilitate personal cohesion and the experience of wholeness and well-being;

Interpersonal factors:

3. Techniques that foster healing presence based on compassion, love, and awareness of interconnectivity;
4. Development of listening and communication skills that foster trust and a bond between practitioner and patient;

Behavioural factors:

5. Instruction and practice in health promotion behaviours that change lifestyle to support self-healing and the development of social support;
6. Responsible application of integrative medicine via collaborative practice supportive of healing processes; and

External factors:

7. The physical space in which healing is practiced.

(Summarised figure and table 1, Sakallaris et al., 2015, pp.40-41).

My thesis is focusing on the internal, and the external factors from the OHE model by addressing emotions and design. A balanced emotional state is a factor towards experience of wholeness and well-being through self-regulation. Self-regulation is a process through which people keep a balance between negative and positive emotions and have a coherent experience of the self (Korpela et al., 2002). The design of a physical space to support OHE, on the other hand, has to have the capacity to support self-regulation through environmental strategies, in other words, the experience of a place (cognition and emotion). This is possible since certain places can enable positive emotional changes and to renew cognitive strength to process events that challenge self-experience (Korpela, 1989)

Furthermore, due to the holistic nature of the matter, the other parts of the model will be included to some extent. For example, interpersonal factors and behavioural factors can be related to different practices for psycho-social support performed simultaneously with hospitalization.

This model is a reminder of some ancient practices in healing. For example, in his dialogue “Charmides,” Platon presents the philosophy behind Thracian healing practices (5th century BC):

[Free translation from Swedish]

“...you should not try to cure the eyes without the head, nor the head without the body, in the same way you can not cure the body without the soul: ... if the whole is not in order the part can not be either ... Everything begins with the soul, both what is bad and what is good for the body and the whole human ... It is, therefore, the soul which needs to be treated first if the head and the rest of the body are to be well” Platon, Charmides, Stolpe (2001, p. 178).

Translating “soul” into contemporary science standard could be a hard and long discussion. However, for the purpose of this thesis I step upon this ancient wisdom by referring to “soul” as in terms of psyche and consciousness.

3. AIMS

3.1. Purpose

In line with existing holistic approaches, the goal of this thesis is to revisit the landscape design for healthcare settings by diving deeper into psychological issues. More specifically, for landscape architecture is considered the use of the knowledge about child and adolescent patients' emotions.

The main motivation for this work is inspired by the fantastic and illogical world of the youngest of us, humans. Since children and adolescents are more or less dependent on adults' decisions, they need us, adults, to advocate for them. Reckoned from the 1st of January 2020 the Convention of the Rights of the Child becomes a law in Sweden. The implication for landscape architecture is that for projects concerning children and adolescents now exist legal consequences regarding the way the project impact children's rights. At the same time, for the Hospital of Ystad which inspired the theme of this thesis, there are currently ongoing procedures for physical planning (Larsson, 2019). For these reasons, a revision of the access of child and adolescent patients to outdoor environment is a must and a right-at-the-time initiative.

The primary audience for my thesis are my examiners at SLU (the Swedish University for Agricultural Sciences), but also interdisciplinary interested professionals and students specialised in fields such as landscape and architectural design, people and environment studies, environmental psychology, healthcare, and urban planning may benefit. With the aim of advocating for the user group in focus, I hope to reach out to a wider audience of children-minded design theorists and practitioners, as well as socially conscious policy and decision makers.

3.2. Objectives

My goal is to open up the possibility for utilizing hospital landscapes as a part of an intentional strategy for emotional balance of child and adolescent patients by the creation spaces beyond the formally designed ones (those based on function and efficiency). With that, I want to challenge the existing limitations and to expand the potentials so that previously overlooked spaces become successfully used together with health-promoting practices and therapies. The target group is the population aged 0-18 years old.

To achieve that, the work has two main objectives.

The first objective is to study emotions in general, and as related to children and adolescents in healthcare environment. This is done mainly through a literature review and conversations with professionals providing psycho-social support for the target group.

The second objective is to propose a way to incorporate the knowledge about emotions into design of in-between and outdoor spaces for child and adolescent patients in order to provoke positive emotional response. This is achieved through drafting general guidelines which could be used for a conceptual design of compatible spaces, and by testing the guidelines at the site-specific case of the Hospital of Ystad through design.

The thesis will, thus, focus on the following question:

How can a landscape design be developed with the aim of achieving emotional balance in child and adolescent patients within healthcare settings?

To answer this question I have asked additional questions found in the methodology sections.

3.3. Impact

Although, for now, there are no plans for providing an outdoor environment for the child and adolescent patients in Ystad, in me as an author, and in the personnel of the Children's Department who experience the situation on a daily basis, there is a lot of hope that this thesis will attract the attention of decision makers and in longer perspective will change the current state.

For the practice of landscape architecture design, my thesis is offering a way to reconsider the experience in healthcare settings, addressing children's and adolescents' emotions related to health treatment. The patients from the Children's Department together with the Children's Emergency Department and other child and adolescent visitors of the hospital of Ystad may benefit from a design proposal since currently there is no access to outdoor environments for this user group while other outdoor environments are neither accessible or appropriate. Although a lot has been accomplished to meet a high quality of healthcare, the Children's Department may achieve higher results in patient's healing by including open spaces towards compatibility with the children and adolescents' need for emotional balance.

4. THEORETICAL FRAMEWORK

Several theoretical concepts underpin this thesis and here I present a description of how I define the most central of them. These concepts are: compatible spaces, in-between spaces, and self-regulation used here to define first, qualities and requirements towards the physical environment, and second, the optimal emotional state needed to increase internal forces which support healing processes. Self-perception and emotions, as well as emotional design are used here as an interdisciplinary theoretical bridge between emotional state and physical environment.

4.1. Compatible spaces

Compatible spaces in this thesis are intended to specifically match the emotions of the user while at the same time inform about concrete qualities to be used in landscape architecture. In that sense I find the term *compatibility* described by the Attention Restorative Theory (ART) developed by Kaplan and Kaplan (1989) as a good start. However, ART emphasis is on slow, cognitive mechanisms in restoration (Steg et al., 2013). For the purpose of this thesis an *emotional compatibility* needs to be further defined in order to use the concept for the design tasks set by my objectives.

In environmental psychology, compatibility is one of four restorative qualities of ART and is the fit between the individual's goals and tendencies and the information available in the environment about possible support of intentional and required activities. Steg et al. (2013, p.357) define compatibility as “[A] quality of restorative environments, as described by ART, indicating a good fit between the individual's inclinations and the characteristics of the environment so that no attentional resources need to be devoted to questioning how one should behave or act appropriately”. Authors like Evans and Cohen (1987) and Stokols (1979) inform that lack of such compatibility may cause an environmental stress. High compatibility experiences, on the other hand, are related to the special mental state in which recreation is achieved by performing favourite activities. During these experiences one becomes sunken in the activity or loses the sense of self. Such experiences are described by Csikszentmihalyi (1975) as *flow* and by Quarrick (1989) as *absorption*.

Hartig et al. (1997, p.182) measure compatibility with the help of the following statements: (1) I can do things I like here. (2) I have a sense that I belong here. (3) I have a sense of oneness with this setting. (4) Being here suits my personality. (5) I could find ways to enjoy myself in a place like this. These statements are used to develop further the term compatible spaces.

4.2. In-between spaces

My project utilizes some existing tools and concepts which describe the spaces between indoors and outdoors, and also include mixing territories or functions, which are meaningful to the user and, thus, they are here called *in-between spaces*.

Bengtsson (2015), advocates for the importance of gradual transition between indoors and outdoors in order to promote therapy landscapes by easier visual and physical access. According to Bradley (2008), *spaces in between* are of high importance for happiness because they provide with relations of different kinds, e.g. spatial, social, functional, emotional. Moore (1999) further argues that children need outdoor play along with *indoor-outdoor links*.

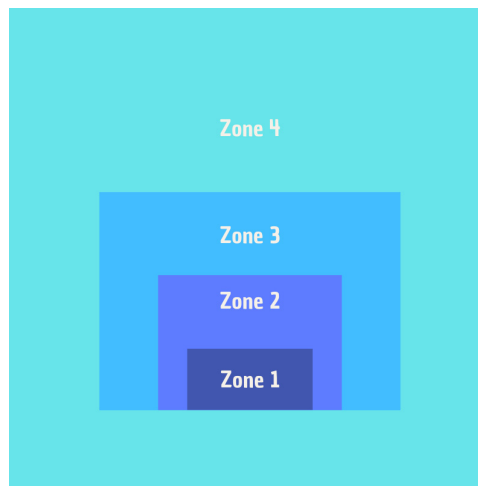
Bradley (2008, p.26) describes spaces in between as linked by meeting spaces arranged as irregular undulating spaces that respond to movement patterns and also can act as a 'break-out' hallway for wet playtimes". Bengtsson (2015) points out some transitional functions provided by, e.g., the view from the inside of the building and the building's immediate surroundings. These are presented as the term *developed edge zones*, described by Chalfont and Rodiek (2005) in relation to dementia patients in healthcare settings. In developed edge zones the authors (ibid.) include areas such as balconies, winter gardens, and entrance areas.

Therefore, if the designer pays attention to what possibilities these areas can bring to the experience, offering them to the users can help to overcome various psychological challenges like the anxiety caused by an environmental change - e.g. differences in temperature, humidity, amount of light, wind etc. The sense of such comfort is also linked to happiness because people feel relaxed (Fordham, 2008). Further in-between spaces have the potential to be free of functional predetermination. Deciding on your own what to do at a given space could be a powerful tool to regain emotional balance and sense of control (Korpela, 1989). The third reason is that in-between spaces could give the possibility to meet others (fostering relationships and friendships) providing a sense of safety (Bradley, 2008).

Bengtsson (2015) presents a principle model called *Four zones of contact with the outdoors* (fig. 1). The model is developed in relation to her studies of housing for elderly but it is meant to be used more generally in healthcare settings (Bengtsson et al., 2018). It follows the steps of transition from the inside of the building to the surrounding neighbourhood and can be used to inform what are the existing opportunities for engaging with the outdoors in the different zones. In this model, the immediate surrounding of the building like balconies and patios are labelled as transition zones (zone 2, fig. 1). In Bengtsson et al. (2018), it is clarified that *transition zones*, as described by Chalfont & Rodiek (2005), can overcome the limits between indoors and outdoors by making it easier for the users to, both physically and visually, use and understand the environment as a whole.

Some other concepts related to in-between spaces are found in the field of architecture and planning. For instance, in the late 1950s, Aldo van Eyck introduced the discursive concept of the *threshold* as a "meeting place" (Teyssot, 2008). Thresholds are spaces without predetermined function, often manifested as an edge between two other spaces (ibid). According to van Eyck, separation is not in favour to people and, therefore, "...

Fig. 1. A principal model of four zones of contact with the outdoors in healthcare settings: zone 1, from inside a building; zone 2, transition zone; zone 3, immediate surroundings; and zone 4, the wider neighbourhood. Source: own production after Bengtsson (2015)



architecture - buildings - should no longer help mitigate inner stress, but should, instead, provoke it” (van Eyck, 1981). With that, it is advocated that thresholds should encourage interrelations between people, contributing to more social interactions and activities. Not surprisingly then, this concept is theorized as a “bearer of inter-human events” (Teyssot, 2008). Viewing playgrounds as “in-between” or “interstitial” in relation to their surroundings, van Eyck intended to stimulate children’s imagination with the idea that they could appropriate the space by its openness to interpretation (Oudenampsen, 2013).

Another notion of in-between spaces is discussed by Kärrholm (2012). He uses the term *interstitial spaces* and supports the view that they can belong to the house or the street depending on interpretation. In that sense, they can be used “wherever one may want to, in order to develop actions of one’s own, rather than just reacting to strong territorial strategies and their regulation” (ibid). Furthermore, he adds that interstitial spaces allow “new rules and new things” (Kärrholm, 2012 p.122) meaning that one can freely “develop actions of one’s own” (Kärrholm, 2012 p.121).

Regarding children play, Mårtensson (2013) describes the important for this user group quality of extend in the environment. According to her, the outdoor play which is not limited by fences (or other boundaries), can afford a play of *flux and transformation* (Mårtensson, 2013). Open-ended and flexible play sequences are achieved by placing open spaces between the play areas to offer possibilities for children’s dynamic movements (Mårtensson, 2012).

The mentioned above four definitions - *transition zone* (Bengtsson, 2015), *threshold* (Teyssot, 2008), and *interstitial space* (Kärrholm, 2012), and *edges of flux and transformation* (Mårtensson, 2013) - are existing concepts to describe the role of in-between spaces which suit the needs for comfort, social interaction and spatial freedom.

4.3. Self-perception and emotions

Environment-behaviour theories explain the effects of exposure to environmental stimulation with changes in arousal (the arousal perspective) (Bell et al., 2001). When arousal changes, people start to seek information to interpret if the change is a positive or a negative event (ibid). Information is searched through other people, aspects of the physical environment and social comparison.

The role of emotions in these processes is clearer explained by the Self-perception theory (Bem, 1967; 1972) and the theory of emotion (James, 1884). According to Laird (2007, p.113), “[E]motional processes are innate, adaptive, complex integrations of action, autonomic preparation for action, and expressive signalling of the impending action sequence. Feelings are the recognition of these complex patterns. An emotional feeling is information about what actions are going on and plays the same role in the subsequent activity as any other kind of information. That is, it provides guidance and defines the context of subsequent actions.” Laird (2007) also mean that feelings are not uncontrollable responsible events which dictate human behaviour but rather a conscious assessment of the processes in the body and the current situation.

Laird (2007) explains this phenomenon through the Self-perception theory which is based on the Jamesian ideas of emotions. The concept of self-perception is informing about the role of self-observation and interpretation on emotional processes. According to these ideas, there is *no separation between body and mind*, but rather, the psyche consists of complex patterns of actions and contexts in which these actions are manifested (Skinner, 1957). The theory is tested by studying the sequence of stimuli and feelings by *manipulating the behaviours* (Laird, 2007). Behaviour can be altered through influencing facial expressions, gaze, posture and actions (ibid). Feelings can be influenced also by cognitive self-monitoring process and situational cues.

Self-perception theory is also based on the understanding that there are two kinds of cues which produce feelings: situational and personal. *Environmental cues* are described as “elements in the environment that convey important information or trigger an affective reaction” (Steg et al., 2013). All people respond to situational cues to some degree but there are some people who do not respond to personal ones (Laird, 2007). Thus, landscape design can focus on the situational environmental cues since they are common among people and they include the physical environment. The cognition about the situation is related to the information about the nature and meaning of an emotional stimulus and this information produces an emotional behaviour (ibid).

4.4. Emotional design

The term is mostly used in fields like user experience design (UX design) - e.g. within gaming or e-learning (Brom, Stárková, & D’Mello, 2018). In its broader sense, though, it is explained by Norman (2004) who argues that humans have evolved to use emotion and cognition in order to interpret other people (Norman, 2004). Interpretation is based on reading of facial expressions, gestures and postures (ibid). Furthermore, this interpretation ability has become inherent and thus, transferred on inanimate objects and animals because it is coming from the same source: humans’ “automatic interpretive mechanisms” (Norman, 2004, p.135). In that sense, humans tend to interpret everything they experience in human terms (Norman, 2004). The attribution of human motivations, beliefs, and feelings to animals and inanimate objects is called anthropomorphism (ibid). Anthro-

morphism is more likely if something is manifesting any kind of behaviour (ibid). Emotional design is addressing three levels of the emotional processes: visceral, behavioural and reflective (Norman, 2004). Since visceral processes are autonomous (pre-thought), the design focused on them is about initial impact, appearance, touch and feel (ibid). The design related to behaviour, on the other hand, is about use and about experience in terms of function, performance and usability (ibid). Design on a behaviour level aims to induce interest in the object, to earn trust in the user by sleek performance and to avoid confusion and frustration by offering an easy way to understand how the object works (ibid). According to the author, these two levels do not involve interpretation and thus, they induce only affect (ibid).

Working with reflection towards emotional design is making all the difference because this addresses the consciousness (ibid). At the end, reflection means interpretation, understanding and reasoning. Reflective design is the most subjective of the three and also has the potential to make people ignore affects related to the other two levels (ibid). According to Norman (2004), emotions themselves are not caused by visceral or behavioural processes. Reflection, however, is the process which is responsible for attributing intentions on inanimate objects. "It is the role of reflection to understand, to interpret and find reasons, and to assign causes" (Norman, 2004, p.139). Another difference is that reflective design is about long-term relations (remembering the past and contemplating the future), while those based on visceral and behavioural level are about the present experience (ibid). Feelings such as pride or shame are directly linked to reflection, and so, a certain object can become (or not) a part of the person's self-identity (ibid). In environmental psychology, self-identity is developed by assigning emotional and symbolic meanings to places (Proshansky et al., 1983; Warzecha et al., 2001).

4.5. Self-regulation

With some nuances, in literature this term has been used to describe the ability of an individual to sustain both emotional and cognitive balance. Along with self-regulation authors also use the term *emotional regulation* which seems to focus just on emotional processes. For example, Korpela (1989) states that emotional regulation is finding a balance between negative and positive emotions. Self-regulation, on the other hand, is related to achieving accomplishments or daily routines through which a person can build self-esteem and confidence through cognitive and emotional assignments of meanings (ibid).

The development of self-regulation from early childhood is helping the individual to regulate their behaviour based on their social context and to develop positive social relationships and it is increasing with the age (Barrett, 2013). According to Barrett (2013, p.8) "children...who are more competent at emotion regulation are more successful in social interaction, capable of focused problem solving, [prioritizing] delayed rewards over immediate ones, and achieving emotional well-being". Children make use of their sense of place for developing emotional regulation and self-regulation (Dovey, 1990; Kirkby 1989). Korpela (1989) further suggests that children find the exploration of place through play as inherently pleasurable and leading to self-directed learning activities. Preschoolers are also emotionally affected mainly from situational causes (e.g. the child falls or breaks favourite toy) and

deal with the emotions through behaviour - covering eyes/ears, removing/avoiding arousing situations, seeking support from adults or finding a security objects (Barrett, 2013). Self-regulation for adolescents, on the other hand, means their ability to balance cognition, emotions and behaviour towards a goal (Baumeister, Tice, & Vohs, 2007). The effects of self-regulation on the quality of the life development and health are of great importance (Moffitt et al., 2011). Older children and adults, in contrast with preschoolers, are capable of reinterpreting situations, adjusting goals and appraisals, or mental distractions in arousing situation (ibid). Not surprisingly then, there is also a direct relation between adolescents' emotional balance and their mental health. A study regarding adolescents with mental illnesses has shown difficulties in emotional regulation (Charak et al., 2019).

One can conclude, then, that while growing from childhood through adolescence - to adulthood, the human involves conscious understanding of the environment and the self. Children master first emotions and later gradually with the years the cognitive experiences within the surrounding environment are added so that the grown individual could be able to sustain self-regulation.

5. METHODOLOGICAL APPROACH

The two objectives of this thesis are carried out through three stages: (1) research for design, (2) concept design and (2) evaluation (see fig. 3). In the concept design section I also include design in the context of the Hospital of Ystad where I present the case. At the end, I present the ethical issues related to this study.

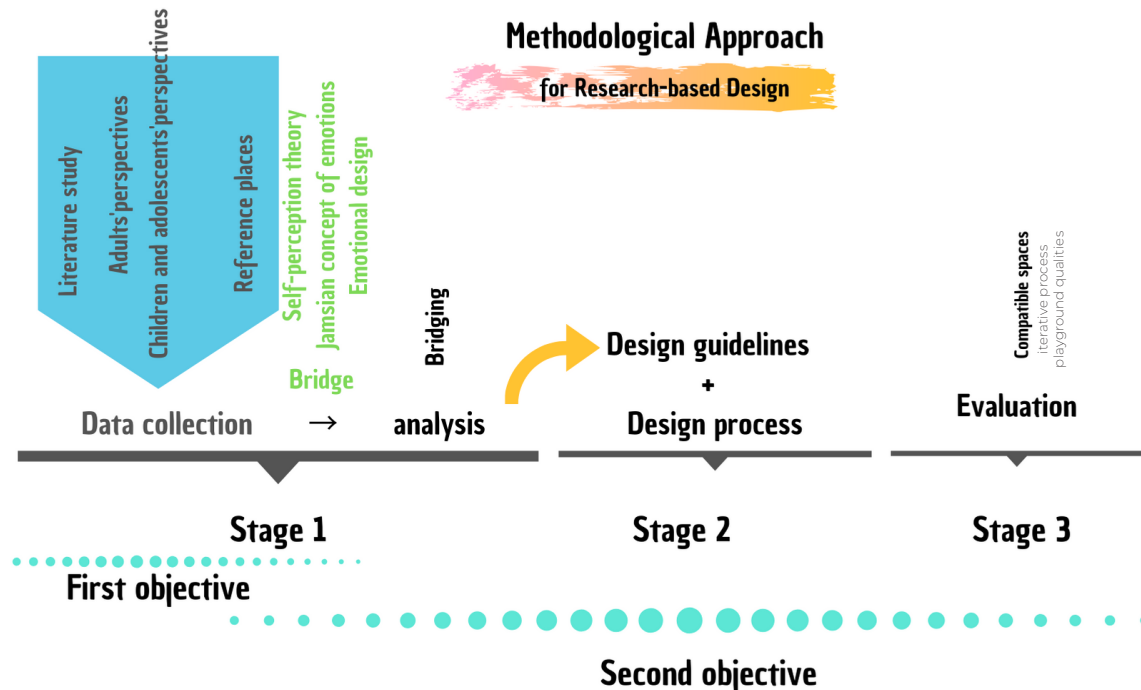


Fig. 3. Methodological approach. Source: own production. Concept references: Self-perception theory - Bem (1967, 1972), Skinner (1957), Laird (2007); concept of emotions - James (1884); Research-based design - Jansson et al. (2019); emotional design - Norman (2004); iterative process - Refshauge et al. (2015); playground qualities - Jansson & Andersson (2018).

5.1. Research for design

The knowledge gathered in the thesis has for a purpose to inform the design process by using the research as basis for taking creative decisions. In literature, this research mindset is called *research for design* (Frayling, 1993; Lenzholzer et al., 2016; Nijhuis & Bobbink, 2012). Taking the term research for design further, some authors suggest embodiment of scientific data in the creative process for landscape design, and, thus, research for design becomes evidence-based design (Brown & Corry, 2011; Evans, 2009; Lenzholzer & Brown, 2016). Here, existing research is used to inform but not to dictate the design process. Since the aim is to build a bridge between something complex and subjective as children's emotions and design practice, the choice of *evidence-based design* may seem suitable. However, comprehensive understanding is not to be found in the literature regarding emotion-physical environment relation. On the other hand, studying children, let aside emotion itself, brings to the scope too many variables so that attempting to use a positivist strategies becomes inefficient.

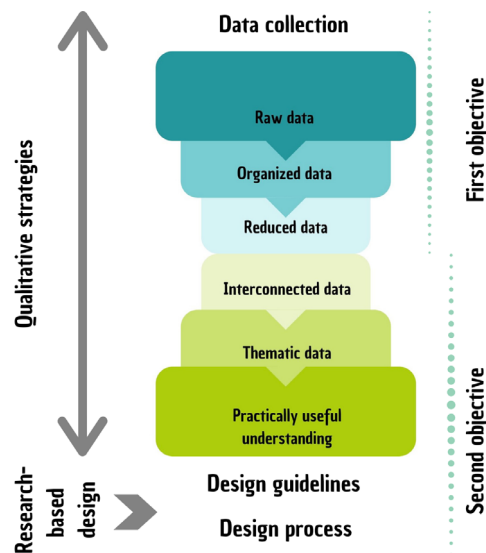
Jansson et al (2019) are also critical about this positivist view because not all research traditions can benefit from the term evidence-based design. They suggest, instead, that knowledge can be obtained also through different paradigms like the ones suggested by Creswell (2003), e.g. social constructivism (often related to an interpretative paradigm), an advocacy/participatory approach, and pragmatism (Jansson et al. 2019). Thompson (2016), on the other hand, is advocating for choosing the right theory for the question. The argument for this state is that the main branches of academia - the natural sciences, the social sciences, and the arts and humanities - are using different norms, values and languages in order to attain knowledge (ibid). Therefore, in my case, building information ground based on interpretive and participatory methods could neither be easily called evidence-based. Instead, Jansson et al. (2019) propose the term research-based design. Adopting this concept for my study, the theory and investigation are providing information for guidelines and a site-specific concept design.

5.2. Methodological framework for research

Following Groat & Wang (2013) the strategies of this thesis are framed by my main way of gaining knowledge, which is through the prism of the constructivist worldview. In my methodology, I adopt the distinction which Groat & Wang (2013) make between strategies and tactics. According to the authors, strategies and tactics combined are what others call method. Strategies is the overall research plan or structure of the study (Ibid) and how I organize it is shown on fig. 3. Tactics, on the other hand, are described as more detailed information about specific techniques, such as data collecting devices, responsive formats, archival treatment, analytical procedures, etc. (ibid).

Zina O'Leary (2010) proposes a method for "drilling in and abstracting out" to support the processing of qualitative data. The process of making sense of the collected data and synthesising is presented through the model in fig. 2. This model is useful here because it shows the mental process of working with raw data in order to interpret and abstract them. In my case, instead of aiming for theoretically meaningful concepts as O'Leary suggests, I

Fig. 2. Model for working with qualitative data, adapted for the purpose of this study by showing the use of the theoretical framework and the objectives. Adapted from Zina O'Leary (2010).



aim for practice-oriented understanding. In fig. 2 the blue toned steps represent the processing of the first objective and the green toned represent the processing of the second objective. At the point where the data are reduced, it is possible to proceed with connections and similarities and then, themes are identified. What I am searching for the benefits of practice, is relations between emotions and physical settings.

In my research methodology I use strategies framed by the school of hermeneutical phenomenology. In line with hermeneutical phenomenology, this thesis deals with the Heideggerian sense of “being-real” and “being-there” (in German: *Dasein*) which is manifested by the constant process of engaging with the world through the self (Heidegger, 2002, p.115). This view is a key to my investigation of emotions and environment because the hospital environments are experienced through the filter of a certain medical condition for each individual.

Phenomenology is pointed out by Groat & Wang (2013) as one of four qualitative strategies and I use it to carry out the both objective with the aim to highlight the meaning of experiences of children and adolescents on the one hand, and that of the adult’s on the other. Creswell (2007, p.59), as well, advocated that phenomenological approach is useful “where experiences contain both the outward appearance and inward consciousness based on memory, image and meaning”. Further, the architectural field has increasingly benefited from phenomenology results due to the presumption that the consciousness is drawn by an “object”, the reality of which is linked to the consciousness (O’Leary, 2010, p.120).

5.3. Data collection

The overall strategies I use for the two objectives are focused on the investigation of experiences through: (1) literature study; (2) study of children's and adolescents' perspectives; (3) study of adults' perspectives - professionals in healthcare, play therapy, counselling, and landscape architecture; (4) reference places.

5.3.1. Strategies and tactics for objective 1: emotions

The strategies for objective 1 aim to answer the question: What kinds of emotions do child and adolescent patients experience in relation to hospital visit or hospitalization? What is the mechanism for altering emotions from unpleasant to pleasant?

Strategy 1: Literature study on emotions is performed in order to understand how emotions work and which emotions are most central for children and adolescents in healthcare settings.

:: Tactic: *Literature reviews* inform about how emotions work in general and what they mean for children and adolescents as patients. For general theoretical background on emotions I performed a book review (Laird, 2007) and a review of research on children's and adolescents' emotions as patients (Pelander et al., 2007; Dolidze et al. 2013). From two different articles describing research I identified occurring emotions and issues. When reading general theories on emotions, I focused and gathered only on those emotions which relate to highest degree to children and adolescents as patients and use of outdoor space. For example emotions and feelings like those related to motivation for dieting or romantic attraction were excluded.

Strategy 2: Study on adults' perspectives have for a purpose to inform about children's and adolescents' experiences as seen from everyday practice. The interviews are also used further to process the second objective. In adult's perspectives I include opinions of healthcare staff who works with children and adolescents on a daily basis.

:: Tactic: *Interviews with professionals* working with children and adolescents at hospitals were performed by phone due to their busy schedule and far location. The first one is with Gergana Tosheva, counsellor at the Karolinska University Hospital in Stockholm, Sweden, and the other is with Catarina Barta, play therapist at the University hospital in Lund, Sweden.

5.3.2. Strategies and tactics for objective 2: emotions and landscape

With the following strategies I investigate the following questions in order to build knowledge for design guidelines:

(a) What in the physical environment is contributing to emotional regulation?; (b) What are the psycho-social practices performed nowadays towards emotional regulation and what are the requirements for the physical environments to accommodate those activities? (c) Which features of design of outdoor environments for children and adolescents in healthcare settings are compatible with their emotions? (d) Which emotions are addressed in such design?

Strategy 1: Through a literature review I inform the thesis about which landscape elements and settings are important for children and adolescents.

:: Tactic: The SLU library's database was searched for articles with the keywords healing environments, children and adolescents where I examined more closely an article by Whitehouse, Varni, Seid, Cooper-Marcus, Ensberg, Jacobs et al., 2001) which is about post occupational evaluation based on self-reporting approaches with child and adolescents patients and visitors at a hospital healing garden. I also performed a book review on Moore (1999) and Casey and Westwood (2017) informing my study about existing design approaches and requirements of healing gardens for children.

Strategy 2: Adults' perspectives are mainly studied through the prism of different roles these adults play in the life of the child and adolescent patients. These roles include play pedagogues, healthcare staff, counsellors, and designers. The children and adolescents are seen here mainly in their role as patients.

:: Tactic 1. *Walking interviews* with professionals in healthcare, play therapy, counselling and landscape architecture have been performed in a semi-structured manner on location where possible.

Walking interviews, have been performed to discuss reference places and to help place analysis of the case hospital. Walking interviews are considered as part of place-responsive methodology (Lynch & Mannion, 2016) and are a preferred because they "let the interviewees lead the *researcher* through *the space*, *allow the participants to conduct* the conversation, and *thus invite a reflection on the power dynamics inherent in the interview situation*" (Ratzenböck, 2016, italics in original text). Walking itself renews attention in geography and anthropology both as a social practice and as a research tactic (Edensor, 2010; Ingold, 2010; Ingold & Vergunst, 2008). Thus, being present gives the opportunity to trigger new, unconsidered, nevertheless, important discussions, and also memories and sensations to talk about.

The focus in my meetings with informants has been to reveal their personal experiences, memories and stories related to their everyday life at work. The daily contact with patients and their families (for staff within healthcare), or clients (for design professionals)

creates a valuable resource for understanding deep emotions and also the following of the time line of the spaces.

The informants who took part in walking interviews are as follows:

(1) Helle Nebelong, a landscape architect located in Denmark, known for her work in the field of environments for sensory experiences and including children. She was interviewed at Sansehaven (The Garden of Senses), a garden for users with different abilities with intention to stimulate the human senses, located in Copenhagen, Denmark and designed by her. The focus of the interview was on design and emotions;

(2) Anna Persson and Tina Syllfors, play therapists and Kristina Andersson, chief of the Children's Department at the Central Hospital of Kristianstad, Sweden. They were met at Takis, the roof garden for the children and adolescents at the Children's Department but also accessible for all young patients and visitors at the hospital. The focus of the interview was on the play sequences and the different elements and how they are experienced by the children. Although not specifically asked, some parts of the answers combined with my observations gave a clear picture of how in-between spaces in terms of Bengtson's transitional zone were used and experienced by the users.

(3) Anita Larsson, chief of the Children's Department at the Hospital of Ystad, Sweden. We met at her workplace and she was interviewed during walks around the hospital at three occasions.

:: Tactic 2. *Interviews by telephone* are done due to long range distance or their busy schedule and thus, impossible to meet in person. In that way, two other informants contributed to my study. These are as follows:

(1) Gergana Tosheva, a counsellor at the Karolinska University Hospital, interviewed to inform about what emotions child and adolescent patients experience in relation to difficult diagnoses.

(2) Catarina Barta, a play therapist at the University Hospital of Lund. With her the conversation was about what activities they perform and what elements they have in their garden.

Strategy 3: While adult's perspectives are relatively easier studied, when it comes to **children's and adolescents' own perspectives**, it is a bit more complicated (see section 2.1., p.9). Due to difficulties in understanding the child's perspectives, Cele (2005) recommends method triangulation, i.e. combination of different methods, and especially child-led walks.

However, organizing a child-led walk in this case would be hard to implement because the patients may not be able to and, thus, recruiting brings complications into planning the procedure. Instead, I include three articles, two of which are based on projection techniques in relation to hospitalization (see section 5.3.1., strategy 1, p. 24) and one based on children's self-reported opinions regarding the use of a healing garden at a children's hospital (see section 5.3.2., strategy 1, p. 25). Since these studies were made in relation to different conditions, I decided to include own

participation approach which is more anchored to the case hospital and the Swedish context.
:: Tactic 1. *Art-based participatory approaches* are used in order to inform about children and adolescents perspectives at first hand. Self-expression techniques like drawing, writing and conversations have been performed by three individuals one by one. All the participations had the same theme - *A Dream Garden* but the participants got to choose the way they want to approach it. The activities are not performed in groups due to time constraints and the fact that it is complicated to gather a group of patients in the studied hospital. Some of the participants were hospitalized, some were visiting for consultation with a doctor. They were: a girl, 12 years old; a boy, 17 years old; and a girl, 17 years old.

Art-based participatory approaches allow children and adolescents to access and to explore themselves, their world, and their values (Derr et al., 2018). Further, they develop the participants' personal connection to the topic by searching the answers for the following questions: "What is important to me as an individual?...What experiences and perspectives do we have for a place? For an activity?" (Derr et al., 2018, p.67).

Different participation tactics allow to overcome withdrawal in terms of self-expression and encourages the participants to open up (ibid). Theme drawing (ibid) has been used here for the data collection (research for design) and include a theme which is not attempt to extract a critique towards adults decisions (ibid). Pelander et al. (2007) advocate that projective techniques, such as drawings, are valuable in order to understand "the basic elements of quality as seen from children's points of view" (Pelander et al., 2007, p.333). Furthermore, drawings are considered more genuine in expressing oneself because, as an inquiry tactic, they are nonthreatening, require no simple right answers, and "help to identify feelings and desires that subjects may not be consciously aware of or able to express verbally"(Pelander et al., 2007, p.334). Drawing was, thus, included as a form of contribution choice in the participation part of this study.

Based on their study on children's drawings, Pelander et al. (2007), conclude that some children may not be capable to draw a hospital that goes beyond their current experiences. Being aware of this aspect, I attempted to widen up the participants' views of what they can desire. In that case, my way of approaching them relies on the phenomenological link between subject and environment, described by Cooper-Marcus (1995). It tend to encourage the thought process and eliminate the observer-object mode (ibid). In line with this idea, in this step, the participants are encouraged to talk *with* the environment instead of about it.

:: Tactic 2. *Predisposition*. Since children may have different landscape preferences according to which there are 8 different *environmental personalities* (Thurber & Malinowski, 1999; Bunting & Cousins, 1985) (see Appendix iv-A). Sonnenfeld (1969, p. 137) defines environmental personality as: "a set of attitudes and expectations and predispositions to behavior which are a function of the individual's personality, a personality that predicts for environmental behavior within the context of geographical environment..."

These environmental personalities are as follows: pastoralism (P), urbanism (U), stimulus seeking (SS), antiquarianism (A), mechanical orientation (Meters), need privacy (NP), environmental trust (ET), environmental adaptation (EA) (Bunting & Cousins, 1985) (see Appendix iv-A). The 8 environmental personalities are adapted for children at school age 9 to 16 and the tool is, then, called

Children's Environmental Response Inventory (CERI). The original concepts are developed by psychologist McKechnie (1974, 1977) as multidimensional measure of environmental dispositions called Environmental Response Inventory (ERI) and used in other studies to differentiate a range of human behaviours i.a. design preferences and leisure activities (Bunting & Cousins 1985).

In my study, predisposition of the participant is attempted with the help of images to choose from. These images reflected the 8 environmental personalities and the purpose with them was not about evaluation but rather finding an appealing image to start a dialogue between user and environment. These were shown to the participants in the hospital to choose from so that the individuals can identify themselves with an imagined garden.

I chose these images to represent a certain environmental personality, according to CERI (Bunting & Cousins, 1985). The intention with using them in participation is not to influence the imagination of the participant. Rather, the aim is to encourage the participant to create a place of their own and the pictures are used as a way to describe the task in a way that any child/ adolescent would understand for themselves. In that sense, the images should not represent a garden, as such, but just a small part of it - an entrance, a pathway, or another element. Of course, the image itself is suggesting some aspects of the setting but still, the image, which represents a certain environmental personality, is chosen by the participants themselves. The categorizations' names and definitions are not revealed for the participants in order to maintain the freedom of imagination.

Once the type of a garden is chosen, the participants are encouraged to sink in their imaginative world and start to communicate with their dream garden. Taking the role of a mediator, I ask the participants guiding questions instead of the garden, depending on their age and cognitive understanding: "How can I make you happy?", "What do you want us to do?", Or "If I could change just as you'd like me, what activities do you want me to provide you with?"

The participants were then allowed to express themselves as they like: verbally, in writing, referring to a song or video or image, draw or else. The idea behind this diverse allowance for expression is the favourite activity (drawing or listening to music, etc.) to act as a catalyst for imagining. All of the three participants asked agreed to take part in the study but since the CERI includes more than three categories not all of them were used. The model as a whole may be in interest for future studies so that is why I chose to present it in the section with the appendices.

Participant 1, (the 12 years old girl) chose to draw a picture. She chose three dispositional images: ET, NP, U. The mother was present during the participation and the reason for being in the hospital was a consultation with a doctor. The total duration was 45 minutes as the participation was, unfortunately, ceased after this time, because of doctor's appointment.

Participant 2, (the 17 years old boy) preferred to write a text and to discuss it verbally. Chosen predisposition image: NP. The parents were not present. He had stayed at the hospital for four days. The duration: 15 minutes - because his mother came to take him home. Before asking if he would agree to participate, the adolescent got the news that he can go home this day. The comment I got from the staff was that he probably will not

agree because he literally “jumped up” from the bed of excitement because of the news and his mother is on her way to pick him up. Luckily, he agreed to participate even if for a short time.

Participant 3, (the 17 years old girl) wanted to express free thoughts through conversation. She chose predisposition images NP and ET. At the end of conversation her mother came and joined us. The girl was hospitalized for more than one week. Duration of participation: ca 2 hours. This participation was particularly difficult because the patient has been in moody condition during the last week. Later in the conversation she shared that she had lost her appetite. She did not have the strength or will to write or draw but she preferred to take part in a conversation. This participation is still considered art-based because the task is to perform imaginative processes.

Commenting, or any other additional information gained with the help of conversation was also included. Any additional observation, conversation or explanation is documented by the researcher (in a notebook, or else) during the participation.

In that way, the interpretation process is started already during the participation, as the participants were asked additional questions in order to clarify the response. The role of the researcher is revealed and the researcher is engaging with the participants. For the interpretation of the drawing is used the knowledge gained so far, for instance, about colour (Dolidze et al. 2013), meaning of nature elements (Moore, 1999), emotions (Laird, 2007), and also interviews from adult’s perspectives and additional participant’s comments during the drawing.

Reference places. In architecture and environmental design, phenomenological research is focusing on person’s experiences of the built form and place (Groat & Wang (2013). Therefore, reference places here are studied phenomenologically. The chosen reference places are such that most closely relate to the case study - outdoor environment for children and adolescents in the Hospital of Ystad. Some of the places has been useful to several aspects of this study, including best practice examples . Best practice examples are used in this study mostly as a reference for the design guidelines.

Two of these places are the outdoor environments belonging to play therapies within children’s departments at (1) the University Hospital of Lund and (2) the Central Hospital of Kristianstad. The outdoor space (1) is located on a ground level and I explored it alone with a short preceding conversation with the staff. The outdoor space (2) is a roof terrace on the fourth floor and there I had the possibility to explore it with guidance from the staff. These two places were studied in relation to experience of in-between spaces.

Further, a third reference place, (3) Sansehaven in Copenhagen, Denmark was visited in relation to an interview. The garden was studied for emotional experiences.

Two more reference places are studied online for their healing gardens for children: (4) The Leichtag Family Healing Garden in Rady Children’s Hospital in San Diego, USA, and (5) the outdoor environment of Dell Children’s Hospital in Texas, USA. These two environments were studied in relation to best practice examples (state-of-the-art healing gardens for children).

Two other reference places are studied for their psycho-social support practices performed mainly indoors: (6) Elpida Children's Hospital in Athens, Greece, and (7) The University Children's Hospital in Manchester, UK. These hospitals were studied to inform about what elements in the physical environments are required to support child and adolescent patients' needs for activities.

:: Tactic 1. Three of the reference places (1),(2),(3), was *visited, observed, photographed and filmed* with the purpose to explore best practice examples, to identify their meaning to the users, and to identify practical issues and challenges.

:: Tactic 2. Because the visited places were not fully satisfying in terms of holistic approach additional reference places (4),(5),(6), and (7) were *searched online* to be studied specifically for psycho-social support practices and best practice examples. The information gathered is from their official websites.

5.4. Analysis approaches

5.4.1. The bridge

In order to identify theories to connect emotions with design I have looked into three theoretical grounds explained in the chapter Theoretical framework: the Theory of Self-perception, the Jamesian notion of emotions and emotional design. According to Theory of Self-perception behaviours could be altered with an aim to change that emotion. This is possible in several ways: by changing facial expressions, postures, gaze, actions, autonomic arousal, and situational definitions of what is appropriate, by introducing environmental cues. Since arousal takes time to influence the emotions there is possibility for the consciousness to influence the emotion.

Emotional design, on the other hand, aims to dedicate efforts on three levels of emotional process: visceral, behavioural and reflective. In landscape architecture, design can influence visceral level of emotion through settings which stimulate sensory experiences. Behavioural level can be tackled by settings for use and bodily experiences. Reflective emotional processes could be induced by environmental cues which provoke memories and/or reflections.

This thesis is focusing on compatible spaces seen as restorative but also as a frame of reference to places of attachment. In that relation, some concepts like place identity (Proshansky, 1978) and place dependence (Stokols & Shumaker, 1981) are borrowed from the Place attachment theory but implemented here through the emotional design theory. Further, compatible spaces are studied in relation to those specific emotions which relate to the user group in focus.

Following the above, it is evident that through landscape design a physical environment can be created intentionally to adjust different emotions towards a healthy balance. In my thesis I use these aspects from the three theories to connect emotions with landscape design. The aspects from the theories I call here *the bridge* and the process of connecting I call *bridging* (see also fig. 3, p.21).

5.4.2. The bridging strategy

Bridging is a process developed here which uses the theoretical bridge for focusing the design efforts on emotional balance and a strategy for continuing the processing of the objective 2 of this study (see fig. 3, p.21).

:: Tactic 1 includes identifying pairs of responses (emotions and behaviour) and physical environment using the triangulated data from the full texts of literature reviews, interviews, art-based participation, and reference places (following tactics from Weatley, 2010).

:: Tactic 2, those pairs are organized in a table as environment (physical qualities)-response (emotional and/or behavioural) pairs of keywords (see chapter 9, image 11, p.70). In some cases, an interpretation is needed to build the pairs for example where only behaviour is available and not the respective emotion or an activity is indicated but not the respective physical settings. The interpretation relies on the triangulated data.

:: Tactic 3. The pairs are scattered and grouped in more general manner, according to similarities in arousal intensity category of emotion following Laird (2007) and pleasantness/unpleasantness. Eventually, some new categories which were not discussed by Laird (2007) emerged during data collection (chapter 9). The pairs were grouped and interpreted according to the final list of emotions. The physical environment (elements and settings) has also been compared in terms of atmosphere and spatial qualities to check if there is some inconsistencies. The data from the grouped pairs is included in the design guidelines as space types.

5.5. Guidelines and Design

The processing of the second objective continues with the stage 2: concept design. The design is undergoing two steps: creation of guidelines and creation of design in context. The design in context is informed by methods found in the literature.

5.5.1. Guidelines

According to Prominski (2016, p. 194) who proposes guidelines for evidence-based design, “a design guideline gives guidance for design action, meaning that it suggests specific direction by excluding many other possible, and by implication, less suitable ones”. Design guidelines’ potential is in the idea that they provide the design process with principles and strategies, rather than ready solution (Prominski, 2016). Thus, different individuals can design different proposals at the same site, and the same individual could produce different proposals suiting different sites.

In his understanding, design guidelines should always reflect against theoretical framework and best practice examples and/or test designs (ibid.). Following this, the design aspects towards emotional support proposed in the thesis are coming from further developed concepts found originally in theory.

Based on the argument that research-based design is a wider concept than evidence-based design I include more elements to compose the guideline. For instance, instead of test designs, I rely on the bridging because it is based on method triangulation. Most importantly, bridging also includes the results from the participation showing a dream hospital garden. *A dream hospital garden* as defined by the participatory approach as a way to complement best practice examples, in the regard that this vision is not limited by construction or hospital regulations.

The guidelines compiled in this thesis consist of three general aspects to keep in mind and five space types to use for design actions. The design aspects are following the most central concepts in this thesis, while the types of spaces describe space qualities and are based on the bridging. The guidelines are to be used directly in various design projects along with site-specific pre-conditions of each project. They are tested here in design for the case hospital.

5.5.2. General design strategies

Site layout

Design of gardens for children in existing hospitals may often require building of those gardens as extensions of the main building. In new buildings it is also advisable to situate outdoor environments in transitional relation with Children's departments and including of in-between spaces (Moore, 1999). The connection between the garden and the Children's departments should be designed in line with user's needs and characteristics, described in this thesis and defined in the guidelines.

The site layout is following the one proposed by Refshauge, Stigsdotter, Lamm and Thorleifsdottir (2015) but still, modified according to the purposes of this study (Fig. 4). The hospital building is presented as the *indoor environment*, the garden itself is regarded as the construction extension and is the *outdoor environment*, the connection between the main building and the garden is an *in-between space*. The outdoor environment and a part of the in-between space are the *main setting* and the different elements in the garden are referred to as *sub-settings* (see fig. 4). Since the in-between space is open for interpretation, some spaces within it could be perceived as a part of the indoor environment.

In-between space, sub-settings and main setting, showed at fig. 3 are the objects of the design in this thesis. Following the theoretical framework of in-between space it should act both as an entrance to the garden or the building but also as less challenging, multifunctional and flexible space to offer a gradient transition of environmental conditions. The Four zones of contact with the outdoors tool, presented earlier is used here with more emphasis on gradual change (see fig. 5).

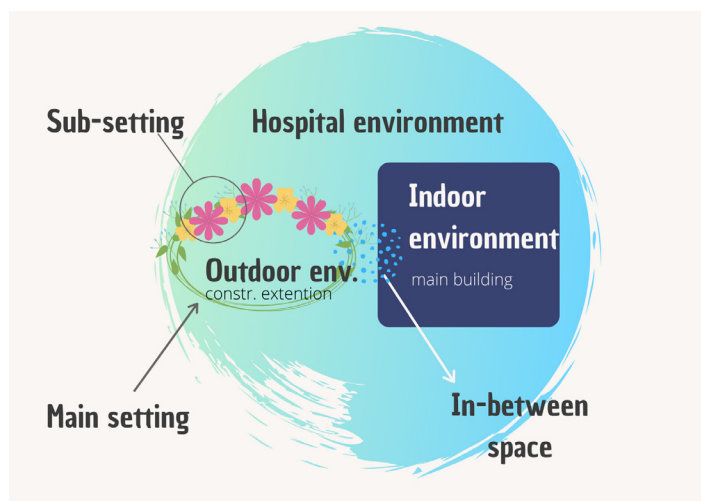


Fig. 4. The site's diagram of the hierarchy, adapted from Refshauge et al. (2015).

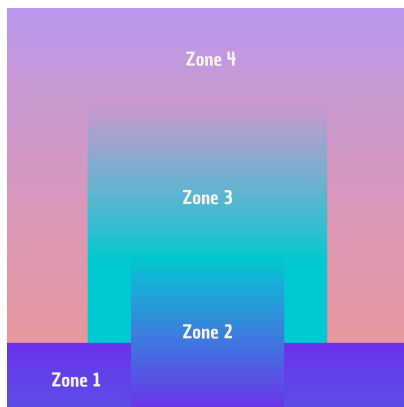


Fig. 5. A principal model of *The four zones of contact with the outdoors* in the context of the Children's Department at the Hospital of Ystad: zone 1, from inside a building; zone 2, in-between zone; zone 3, immediate surroundings; and zone 4, referring to larger landscapes. Source: adapted from Bengtsson (2015).

Site structure

Laidlaw (2017) has proposed that children's gardens should adopt a kind of branching system in order to create a wider variety of choices and experiences (see fig. 6). He suggests that the entrance should be marked with a landmark (e.g. an art sculpture) which is appealing to the target users (ibid). Once entering the garden there should be formed a sub-setting as a meeting place with sitting opportunities and a water feature (ibid). This would represent a type of in-between space where the users can decide whether to stay for a while or to use it as a starting point for their adventure. From there, they should be able to find different paths to different kinds of spaces to provide a choice for experience (ibid). This is providing a level of mystery and privacy into the main setting (ibid). The strategy is chosen here also because it makes the site to appear much larger than it actually is and for a child this experience is intensified (Laidlaw, 2017).

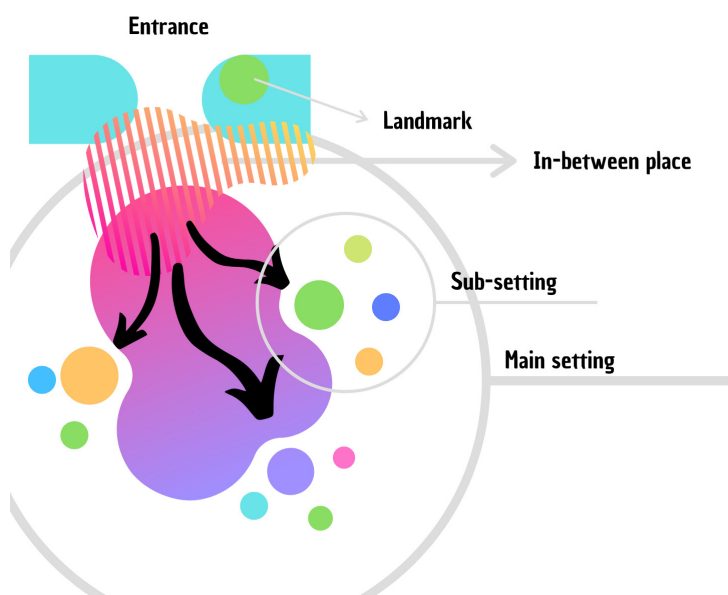


Fig. 6. Illustration of site approach for children's garden following the description of Laidlaw (2017).

Iterative process during design

In a recent study about evidence based design for playgrounds, Refshauge et al. (2015, p.233, Table 1) propose the gathered data to be used as initial input for their design model, through the so called iterative process.

Refshauge et al. (2015, p. 232) suggest some questions for evaluation of their design proposals as, for example, “Does this comply with client/user wishes?”, “What senses are expected to be stimulated in this solution?”, “Is it realistic to build?”, and “What other affordances are possibly provided through combining of different behaviour setting?”.

To follow this strategy I use a list of questions to answer during the design process. Those questions are based on the two objectives of this thesis and they are as follows:

Are there optimal sensory stimuli ?

Are there possibilities for individual therapies and therapies in groups? For events?

Can children and adolescents do things they like and love here.?

Can they sense that they belong here?

Can they have a sense of oneness with this setting?

Is there settings for the different environmental personalities?

Can they find ways to enjoy themselves in a space like this?

Are the settings open for interpretation in terms of function territoriality, form?

Are they open for transformation?

What kinds of emotions can be processed/promoted here?

Has the design worked on visceral, behavioural and reflective levels?

How this may change the experiences of healthcare at the case hospital environment and the motivation for self-healing?

The resulting design is evaluated and adjustments are made. Refshauge et al. (2015) suggest that the main tasks of the design could be achieved by an iterative process where the affordances based on user characteristics are the initial input and the best practice examples are a secondary such.

5.5.3. Design in context

Choice of site and site description

Initially, I was aiming for a hospital environment in a bigger city like Malmö or Lund in Sweden. During the preparation, I was in contact with staff from Lund’s University hospital and Malmö hospital to see if they were interested in cooperation. The communication with personnel from the hospital in Malmö was a bit delayed and also, due to their heavy schedule I realized that it would be hard to work with them as a student. The two hospitals were interesting cases but in the meantime, I was able to find another case which was both interesting and open for closer study.

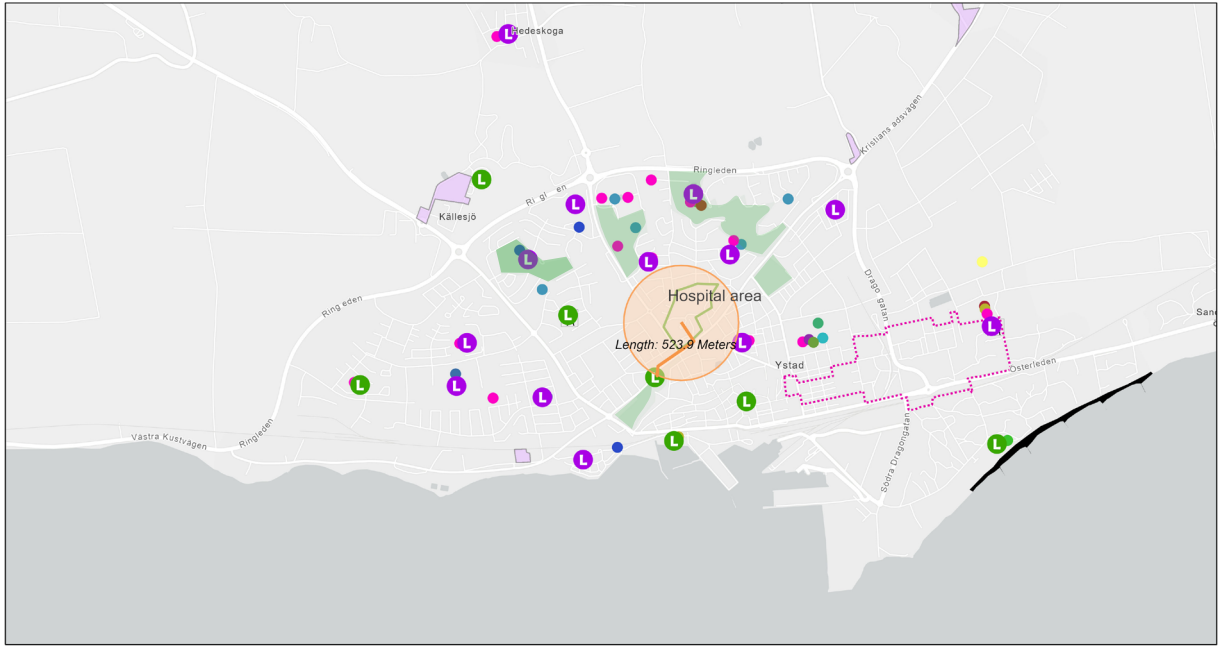
The chosen site is the Children’s Department at the hospital of Ystad. The hospital is centrally located in the city and south-east of Scania region. The hospital area is a campus

type of urban tissue, with relatively low-rise building shapes (as highest- four floors) (see fig. 7). The landscape around the buildings is consisting of low-cut grass, shrubs and solitary trees. There are also historical remains from therapeutic gardens from previous times (Larsson, 2019), which all visitors might not recognise (fig. 7). Except from the old trees, today the therapeutic gardens are gone to be replaced by low-maintenance grass lawns. There are no play spaces or outdoor spaces for patients and visitors to interact socially, except for the small garden arrangement beside the main entrance. It is visible from the map that there are no suitable (planned) areas for children and adolescents in radius of 400 meters from the hospital (fig. 8). The nearest playground is at over 500 meters distance from the main entrance of the Hospital building (fig 8).



Fig.7. Site morphology: campus of the Hospital of Ystad (in orange) with the main entrance (black arrow) and the available space for a new garden for children and adolescents (in blue).

City of Ystad - ArcGIS Web Map



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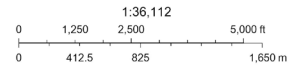


Fig. 8. Map of Ystad, showing playgrounds (L), including for different abilities (in green), opportunities for physical activities (dots), (including spontaneous), health promoting path (pink dashed line), and recreational parks (in green). Source: ArcGIS tool provided at the Municipality of Ystad's website.

Ystads kommun, Ystad kommun, Lantmäteriet. Sources: Esri, HERE, Garmin, FAO, NOAA, USGS, © OpenStreetMap contributors, and the GIS User Community

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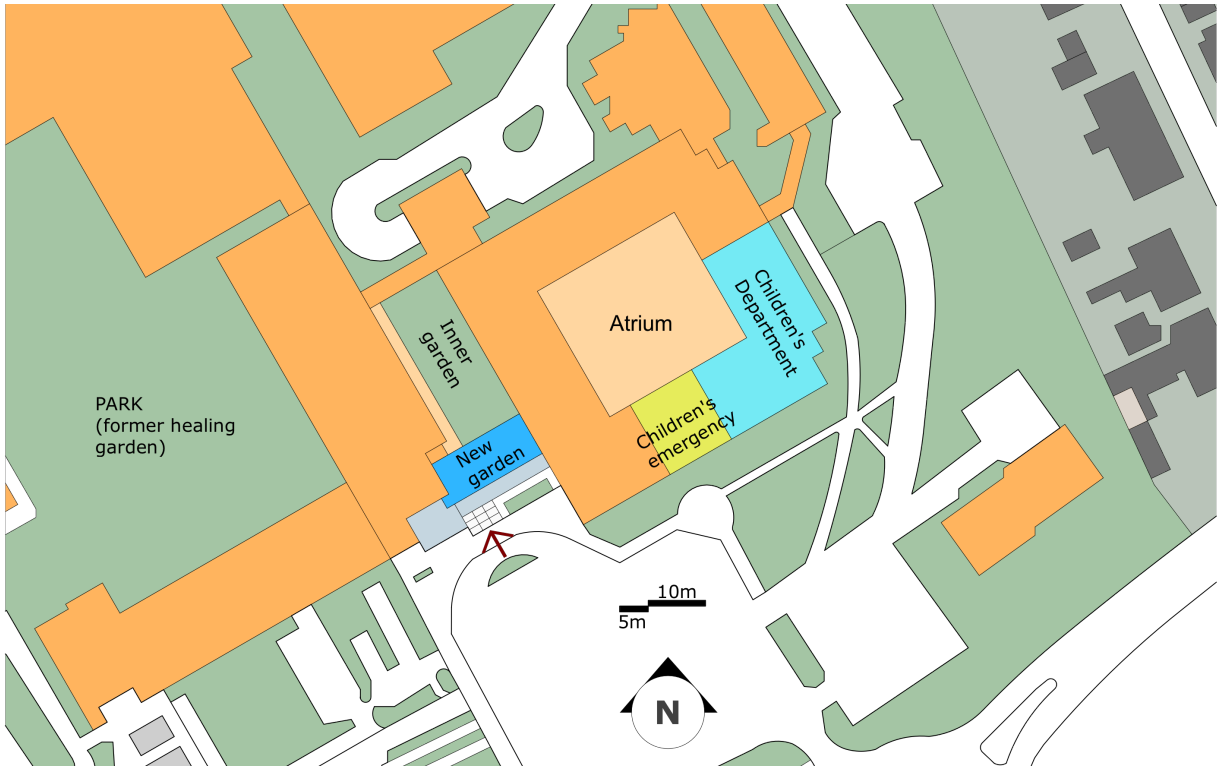


Fig. 9. Location of the Children's Department and Children's Emergency Department at the 4th floor, the available space for a new garden for children and adolescents (in blue) at the 4th floor, the existing inner garden for personnel at the ground level, the main entrance (red arrow), ground floor and the park (the former location of a healing garden).

The Children's Department and Children's Emergency Department (see fig. 9) have, currently, no access to direct outdoor environment and they are located on the fourth floor (image 1, p.39). The existing inner garden is accessible for patients, neither physically, nor visually. It is usually locked since it is only for personnel (image 2, p. 39). Recently an analysis of the current state of the hospital area has been made by the owner of the property, Region Skåne (Larsson, 2019). Soon the analysis will lead to physical planning and the chef of the Children's departments thinks that it is a right time for considering design proposal. After a short e-mail communication with Region Skåne, it became clear that there are no current plans to move the departments to the ground floor.

From the maps available at the Municipality of Ystad's website it is clear that there are no new plans for changing the master plan of the hospital area (Ystads Kommun, 2019). This means that there will be no new opportunities for outdoor environments for children and adolescents in this hospital, nor in the area around it. The only chance is if a raised above ground garden for children and adolescents is constructed.

The above-ground location of both departments has been an obstacle for developing an outdoor environment for the children patients (Larsson, 2019). Financial resources are also not enough and also the good will of the political decision makers is needed (ibid). The biggest hope is that with the legislation of the Children's Rights Convention there will be more possibilities for change (ibid).

Generally, Larsson (2019) thinks that an outdoor environment for children and adolescents is needed not only for the children staying at their department. There are children who are relatives of patients at their department (in their role of siblings) but also at the other departments in the rest of the hospital (in their role of sons and daughters or grandchildren). Smaller children are always accompanied by adults, most often - parents. Teenagers can be staying by themselves but they often have visits by friends in their age, siblings and parents. Younger children are never left to go outside without an escort.

The patients they take care for individuals of are of all ages up to 18 years and they treat all kinds of illnesses. Occupation is dependent on seasonal changes. For example, the December-April period is characterized with infectious diseases, mostly babies. They can suffer breathing and stomach problems. It is not a problem if they have direct contact with the outdoors, the problem is not to spread diseases further.

Other kinds of patients they have are children with diabetes and other chronic diseases and patients with fractures coming from the Orthopaedic department. Except for the patients from the Children's Department a possible outdoor environment would be beneficial for the patients from the Children's Emergency Department as a waiting room.



Image 1. Main entrance of the Hospital. The window of the elevator hall leading to the Children's Department and the Children's Emergency Department is visible at the fourth floor (a window with three sections).



Image 2. The existing inner garden on the ground level, visible from the main entrance. These doors are locked at the time of visit (7 May 2019, 5pm).

The Children's department and the Children's Emergency Department are located in the main building, reachable from the main entrance hall through an elevator (see fig. 9). Some of the rooms are facing South, overlooking the parking lot on the front side of the building and the sea port in the distant (image 3). Other rooms are facing East where there is located a residential area with trees and low houses (image 4). The inner garden is only visible from the main entrance on the ground floor (image 2). The shared space dedicated to the dining and tv-watching is overlooking the huge atrium of the main building which is forming an indoor square with waiting rooms for the Emergency Department and a hospital café (fig. 9).



Image 3 (left). A single patient's room overlooking the South side. Image 4 (right) overlooking East side.

Pre-conditions and context

In the design stage, I study site specific pre-conditions through architectural drawings of the site and the building, through conversations with the staff and through a site analysis.

Drawings of the buildings are important in order to understand the relation of infrastructure with facades and the possible location of the children's outdoor space. After studying the plans and conversation with the staff, it seems that there is only one suitable location for the garden which came straight forward. Over the entrance hall there is a void which could be used for a terrace or garden on a bridge structure (images 5 & 6). Most weight for choosing this location was put on where there is a need for outdoor environments for children and adolescents and what is actually doable. The entrance of the garden will be visible from the elevator hall which is the way the patients reach the Children's Department and the Children's Emergency Department. The garden is to extend to the facade of the facing building, hanging in the air one story above the roof under. An observation at level two showed that the suggested structure will not cause shadowing effect inside the building.

To avoid logistic conflicts and negative consequences for the architecture of the building , at one of the site visits is performed site analysis including filming of the route from the main entrance to the department. Issues like safety and regulations in relation to hospital environments would be essential as they are impossible to bypass. Another aspect which plays a role here is the infrastructure of the building which is determined by studying (1) how are people and goods moving through the building, (2) how they enter the department and (3) how the patients access the outdoors from the inside, (4) what activity and where is performed, etc.



Image 5. View to the roof over the main entrance from the elevator hall at the fourth floor (left).



Image 6. The view from the elevator hall at the fourth floor(right).

Concept design in context

The directions set from the design guidelines will be translated into a design in a specific context. The design stage will benefit from a gathering of background and technical material (design pre-conditions) and the design guidelines. One site visit was made specifically to make site analysis and to take measurements because the original drawings were not provided. For the drawings I also used information provided by the Municipality of Ystad at their web application for maps which were not very detailed.

For this study, a concept is found in the guideline, where I use the five types of spaces to compose an emotional map (arranging of the space types) and to define an infrastructure and rooms I used Laidlaw's model. The five design principles are used to define settings and atmosphere. It seems that the main two elements I should be working with are air, because of the wind exposure and height, and water, because the water should be managed to avoid flooding similarly as for rooftops.

5.6. Critical assessment of the design against playground design assessment

After the design proposal is ready, it is necessary to evaluate it by asking questions about how the quality and the usability of the design was influenced by the methodology. How would it change the experiences of the child and adolescent patients? Is the final design proposal meeting the goals of the study? Is the final design proposal meeting the needs of the users?

The iterative process has helped in the design process and a final assessment following the list of questions set has been used to make final adjustments. However, is the final result reflecting the child and adolescent patients' needs in its full potential?

An evaluation with slightly different focus is performed with the help of a tool for assessing playgrounds, described by Jansson and Andersson (2018). The motivation for this choice is that it is a comprehensive tool which combines many of the studied here aspects like inclusiveness, accessibility, biodiversity, sensory experiences, health and learning (ibid). It is also a tool which is suitable for use under planning and design stages (ibid). At the same time this is an opportunity to challenge my own methodology.

Considering this, the question which will be discussed (chapter 14) is, then, **if the input of emotional knowledge has resulted in successful strategies for tackling emotional regulation through design? In what way has emotional input contributed to the users' experiences?**

5.7. Ethical issues

The participatory approach and the study visits relate more or less to individuals under 18 years old. Therefore, and also due to other ethical and policy considerations such as confidentiality regarding illness and other hospital regulations, identities of user's found on healthcare settings during site visits and participation will not be revealed. This applies, for example, during photographing and video recording of hospital gardens and departments. The confidentiality may not apply for informants over 18 years old since their profession and place of work is important for the thesis, and also they have given their verbal consent.

Working with individuals under 18 years old also makes me responsible for their physical and psychological safety. For the part with children and adolescents' participation at hospital of Ystad, an informative sheet was prepared (appendix iv-B). It is presented to the hospital staff and parents of the patients. Before participation, I have taken the initiative to inform me about any health conditions of the patient which may be a risk factor. During the participation, the 12 years old girl was together with her mother, the 17 year old boy was alone (with the consent of his mother); and the 17 and a half years old girl was first alone (with mother's consent) and after a while her mother joined.

6. CHILDREN'S AND ADOLESCENTS' EMOTIONS AND HEALTHCARE SETTINGS

In this chapter, I will familiarize with the nature of emotional experiences, feelings, and the emotional aspects of childhood and adolescence in order to process the objective 1. Further, emotions are studied in relation to illness and visiting healthcare institutions or staying at hospitals. The data is result of a literature review which focused on information from the interviews about which emotions are relevant to the user group.

6.1. How emotions work

Those emotions and feelings, described by the literature I focused on are obviously not the full range of emotions. The Geneva Emotion Wheel (Scherer, 2005) or Plutchik's theory on emotions (1980, 2001) are examples of studies in an attempt to present the whole range of emotions. Here, however, I focus on just a few of them which are most relevant.

Different emotions are increased by intrinsic arousal which is most evident with feelings like fear and anger (Laird, 2007). Tackling environmental cues changes arousal rates and thus emotions can be changed (Laird, 2007). Furthermore performing emotional behaviours is sufficient to produce emotional feelings (Ibid). According to Laird (2007, p.95), "... there are a multitude of kinds of cues that combine to constitute the emotional experience. The cues include those arising from facial expressions, postures, gaze, actions, autonomic arousal, and situational definitions of what is appropriate. All these may contribute, but none are absolutely necessary."

Emotional feelings are related to higher rates of arousal but since these processes take some time, the consciousness also plays a role in what the emotional experience would be (Laird, 2007). Thus, numerous studies (Nisbett & Schachter, 1966; Schachter & Singer 1962) show that arousal can be misattributed to change the emotional experience with the help of the context. This could happen in two ways.

On the one hand, an emotional arousal is attributed to nonemotional reason and as a result, the participants report a less intense emotion. This is possible by explaining the bodily changes with e.g. a physical activity like jogging or riding a bicycle. Emotions, which have been successfully diminished in that manner are such as: anxiety, anger, cognitive dissonance,

and discomfort of social comparison (Tesser et al., 1989), and also speech anxiety (Olson, 1988; Olson & Ross, 1988). Studies with an opposite approach (i.a. Zillmann, 1983; Dutton & Aron, 1974) achieved the opposite effect: an emotional arousal is misattributed to another kind of emotion and thus, the participants report stronger emotional experience.

Considering this, it is possible that emotions can be altered in a desired direction by changing the interpretation through changing the physical environment. As (Laird, 2007, p.125) suggests, "the feelings represent a kind of "interpretation" of both the behavior and the context in which it occurs...the content of the feeling...is the relationship between action and context". In order to attempt change in interpretation of behaviour landscape architecture can use feeling illusions.

Experiencing feeling illusions induces similar effects as perceptual illusions (ibid). Perceptual illusions in their turn are known from the Gestalt Theory (e.g. connected lines perceived as a 3D cube), which is a familiar theory among art and design field professionals (Behrens, 1998). "Such feeling illusions have the same logical force as well: If we can create an illusory experience by manipulating a cue, then that cue is probably important in the creation of normal, real-life experiences" (Laird, 2007, p.19). Laird (2007) also argues that there are many cues that work in combination that contribute for the final "real-life" experience (ibid).

As shown during experiments, conscious manipulation of facial expressions leads to changes in emotional feelings and also unconscious (autonomic) emotional responses (ibid). Reported by several researchers, dependent on the factor pleasantness/unpleasantness both facial expressions and emotions can vary from positive to negative and from good to bad, as in the middle is neutral (Russell & Bullock, 1985; Shaver, Wu & Schwartz, 1992). However, although the results are consistent with variation in emotions as arraying by valence and arousal (Feldman-Barrett & Russell, 1998), it seems that a particular negative feeling cannot diminish a counter positive one having a counter score on the scale by pleasantness/unpleasantness (Laird, 2007). This means that a replacement of a negative with positive feeling could not be presumed but, rather, it should be studied. It is just because the experiences of behaviours fit the experiences of emotions very accurately, and thus, there should be more factors considered (Laird, 2007). However, for the purpose of this thesis, and particularly in data organization part, the feelings will be referred to as positive, negative and neutral, considering the factor of pleasantness/unpleasantness.

Following the above, landscape design can include elements which change behaviours towards positive emotional state. For example, Laird (2007) informs that holding a spoon with teeth induces smiling expression, which led the participants in that study to feel happy emotions. In the same way, funny mirrors could have the same effects.

6.2. Emotional intensity

According to the literature on self-regulation (see p. 20), smaller children experience mainly stronger feelings and with their development in years and experience they start to gradually add cognitive processes as well. Emotional design, and in particular landscape architecture can work with self-regulation by offering physical elements on the all three levels (visceral, behavioural and reflective) so that both children and adolescents are included. In this section I combine theory on emotions with emotional design while focusing on those emotions which were reported as important in the two telephone interviews.

There is one indicator which can be studied for all kinds of feelings and it shows the main difference between emotional and nonemotional feelings. This indicator is the *intensity of autonomous arousal* characterised with increased heart rate, blood pressure, respiration rate, adrenalin secretion, etc. and also changes in behaviour in terms of increased motor activity (Bell et al., 2001). Arousal is also related to heightened brain activity (ibid). According to this indicator, the feelings are categorized roughly as high intensity feelings (emotions) and less intensive feelings (Laird, 2007). There are also other kinds of feelings like cognitive feelings (based on knowledge), and motivation and homesickness which are based on self-monitoring and reflection (ibid). What all these feelings have in common is that they follow autonomous reactions.

:: **High intensity negative feelings** are also referred to as emotional feelings and are related to changes in the visceral reactions (Laird, 2007). Autonomic arousal has the strongest effect on the more intensive emotions like fear, anger, rage, or disgust. Nonetheless, higher arousal caused by stressors like noise and crowding has increased effect on aggression (Bell et al. 2001; Zillman, 1983). According to Norman (2004), high intensity feelings are addressed by design on touch, feel and appearance. On the other hand, negative emotions like rage make people to seek to assign blame somewhere externally and sometimes design can offer a relief through inanimate anthropomorphism (Norman, 2004). Following this idea, objects like punchbags could prove to be one good design solution. Feelings like fear and rage were reported in the telephone interview as one of the most frequent emotions related to the user group. In that relation, Tosheva (2019) advocated for channels to lead out the negative emotions and channels to receive positive ones.

:: **Less intensive emotional feelings** like *confidence, pride, and self-esteem* are affected by standing or sitting positions, by boasting, and by appearance (Laird, 2007). It is also noticeable that, according to Laird (2007), less intensive emotions like drop in confidence, or shame. Laird (2007) also points out that self-esteem drops when people compare themselves unfavourably or in relation to unpleasant experiences as illness is.

Confidence, pride and self-esteem involve retrospective and prospective reflections about performance (ibid). Thus, these feelings involve both behaviour and reflection with which emotional design can work with. Self-judgements and reflections over one's situation could be avoided through flow and absorption activities. Further, privacy settings can also prevent unfavourable comparison but maybe in smaller degree. Pride and shame, on the other hand are directly linked to self-identity like the objects that surround an individual (Norman, 2004).

:: **Motivation, overjustification and motives to act** is a feeling which helps overcoming depression and withdrawal. Amabile (1979, 1983) and Amabile, Hennessey & Grossman (1986) present evidence that creativity and interest in performance decline when it is motivated by a reward (an external motivation) and this is true both for children and adults. However, if the reward is a form of information about one's performance, it can actually increase the motivation (Laird, 2007). Hennessey, Amabile & Martinage (1989) even advocate that children can be trained to prevent impact of reward on intrinsic motivation. In that sense, "...anything that tells someone they have done a good job increases their attraction to the activity" (Laird, 2007, p. 128). Therefore, emotional design should focus on the reflections it can evoke but also allow motivational activities.

:: **Cognitive feelings of familiarity and boredom** are about knowing, they are also feelings, rather than judgements (Laird, 2007). It is because they come immediately, while the person is unconscious of any supporting evidence (ibid). They too fit the Self-perception theory but they are different from the other discussed feelings in that sense, that they are about cognitive operations, knowledge and memories. Thus, emotional design for addressing these feelings is focusing on reflections. Familiarity and boredom are also feelings that are reported in relation to children and adolescents as patients (Pelander et al. 2007).

Laird (2007, p.139) defines *familiarity* as the feeling that tells "if we have encountered some objects previously, or if instead they are new in our experience"; or the feeling of knowing that a certain information or event has been experienced personally or it has been heard from somebody else, imagined, or dreamed. Furthermore, feelings of familiarity also mean a certain "ease of processing of a cue or question" (Laird, 2007, p.147). Another feature of familiarity is that it, too, is conditioned by the context. Some hospital practices suggest use of familiarity (home-like) elements and atmosphere to induce positive emotional experiences (Tosheva, 2019).

Laird (2007) explains that *boredom* arises in relation to self-monitoring of mental activities. One side effect of boredom is the feeling of time passing by too slow (London & Monello, 1974), while another side effect is the inability to remain focused (Damrad-Frye & Laird, 1989). Laird (2007) concludes that boredom is as the other cognitive feelings and as such, it is also an interpretation of activities. Because smallest children are not developed enough to perform self-monitoring, lack of activities may lead to strong negative emotions. Reflective design can show difficult to apply for small children but affect can still be influenced on a behavioural level.

:: **Homesickness** is caused by the loss of a familiar environment (Dieterich-Hartwell & Koch (2017). In some cases it can lead to disturbances like depression, loss of control, obsessive thoughts about home, and apathy (Baier 1992; Koch, 1999); physical experiences like gastric and intestinal problems, sleep disturbances, appetite loss, headache, fever, and aches and pains (Koch, 1999; van Tilburg, 1996). Nostalgia is a feeling which do not allow the person to live in the present moment, especially when something is lost abruptly (muf, 2000). Therefore nostalgia over home environments can be addressed by design by using familiar elements and sensations (ibid). In relation to feelings of nostalgia and homesickness, Dieterich-Hartwell & Koch (2017, p.1) support the view that "the creative arts therapies with their attention to preverbal language—music, imagery, dance, role play, and movement—are able to reach individuals through the senses and promote successive

integration, which can lead to transformation and therapeutic change.”

Bartos (2013) supports the view that children tend to experience places more sensually while adults - more intellectually. As Tuan (1977) argues, children are more likely to connect to the environment through the present moment. Adults experiences, on the other hand, are rather based on childhood memories from the past and more precisely, from childhood (Bartos, 2013). That is why, it is more likely that children can adapt to new environments more quickly while adolescents may tend to experience nostalgia which prevents or makes difficult for them to adapt to new environments (e.g. hospitals during hospitalization).

6.3. Emotions related to hospitalization

*“When life puts you in an impossible position,... you must let yourself to be emotional”
(Tosheva, 2019)*

Emotions of children and adolescents related to illness show not surprisingly to be mainly negative but there are some exceptions. Children and adolescents experience sadness, insecurity and fear while a great stressor for hospitalized children seems to be the lack of entertainment (Pelander et al., 2007). Empathy towards parents, hope and need for familiarity are some less negative feelings experienced (ibid). Besides the emotions identified in the previous section, more emotions and nuances were found while studying closer the effects of hospitalization and illness. These were informed by reviewing literature dedicated to child and adolescent patients’ emotions and also by the two telephone interviews.

High-intensity feelings reported from an adult’s perspective by Tosheva (2019) are fear, phobias, tension, rage, need for screaming while **less intensive** are such as insecurity, need for normalization of the everyday life, need for physical activity, need to feel joy and safety. Barta (2019) also confirmed that fear is a strong emotion that children are going through. Children’s fear is an emotion which also tends to recur later in life during adolescence (ibid).

Besides children, another two user groups were discussed with Tosheva (2019): siblings and parents. Siblings are exposed to huge risk for depression. They do not dare to bother the parents and they withdraw. The parents, on the other hand, experience loss of control, anxiety, fear, uncertainty, powerlessness, and also depression (ibid). Because family members are highly empathic towards each other, these feelings are sensed by the ill child or adolescent as well (ibid).

In relation to child patients, **familiarity** is referred to as a notion of home-like environments in Pelander et al.(2007) which is more of a positive experience. However, Pelander et al.(2007) also discuss that children recognize elements of the hospital environments as they include them in their drawings. Recognition of hospital environments is not directly assessed as positive or negative in their study but in other studies (e.g. Dolidze et al., 2013) it seems that familiarization with the typical hospital attributes could lead to unpleasant emotions. Familiarity is also pointed out by Tosheva (2019) as important and how hospitals work with this feeling is described in section 7.2 (p.52).

Boredom, on the other hand, can also lead to more intensive emotional experiences for children and adolescents in hospitals. In their study, Pelander et al. (2007) confirm that the lack of entertainment is a huge stressor for the children. In line with Laird's understanding of the relation between emotion and behaviour, it is obvious that by putting children and adolescents into hospitals is equal to forcing self-monitoring mental activities and thus, there is the feeling of boredom. Having in mind that this feeling is an interpretation of activities, it is very possible that boredom, along with its side effects, in the context of hospital environment can lead to negative, high intensity emotions like fear, anxiety or anger; and inability to focus towards the healing process. Considering this, hospital environments should offer wider variation of activities including outdoors. Furthermore, Wilson, Megel, Enenbach and Carlson (2010) relate boredom with feeling not at home, feeling alone and sad and feeling the need for companionship.

Self-esteem was another feeling that was examined with the help of literature. It became evident that children and adolescents in hospitals have a great deal of self-esteem issues. Self-esteem seems to fall in relation to bad or unpleasant experiences, or if one is comparing one's self unfavourably (Laird, 2007). Many people experience feelings of guilt or failure in such situations, especially for people who are more responsive to personal cues (ibid). Dolidze et al. (2013) show, however, that all of the child and adolescent patients in their study experience some negative effects of dropped self-esteem in relation to hospitalization and especially before surgery.

Laird (2007) explains that confidence is experienced in relation to anticipation of future outcomes, while pride is retrospective: it is experienced towards accomplishments (ibid). Furthermore, people tend to express their own expectations for performance of tasks when they are confident (ibid). On the other hand, they tend to keep to themselves their estimation of performance if they do not feel confident enough (ibid). About pride, Stepper and Strack (1993) found out that it is closely related to posture and body position: participants who worked on low surface report less pride of their accomplishments and on the contrary, participants who work on normal height report more pride of their accomplishments.

What all this means for child and adolescent patients is that they may become less willing to communicate when their confidence falls. On the other hand, as hospitalized, patients are often forced/required to lay down, or sit in a wheelchair which can lead to drop in pride of accomplishments. Design of outdoor spaces can address these factors. Pride, for example could be stimulated by allowing practices like arts where the art is shared and appreciated. Confidence can be encouraged by activities which are estimated as achievable by the child and adolescent patients. That is why, structures for advanced physical activities would, obviously, would have a negative effect on confidence.

Dolidze et al. (2013) mean that emotional and behavioural state may have direct influence on patients' ability to process information about their situation and also their ability to maintain emotional balance. The study also supports a relation between self-esteem and some other high intensive emotions. Since self-portraits "provide insights regarding self-concept, anxieties, attitudes, and conflicts" the authors use projection techniques to study emotions (Dolidze et al., 2013, p.471). Furthermore, they also agree that children's self-portrait can predict the outcome of the illness due to children's "*inner [knowingness]* of the state of their body and feelings" (Ibid., original italics).

Dolidze et al. (2013) inform that children facing surgery show drop in self-esteem and increase of other high-intensity, negative emotions. In some cases the postsurgical distress can be harmful (ibid). Based on use of colour, size and omissions in child and adolescent patients' self-portraits, the research of Dolidze et al. (2013) have shed light to emotional **nuances in the self-esteem, stress and lack-of-motivation spectra**. According to Withrow (2004), moods and emotions can be communicated through the use of colour as an alternative to verbal expression. Omissions of body parts, on the other hand tend to indicate anxiety about that body part which is not depicted (Furth, 2002). These meanings of colour, size and omissions were added to this thesis in terms of design but they also gave some directions for interpreting the participants' contributions.

Following Dolidze et al. (2013), it seems that the use of colours in architectural design (both buildings and outdoors) for healthcare departments for child and adolescent patients could be significant in that sense that colour is reflecting the perception of their own bodies. For example, before surgery the majority of children and adolescents with heart disease use just one colour and those who use more colours choose just a maximum of four, while after surgery the number of increases slightly and the cases with blue colour used increases significantly (ibid). Prior surgical operation, those patients experience ambivalence towards their body if red colour is used for the whole body (ibid). According to Malchiodi (1998), the use of blue colour is a sign of good emotional state and peacefulness and thus, it can be intentionally used in design.

Regarding size, hospitalized children and adolescents show to draw significantly different: smaller bodies, disproportionately small extremities, torsos and heads (Dolidze et al., 2013). The factor size reveals many nuances of self-esteem issues. Viewing one's own features as smaller may be sign for *feelings of insecurity* (Buck, 1948; Burns & Kaufman, 1972) and *depressive and regressive predisposition* (Machover, 1949). Smaller head, on the other hand has shown to indicate *feelings of inadequacy* (DiLeo, 1973; Machover, 1949), *inferiority and weakness* (Burns & Kaufman, 1972; Machover, 1949).

Omissions inform about issues with stress, intrinsic motivation and inability to act. A huge percent of the child and adolescent patients do not draw hands on their self-portraits (Dolidze et al., 2013). Authors relate this omission with *anxiety and feelings of guilt, inability to take action or to defend yourself (feelings of helplessness)* (ibid). Missing hair in the drawings also show more typical for ill children compared to healthy (ibid). Furthermore, self-portrait missed hair more often after surgery than before (ibid). In the study, the authors suggest that this omission shows *lack of vigour and energy* due to deprivation of physical activities (ibid). Missing trunks was also featured in the drawings and the authors suggest that it is related to children's coping strategies to avoid thinking of their own bodies: *denial and repressing the stress* of the surgical operation (ibid). Another aspect of child and adolescent patients' perceptions is the lack, or transparency of clothes which the authors relate to the *perceived lack of privacy and psychological uncertainty* (ibid). In other presurgical drawings, there is an omission of the mouth which could symbolize an *unwillingness to communicate with others, anxiety and insecurity* (Buck, 1948; Koppitz, 1968).

These experiences can be a huge hinder for using an outdoor space, or to perform other kinds of activities to lift the patients' emotional state. Therefore, I consider motivation as one important factor to work with since it affects both behaviour and reflection.

7. PRACTICES FOR PSYCHO-SOCIAL SUPPORT

This chapter will discuss the idea that the design and planning should complement the efforts of the hospitals regarding supporting activities while working with ill children and adolescents. Here, I present the results from literature review (section 7.1), and the interviews on location and the reference places (sections 7.2 & 7.3)

Certain progress in working with children's and adolescents' emotions have been achieved through different practices for psycho-social support such as play therapy, visiting theatres, live music performances and other activities. Often, it is not meant to facilitate those important activities outdoors but they occur inside the building. As much as those activities may have a positive effect on patients, their healing potential could be expanded by moving them outdoors. Studies through children's drawings show that children include not only the building but also the surrounding area when asked to draw their ideal hospital (Pelander et al., 2007).

7.1. Play and place exploration

According to researchers such as Korpela (2002) and Silbereisen et al. (1986) identity formation among adolescents is directly linked to the possibility to choose and shape outer context and settings in order to regulate emotional states. Appropriate self- and emotional regulation forms protective mechanisms against mental health issues (Cole, Michel & O'Donnell Teti, 1994; Eisenber, Smith, Sadovsky, & Spinrad, 2004; Gross & Munoz, 1995; Kring & Werner, 2004) and is achieved through processes of control, creativity, mastery, privacy, security, personal displays, and serenity (Korpela et al., 2002; Low & Altman, 1992). While research has demonstrated that adolescents develop social strategies through their social networks to regulate emotions (Berkman & Glass, 2000), the role of place in producing environmental strategies to regulate emotions and promote identity development is not less important (Korpela, Kyttä & Hartig, 2002).

Children, on the other hand, experience pleasure and desire to be physically active in order to sustain their self-esteem (Nebelong, 2017). Furthermore, children use to carry play with them so it should not be assumed that the play mood diminishes or even disappears once a child enters a hospital. According to Cummins (2017, p.21), play is a practice,

rather than a setting since it can occur “anywhere” and “anytime”. It is a spontaneous activity, an interaction between the mind and the physical world which is not explicitly experienced by children but also grownups (Ibid.). In that sense, an outdoor environment including play and garden elements may contribute towards emotional regulation. Both children and adolescents have environmental experiences different from adults’ (Cummins, 2017; Cele, 2005; muf, 2004) and these experiences changes with the course of time and experience (Flavell et al., 2002).

For example, Piaget’s theory for children’s development (Piaget & Inhelder, 1956) is based on the belief that the understanding of the environment is evolving with the development of the brain by going through four different stages related to age. As opposed to Piaget’s suggestion, Flavell et al. (2002) argue that this model is too simplified and one should consider rough stages and trends rather than age.

Grahn (2003) amplifies further that discussion by suggesting that the child’s development is influenced not only by inherited biological pattern, social environmental context and relations but also sensual perceptions, places and objects. It may also be so that certain groups of children are more sensitive to their environment than others. For instance, neighbourhood green space quantity has particularly positive effects for the emotional well-being of one specific group: preschoolers from poor families (Flouri, Midouhas & Joshi, 2014).

Studies also show that emotions and mood may be a key for understanding the motifs for engaging with the physical environment as adolescents tend to appreciate it not only practically but also irrationally (muf, 2004). For example, their interest in a physical environment can be provoked by a sudden desire and also, they tend to make meaningful use of spaces which adults usually do not consider valuable (ibid). According to the studies, seeing the value in overlooked spaces and elements of the physical environment through adolescents’ perspective may bring value for the rest of the users (ibid).

7.2. Psycho-social support and physical environment

Online study

Aghia Sofia Children's Hospital in Athens, Greece is a children's hospital specialized to treat cancer conditions and is built and maintained through donations (Elpida Association, 2019a). The hospital management has taken into serious consideration the importance of psycho-social support but the focus seems to be on indoor environment which can be explained by the nature of the diseases they treat (ibid). The official website informs about four main ways to provide psycho-social support to the patients which seem to be focused on the whole family rather than just on the child/adolescent patient.

Multi-space Library is a dedicated mixed-use space for reading, relaxation and enjoyment. Based on the ground floor, the library also provide activities and events for the patients families like educational programs, seminars, and arts and crafts activities. Some of the activities are made possible with the help of volunteers. (ibid).

Two afternoons of the week the library transforms into a **cinema** for showing movies to children and adults. The cinema hours are attributed with popcorn and refreshments, just like at the real movie theatre. The purpose of the cinema is to allow the visitors to "travel to magic worlds, escaping from the day-to-day reality of hospitalization." Periodically, at the hospital are organized various events for children and their families to offer optimism and joy. (ibid).

Along with these three practices, the hospital offers a **social support** - accommodation for the patients' families and it is designed very purposely with home-like atmosphere. The aim with this practice is to reduce the stress and anxiety in the parents. (Elpida Association, 2019b).

The Children's Hospital in Manchester, UK has also a huge focus to psycho-social support practices and especially play therapies. These therapies include developmental play, therapeutic play and specialised play. The play therapists help patients with familiarization and comforting, providing with craft and distractions while they wait for procedures. Patients' experience organized events: music for health, clown, Captain Zoo (Manchester University NHS Foundation Trust, 2019a). Play specialists are also involved in projects and events like music sessions, POD entertainment shows and invite entertainers such as Clown Doctors (Manchester University NHS Foundation Trust, 2019b).

For adolescents, they have special indoor rooms like Teen Zone, with computer stations, a pool table and casual seating areas. They have also playrooms, sensory rooms, youth clubs and craft clubs. There, children and adolescents can play on the Nintendo Wii or on the computers, watch TV, listen to music, play games or draw. There is also a roof garden on the third floor and a dedicated area for young people in the hospital garden on the Boulevard. (ibid).

Interviews on location and observations

Play therapy is offered also in *the Central Hospital of Kristianstad, Sweden* - both indoors and outdoors (image 7 & 8). An open and free play is provided just like at the kindergarten and they also have theme crafts for the different seasons - for Christmas, or Easter or activities adjusted to the seasons (Persson, Syllfors and Andersson, 2019). They have school classes for the children who are pupils, as well (ibid). The activities can occur in different rooms dependent on the user's wish (see diagram 1 & image 7). This environment provides a gradual transition from indoors to outdoors as follows: rooms in the inside of the building with views to the outdoor play setting; a fully weather protected patio (glass sliding doors and impenetrable roof); seating settings along the patio and the building facade protected from sun and rain by retractable awnings; and fully open space on a rooftop. The open space has too many sub-settings and elements on relatively small area.

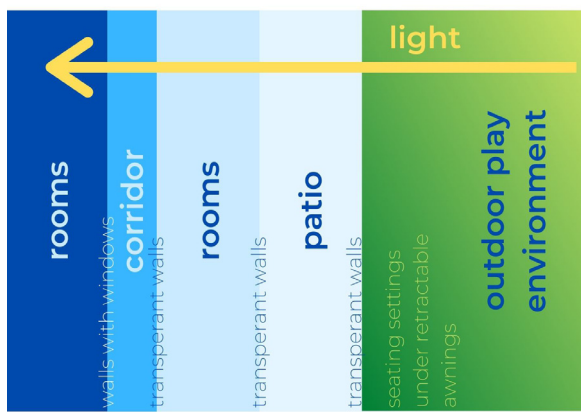


Diagram 1. Transition between indoors and outdoors.



Image 7. Play therapy at the Central Hospital of Kristianstad (indoors).



Image 8. Play therapy at the Central Hospital of Kristianstad (outdoors).



Image 9. Play therapy at the University Hospital of Lund (indoors from small children's view).



Image 9. Play therapy at the University Hospital of Lund (outdoors from small children's view).

At the University hospital of Lund, Sweden they, too, provide activities both indoors and outdoors as the outdoor environment is on the ground floor (images 9 & 10). Barta (2019) emphasized that children patients should not be alone in their situation but meet others with the same disease in order to get support. Children experience consequences later in life and that is why later, as adolescents they meet smaller children to inspire courage but also to talk about their current experiences and, thus, reflect on their own situation (ibid). For adolescents, they have evening therapies (ibid). This adds a time dimension in design terms. They also have activities as snacking and socializing and cultural activities outdoors

During observations, I found that the outdoor area provides multiple kinds of seating settings like benches with tables, stone walls covered with wood, pergolas and gazebo which could facilitate various gatherings for psycho-social support. The space is spacious and allow in-between spaces for flux and transformation between the play sequences and seating settings. Such in-between spaces are also created with the help of shrubs pathways and low walls. There are suitable sand pits for children with different physical abilities (incl. raised sandpit) and water play with enough space around them to allow playing with toys or riding bicycles. The playhouse (the house of a captain Hook) is slightly raised above ground and accessible through a long and swinging ramp. There are settings for different ball games like basketball with baskets on different height and also a ping-pong board suitable for older children and adolescents. Picking fruits and berries for sensory experiences is also available during the warm season.

At Karolinska University Hospital in Stockholm, Sweden they also have a play therapy. Other than that, a counselling for helping processing emotions is provided as reported by Tosheva (2019). This informant gave comprehensive information about the direct connection between the emotions and the physical environment to complement psycho-social support.

At this hospital **familiarity** is addressed by the physical environment in several ways. A special room called room for conversation (in Swedish - samtalsrum) is used indoors while conversations can be carried out outdoors as well. For example, in a gazebo with an atmosphere enriched by calm music and lighting. Children are encouraged to express themselves by providing them with paper and pens. The environment should not be “clinical” but “home-like” instead. Soft materials like blankets and carpets, or soft toys for the children. It is a good idea to have a table where you can put a glass of water. The atmosphere should have a safe and cosy feel. The room should be light but not transparent in terms of privacy. “You do not want to expose yourself when you are crying” says Tosheva (2019). Even sound should be thought of in order to avoid somebody overhearing the conversation. (Tosheva, 2019).

Because of loss of hope and control some people get into **furious state** and they start to throw objects around. For that reason, sharp objects and breakable materials are not recommended. **Fear and phobias** are related to white uniforms and injections and the hospital rooms while hospital rooms make the young patients feel **insecure and unsafe** because they do not know when the doctor will come and perform painful procedures on their bodies. They are caught in a frightful and unpleasant situation so they feel **anger** which in a normal daily round is released by intensive physical activities or even screaming usually outdoors. (Tosheva, 2019). Spending long hours in boring corridors, children need space to run and play. Tosheva (2019) further sees crying and screaming as a positive thing because this the way to utilize extensive energy and the outdoors provides that.

7.3. The current situation in the Hospital of Ystad, Sweden

Larsson (2019) shares that the department does not have any direct contact with the outdoors to perform activities at but she is a strong supporter of psycho-social practices. “Only the fact that a person is in hospital itself makes a psycho-social support a must”, says she. The focus so far has been the facility and the professionalism of the staff but she thinks it is important to have outdoor environment because it helps children to live through their emotions. Thinking about the parents, it is very hard for them not being able to go out for a minute and take time to reflect. They don’t dare to leave alone their children and become trapped in the hospital facility. (Larsson, 2019)

The capacity for hospitalization of children here is a small number of beds in comparison to bigger children’s hospitals so currently there are no play therapy activities. However, Larsson (2019) is a strong supporter of psycho-social practices. The department has a shared dining room, a reading corner with access to natural light and a playroom for the smallest children, which is, though, too dark (no direct sunlight), too small and too separated. The available space is utilized to the optimum but the lack of free space is obvious and a room for recreational activities with access to the outdoors is needed to compensate. (Larsson, 2019).

8. KNOWLEDGE FOR DESIGN

In this chapter I will present the results from literature review (sections 8.1. & 8.2) where 8.1. discusses different concepts to further define the term compatible spaces; child and adolescent patients' perspectives (section 8.3); interviews on location (sections 8.4 & 8.5); and best practice examples through online study (8.5). Here the information is gathered and synthesized further to be useful in design of physical environments.

8.1. Compatible spaces in terms of the focus group

As a part of the second objective of this study, the understanding of compatible spaces is further developed here in relation to children and adolescents in healthcare settings. While long-term residents may become attached to a place through social-cultural interactions, a person can also become attached in a short period of time when using the physical landscape as a personal frame of reference, such as when visiting as a tourist (McCool & Martin, 1994). In such cases it could be argued that a certain kind of matching between the place and the person is occurring. This is an essential aspect to consider in the case of hospitalization of children and adolescents, since feelings of nostalgia towards places of attachment could influence healing processes negatively. In that case, a place within the hospital environment can offer settings, which resemble places of attachment.

Following the above, compatibility could be both restorative and can induce memories and feelings related to places of attachment. Hartig et al. (1997, p.182) measure compatibility with the help of five statements, some of which can also be explained by place identity and place dependence:

(1) I can do things I like here. (2) I have a sense that I belong here. (3) I have a sense of oneness with this setting. (4) Being here suits my personality. (5) I could find ways to enjoy myself in a place like this.

Hartig et al. (1997) do not say what these statements mean by definition so based on them I included concepts of other authors, which describe further compatible spaces with regard to the user group within the frame of these five statements.

Freedom and joy

Statement (1), is suggesting a high degree of freedom and independence within a given space. Green (2018) defines these qualities as a form of *spatial autonomy*. Green (2018, p.67) defines spatial autonomy as “a self-directed space”, or space where an individual seeks freedom and independence”. Green (2018) argues that spatial autonomy is a form of expression of children’s independence. Children tend to claim micro places (often hidden ones) in their home environment (e.g. behind a couch, under a table or bed) in order to just be by their own rules (ibid). In contrast, at forest environments the spaces claimed are bigger and the hiding is not that important anymore (ibid). Instead, imaginative creation of places is in run, often at elevated spots where it is possible to observe other children and adults from a distance (ibid). Hiding and seeking high places in the landscape are also forms of negotiation with the adults rules or with other children (e.g. siblings) and this negotiation depends on sociocultural and geographical factors (ibid). Green (2018) argues that achieving independence in that sense could be realized individually or collectively and is contributing to the child’s sense of self and self-confidence.

Except for this study, the concept of spatial autonomy has not been fully determined by literature so far (Green, 2018). About adolescents there are less resources but at least it is argued that this population values high the possibility for social interaction and the spatial autonomy (Ward Thompson & Travlou 2007, p.74). They simply prefer places where they can be out with friends and away from parents’ monitoring (Ibid).

From architectural point of view, spatial autonomy could also refer to freely body movement within space through mastered physical skills and also the freedom to choose elements from the physical environment to practice those skills on. For example Nilsson (2010) explores such elements in the physical environment which could be used for training of body skills by the youth (youth as defined by life situation and not by age). Feldman (1996) describes such skills as *bodily orientation*: unconscious orientation of the body and bodily routines in a familiar spatio-temporal order. This aspect of spatial autonomy also can relate to the statement (5) of Hartig et al. (1997) about enjoying. Bradley (2008) envisions spaces for enjoying play as irregular undulating spaces that follow the movement patterns.

Considering the above, the first statement used by Hartig et al. (1997) can also be paraphrased to “I do what I love here” in order to emphasise on freedom and joy. The term compatible spaces is to describe here as the capability of the physical environment to match, appeal and respond to the users’ emotions, needs and affiliations and the providing of effortless in performing desired activities.

Belonging and self-regulation

By the sense of belonging (statement (2),(ibid.), the physical environment contributes to defining one’s bodily experience and consciousness as a separate and distinct individual (Proshansky et al. 1983). Further, the sense of belonging is related to the sense of familiarity and sense of being an insider. The latter is felt when there are things and people a person is used with (Hay, 1988). Being an insider allows feelings of security and status to arise (ibid). These two feelings, on the other hand, are contributing to self-regulation processes.

Not being alone and connectedness

As Wilson et al. (2010) suggest, feeling alone in relation to children's hospitalization means also uncertainty, knowing scary things and not feeling home. Statement (3) about oneness, is very much like what Schwartz (2008) means by *connectedness*. Because feeling of connectedness is also not feeling alone, design can work in that direction in order to diminish unpleasant feelings. Landscapes which connect to the family, to the community and to the wider world enable the possibility of happiness (ibid). She suggests that the feeling of connectedness is fundamental to happiness because humans value high the feeling of not being alone (ibid).

Personality, mood and negative emotions

Statement (4) about personality, can be related to the way children and adolescents process unpleasant situations. Regarding hospital environments, compatible spaces may also include the concept of *palliative spaces*. Healing/restorative environments like gardens and parks could be regarded as palliative spaces for their soothing effects. In this relation, Grahn et al., (2010) advocate that the sensitivity towards the physical and social environment is subjective and it is based on how the individuals perceive their own situation. Thurber and Malinowski (1999) use the term palliative spaces for spaces which seem to have a positive effect on children and adolescents dealing with high levels of irritability. According to the study, the symptoms increase if the individual is not able to identify a palliative space for oneself. It seems that besides the inner subjective perception of one's own state, there may also be important to consider personality characteristics like environmental preferences and behaviour attitudes which "take charge" of choosing the coping strategies and the kind of palliative space preferred.

Children experiencing trauma benefit from playgrounds, especially well-kept playground for build-yourself activities [in Swedish: bygglekplats] (Jansson, 2016). In English, these kinds of playgrounds are also known as *adventure playgrounds* and they serve different purposes, i.a. "a place for interaction", and "a community space" (Sutton, 2011). On these kinds of environments "[free translation from Russian] children and adolescents (typically between 7 and 14 years old) play, communicate, build, craft with a variety of materials, draw, dance, play sports, play football, bake bread and make pizza, make bonfires, set performances, photography, care for animals, along with other children go on excursions, participate in multi-day children's camps, Robinsonade, etc." (Kotlyar & Sokolova, 2014, p.84). Such play environments are messy places and are often related to joyful activities and social interaction. Therefore, adventure inspired spaces for children and adolescents could also be seen as compatible for processing negative emotions.

Through the concept of palliative spaces, a sixth statement for measuring compatibility could be added: "I feel I can process my negative emotions here".

8.2. Healing gardens for children

There are several aspects for designing children's healing gardens which define their quality. These aspects are such as architectural communication, user diversity, high quality of social environment, climate and nature.

:: Good location and entrance mean good **visual (architectural) communication** of the outdoor environments which is crucial for the use of it (Whitehouse et al., 2001). A good location of the garden in that sense is achievable if the entrance is distinctive and the garden is visible from patients rooms, cafeterias, waiting rooms, and entrances (Moore, 1999) (see image 10, p.61). In that way, the physical environment provides the users with knowledge about the health promoting environment. Architectural communication seem also important for motivation and could match the need for connectedness.

:: **User diversity and high-quality of social environment** mean that the garden should include settings suitable not only for children but also adolescents and adults to be together. These types of environments should offer also settings for different occasions, not least a good place for processing grief or stressful situations (Moore, 1999). This aspect is essential for the psycho-social support as design arrangements are needed for the different supporting activities.

:: **A good climate and lighting** is another feature of the successful therapy garden. This includes weather protection from cold and hot days. On cold days wind and rain protections are and while the sun exposure is good for the health, children are more sensitive to sun rays so a shadow is needed, especially where children stay longer for activity. For people of Northern Europe, bright light is a source for serotonin which lifts depression and aid happiness, however, it should not be used in excess (Fordham, 2008). Fordham (2008) also advocates that the contrast between light and shadow should not be too sharp. The filtered light is optimal condition, at best - refracted through green leaves light (Moore, 1999). Gradual change in climate and lighting is a quality of in-between spaces as links between indoors and outdoors.

:: According to Moore (1999) **vegetation** can create different rooms and floors in which children and adolescents are interested (Moore, 1999; Bozkurt et al., 2019). Linquist (1997) further suggests that plants should be selected for seasonal change interest. Moore (1993) considers a play vegetation in the form of a.i. sensory variety with qualities like fragrance, texture and wind effects; play value (fruits/nuts, seeds, and foliage for play props and places to hide; pleasure of nature (edible fruits/nuts, herbs); shade; screening (visual buffers and wind protection); and wildlife habitat value (birds, butterflies). Vegetation is, thus suitable material to create in-between spaces for flux and transformation. Placed between different play sequences and other settings, shrubs intended for noise buffer, screening or edges can be designed for open interpretation and creative use (see image 11, p.61).

:: **Non-domestic animals** are significant for children (Moore, 1999). They can be interesting discoveries in play as found in their de facto habitat (e.g. amphibians, insects, birds, fish, dragonflies, and damselflies), or as intentionally designed habitat in relation to classical children's stories which can relate to story-time. By attracting animal world through design children and adolescents are encouraged to express thoughts and emotions - verbally or through art. This also gives opportunities for social interaction.

:: Water is a popular play material for children (Laidlaw, 2019; Moore, 1999) so it should be suitable for human consumption (Laidlaw, 2019). Further, studies have shown that water is related to strongly remembered childhood experiences (Moore & Wong, 1997, Chapter 4). Water play helps exploration of nature and seasonal changes, and encourages communication skills and cooperative play (Casey & Westwood, 2017). Dry riverbeds, sand play areas, little hills and grassy mounds, tunnels, and water “walls” (pipes, funnels and guttering attached to fences) seem to be liked by small children (Casey & Westwood, 2017) . In waterplay, children are immersed in sustained play for long periods, and also it provoked large range of language and invention and they often satisfy with small amounts of water (ibid). They are fascinated of the tiny rivulets of water wide enough for small fingers to block and unlock (ibid).

Bozkurt et al. (2019) suggests that there are two types of interaction with water: active and passive. Active interaction includes physical activities and contact with water: throwing things into the water, running and walking in it. Active interaction is immanent to smaller children in higher degrees in comparison with older children. Older children interact physically with the water more often if the weather is hot. Passive interaction is when no physical interaction with the water occurs but rather include watching, listening, and sitting near the water: both children and adolescents may read a book, meet friends, eat, chat or listen to music while small children seem to like sitting on benches facing direct to water. Young children occupy the places where they could interact directly with water directly. A factor for interaction with water is the weather. Under 10,8°C both passive and active interaction decreases, especially activities that involve contact with water. (Bozkurt et al., 2019)

Water is, thus, an element which helps redirecting self-monitoring processes during illness. It also helps the individual to dismiss unfavourable comparison while immersing in a flow activity. Active interaction with water can be related to overcoming challenges and thus, influencing pride and confidence. Through passive interaction, on the other hand, water could be a mediator between unconsciousness and reflection.



Image 10. View to the play therapy garden on the way to the main entrance of the Children's department at the University hospital of Lund.



Image 11. Vegetation used for edges between the spaces at the Children's department at the University hospital of Lund.

8.3. A Dream Garden

8.3.1. Results from literature review

Whitehouse et al. (2001) emphasize that increased stress levels can influence the healing outcome negatively. Also, the complex and unfamiliar environment in hospitals contribute to mental fatigue and confusion (ibid.) This can be changed by including calming natural environments which require less cognitive pressure (ibid). The study of Pelander et al. (2007) emphasizes that lack of activity is a huge stressor and confirms that children like natural elements like trees and real animals. Therefore, one reason children patients seek outdoor environment could be to find comfort and healing. For example, in children's drawings, the courtyard is presented as filled with trees, playgrounds, and actions for children (Pelander et al., 2007). Prospect - refuge settings found outdoors are particularly preferred by children for dealing with their emotions. For example, van Andel (1990) reports that children searched for enclosed, hidden places where they could see out without being seen, and Kirkby (1989) suggest that a refuge setting could be comforting for them.

Whitehouse et al. (2001) find out that children patients with chronic diseases and siblings wish for more interactive things to play with and for more active play (e.g. climbing, tumbling) and manipulative play (digging in sand, building, etc). Most adolescents, on the other hand, prefer opportunities for active use of space (Whitehouse et al. 2001; van Andel, 1990). However, some adolescents, for instance with special needs, may prefer more passive interaction. This raises the question for finding a balance between challenging and the less demanding spaces.

Children in ages two to three prefer to interact with the water, a favourite object (e.g., the dinosaur sculpture), or their favourite things to smell (Whitehouse et al., 2001). The next age group - four to five, express desire for active play like climbing, running, jumping, and also mention animals in the form of artworks (ibid). Children at ages six to ten expressed wishes for more structured games and more inspiration for creative play. (ibid). For one autistic patient, waterfall is wonderful, and he appreciates opportunity to learn the names of the animals. Some patients wish for more quiet environments and some suffering advanced cancer report no wish to go out due to lack of energy (ibid).

Other hospitalized children point as important to be in an environment which is different than a hospital: a quiet place with colours and flowers, animals and waterfalls (ibid). Familiar, home-like hospitals are imagined by children patients (Pelander et al., 2007). The younger patients are drawn to child-scaled spaces, with familiar artistic renderings of animals to make them feel safe along with other positive experiences (Whitehouse et al., 2001). Adolescents seem to seek more private spaces to deal with self-conscious about their appearance (ibid). Another important aspect for the children are windows. They present the contact with the outdoor environment since they let in natural light which makes them changeable, interesting, and informative (Pelander et al., 2007).

This literature study provided with a lot of information about desired physical settings. It became even clearer that there are a lot of differences in preferences depending age, situation and even mood. Some of the preferred qualities are contradictory (e.g. active play and quiet places). My intention with the next steps is to try to find a way to work with such contradictions.

8.3.2. Results from participation

:: Participant 1: 12 year old pre-adolescent, female, (6th grade)

The first participant in my art-based participatory approach chose to draw a picture (see image 12). Her comment about what could make her happy in her dream garden was “I’d like to take a walk in the forest”. Then she drew the picture shown below. During the drawing, we talked about her favourite colours which were light pink and black and stuff she likes to do in her free time: reading stories, autobiographies, and popular science; doing manual activities (pyslla); drawing. Her favourite story is about a boy, Sune “who is 12 and is doing strange things”.

When discussing the drawing, she pointed out that there should be a path to take walks and the garden should be big. The gravel path at her drawing is separating two different settings. Since she constantly rotated the paper during the drawing there should not be notions of which side is up and which down. This is, again, a sign that children experience the space differently than adults. Her manner of imagining the space could be described as watching from above but zooming in and paying attention to details. She started with the trees and the tent underneath them. Next she drew a black house which she explained later that it is with walls and roofs but open in the front (without a door) and she’ll use it for to sleep there. On the other side of the path she made water basin with riverstone, sand, tree trunks on the side which are supposed to be used for climbing and sitting. At the end she depicted a pair of swings - single and a nest with flowers around them.

Interpretation:

The number of colours of the drawing are 7. According to (Dolidze et al. 2013), children facing operation used a maximum of four colours, whereas the control group of school children used more different colours. It seems then, that this particular participant has been in a good emotional state. She even used nuances of green to separate elements. The elements depicted are such as big trees, a den, a private tree house, camping elements like fire place with stones, swings, shrubs, flowers, a pond with big stones, tree trunks for sitting. The central element is a path for walking.



Image 12. Drawing by the first participant.

There are some edges present which seem to be of significant value. For example, a green circular strokes between the path and the forest with the den and the tree house is resembling shrubs to provide privacy. The edge beside the pond is more for sitting and reflection. Because the tree trunks are two, maybe, there is a suggestion for allowance of social interaction. The swings are also two and one of them is of the “nest” type which can be used for swinging with a friend or just for lying and resting. Flowers are also a positive impression and they are in two colours in the participant’s drawing. There are certain separation between the privacy activities and the joy and calmness seeking activities because the relevant elements are positioned on the two opposite sides of the path. The camping elements and the tree house could also be sign of striving for independence or adventure.

The use of blue colour, and especially used for the nature element of water is a sign for good emotional state and peacefulness (Dolidze et al. 2013) and also is related to strong childhood memories (Moore, 1999). The stones in the pond are also reminding the image used to appeal to environmental trust (ET) personality, so the pond could also represent a wish for exploration and adventure, related on its turn to developed confidence (Thurber and Malinowski, 1999).

What is most important for this participant is the following:

A place to hide and be alone, which is represented by the tent.

A place to sleep undisturbed - represented by the black house.

:: Participant 2: a 17 years old adolescent, male

Under this short participation, the boy wrote two rows of text which was discussed further. The text was the following: “ Göra en lugn och sansad, njuta och känna sig friskare” [Free translation from Swedish]: “To make one calm and clear-headed, be delighted and feel healthier/freshened”.

He shared his view that his dream place should bring one to a calm state and help in the process of gathering one’s thoughts (sansad- from Swedish clear-headed). His dream garden is open for everybody. A place like this exists in his everyday life and that is a forest he use to go out for jogging at. His current state is described as very “stressed” because of all the “stuff” he is engaged with like school, job and training martial arts (thai box and kick box). The last four days he has been stuck in the bed and without fresh air, and for him, fresh air is “everything”.

Interpretation:

The second participant is training martial arts, as revealed in the discussion during participation. Some insights about MMA (mixed martial arts) and self-regulation is discussed in Massey et al. (2013). According to the study, these kinds of activities help the individual to sustain self-regulation, which helps mediation of internal (i.e., deliberately induced physical pain and psychological distress) and external factors (i.e., creating & maintaining an ascetic routine). Most likely, by stating that “fresh air is everything” for him, he meant that a great part of “everything” is the ultimate right to be able to maintain a balance towards a goal related to the philosophy of MMA. “Fresh air”, on the other hand, could be the manifestation of MMA/physical activities. The reason for hospitalization (not mentioned here due to ethical issues) has deprived him from the physical activities he is used with but being in a

hospital department without access to outdoor access has further contributed to arousal and stress.

Since there are a lot of thoughts he processes in this moment, another aspect discussed is the need for calmness and order in the mind. Chaotic thought may take over because he is physically restrained to complete tasks towards his goals. Stress and boredom work hand in hand here as increased brain activity is combined with limited physical activities available (restriction and boredom). This also causes an inability to remain focused. According to the participant during activities in nature like jogging in the forest he can regain clearance in his mind.

:: Participant 3: 17 years old adolescent, female

The third participant expressed her desire to go out in nature, “somewhere open - not enclosed.” To be outside for her is being happy and calm. She likes to be near water because it is relaxing. She feels she wants to go home because she misses her friends and family. They are coming to the hospital to visit her but here there is no space for these meetings. She misses “some place to meet them in peace” (from Swedish, “lugn och ro”), which do not look like a hospital. When asked what are the things that would remind her that she is in a hospital she answered “Well, it is the smell, the feeling. People look sick, there are doctors going around...” “It would help if you don’t see the building but rather it is more nature-like.”

Her dream place reminds of a forest or a mountain but near a sea or lake” because water is cosy” (from Swedish “Vatten är mysigt”). She would like to be alone and listen to music, or be with one or two friends. For her, friends are “everything”. In the hospital there is nothing to do but she’d like to watch youtube or other fun stuff to cheer up.

A place she loves to go is Mossby strand, a long sandy beach at the south coast. She likes it because it is very long, and she likes especially a place where a brook meandering between big old trees is running out in the sea. She is use to visit the place with her mother and her friends and swim if the water is warm enough.

If she could freely choose, she could enjoy carousel, or bungee, but she then prefers something more safe like a funicular railway.

Interpretation:

The third participant has experienced deprivation in the last days, so it was very difficult to awaken interest in the conversation. It was obvious that she was willing to express herself but she could not find a way. Talking about nature and friends cheered her up. In that sense, it was interesting that she said about her friends that they are “everything”. This confirms the discussions about the need for psycho-social support and its significance to health recover. The longing for home (familiarity) in relation with meeting friends was identification that it is of importance how and where you meet friends as an adolescent. Childhood memories from summer and sea seemed a topic she was excited about. Adventure was also a part of the conversation which revealed a wish for challenging experiences.

8.4. Examples from practice

8.4.1. Play therapy

(summarised interview on location with Anna Persson, Tina Syllfors at Play therapy and Kristina Andersson chief of the Children's Department at the Central Hospital of Kristianstad)

The play therapists report that both children and adolescents come to the play therapy independently and by their own initiative, because it is close, there are no restrictions, even for children with infectious diseases. The play therapy is used as a waiting room, and from children from other departments (who are not patients themselves) (Persson, Syllfors & Andersson, 2019). This aspect shows the motivation this environment offers, and also the importance of spatial autonomy.

The activities that have emphasis is on *relaxation*. There are hammocks and swings as mentioned but also a desire for more cosiness through vegetation to form a room. Other activities they have are free and open play, play with sand, riding three wheel bicycles, and there is also school studies for the pupils. (Syllfors, Persson & Andersson, 2019).

The view from the windows of the patients' rooms show almost only facades of the building and a little bit of sky (ibid). Some of the Children's department rooms have views to the rooftop garden but to ensure privacy inside the rooms they use window filtering foil (ibid). Although the architectural communication of the garden is not perfect (the garden is not visible from the outside of the building or the main entrance) the roof garden is rather popular, not least due to the help of the play therapists.

In design terms, one should think simple, they think. Also, as the space is limited, it is recommended that it is optimised, without elements which only take volume and do not give a value in play. According to safety requirements, bigger objects like chairs, tables, parasols etc., should be fixed on the ground when the garden is above ground. The height requires also fencing, less vegetation is available and water management is more advanced. Challenging play is not recommended by the therapists, instead, the elements should have soft rounded shapes to avoid injuries. (ibid).

This entry adds to my study some wishes and desires for physical settings which afford high degree of relaxation, which confirmed one of the participant's wish to be able to sleep outdoors undisturbed. Another important aspect is that additional human resources are needed if the garden is not well communicated in the space.

8.4.2. Landscape architecture

(summarised walking interview with Helle Nebelong, a landscape architect, based in Copenhagen, Denmark; personal observations included)

According to Nebelong (2019), empty spaces allow random running/cycling. If the space is small there is a risk for collision and conflicts. Noise is disturbing, especially for children with ADHD. However, noise can be reduced with the use of vegetation like shrubs. Paths and curious elements provoke stopping by and exploring and in that way funny small adventures are created and imagination is triggered. (Nebelong, 2019).

The principles of universal design are in the core of her work but she stresses that accessibility should not become a trade off for creativity (ibid). Accessibility should be used together with creative ideas in order to achieve interesting places and to create possibilities for social interaction (ibid). The view from the stroller is very different as opposed from the view of older children and adults who can stand up (ibid). In the conversation, we agreed that babies, most probably, are fascinated by the view of a tree crowns from below. Regarding this thesis this discussion made me think about patients in beds who probably also would appreciate the view of tree crowns from bellow.

In the Garden of Senses I noticed many elements related to emotions. For example, a small room for reflection with signs of many different religions and also hope and love (image 13). Other elements, like the stone river provoked imaginative adventures and characters (image 14). Nebelong (2019) reported that at this particular setting a story have been created by playing children about an imagined crocodile.

An appealing environment can provoke speech as a form of self-expression and emotion. Wonder can be provoked through placing unexpected curious object or beautiful artworks. Particular intimate settings like up on a tree can be suitable for discussing love matters and are much appreciated by adolescents. If a design does not provide ready solutions for play, children are encouraged to create their own games, which is also a form of expression. (Nebelong, 2019).

Nebelong (2019) also recommends transition zones between indoors and outdoors with translucent roofs along the facades. It helps children to see objects of interest in the garden and encourage them to go for further exploring.

Image 13. Room for reflection at the Garden of senses.



Image 14. Stone river at the Garden of Senses.



8.5. State-of-the-art healing gardens for children's hospitals

Through the course of this study, I have found at least one hospital which is focusing on the holistic approach towards their healing process philosophy. All other discussed hospital gardens has been valuable pieces of the puzzle but none of them could show the whole picture.

For example, the garden at the hospital in San Diego is very inspiring and relevant to the process of dealing with emotions, which was confirmed by a post-occupational evaluation where a study showed a good feedback (Whitehouse et al., 2001). However, it became evident that there are some factors that hinder the user experiences and I have taken them into consideration for the guidelines (ibid). These are:

- (1) the lack of knowledge that the garden exists has prevented a lot of users to miss the opportunity to visit the garden (ibid). When the garden is added after the construction of the building, the design and location may fail to communicate the existence of the garden to the hospital visitors. (ibid).
- (2) long distance from the patients' rooms to the garden requires assistance from other people and enough available wheelchairs. (ibid).
- (3) confusion over the purpose of the garden can relate to uncertainty if the garden is for everybody (ibid). A possible reason could be if the garden feels too private at its entrance.
- (4) and underlying philosophy towards traditional medicinal biomedical treatment is diminishing the benefits for the patents (ibid). Therefore medical care should be provided in combination with garden therapies.

From what I have found during studying those hospital gardens for children included in this thesis, Dell Children's Medical Centre of Central Texas, USA seems that most successfully utilizes their outdoor environment for a holistic approach towards healing. There maybe other hospitals with such qualities but, here, we need to discuss just one good example. This medical centre was designed to be the first to achieve Leadership in Energy and Environmental Design (LEED) certification in the world (U.S. Green Building Council, 2020). The LEED certification addresses design, construction, operation, social responsibility, and health: "Our mission is to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life" (ibid).

According to information on their website, the medical centre was built with a holistic principles in mind (Dell Children's Medical Centre of Central Texas, 2019). The garden seems well communicated by architectural qualities since it is visible from all departments and the building is only 3 stories high (CentralTexasGardener, 2016). The access is so easy that consultations with doctors sometimes happen outdoors (ibid). Staff can also benefit from it - when extreme stressful days occur, there are stress relieving (palliative) places to regain strength and calmness (ibid). The gardens are designed for sensory experiences of nature elements like vegetation, animals and water (ibid). Art is part of the garden too, including through patients' participatory (ibid). There is an actual kitchen gar-

den where patients, staff and volunteers can plant fruits and vegetables to be used later in the medical centre's café and kitchen (ibid). The kitchen garden is also used for stress relieve (ibid). The outdoor environment offers a place to remember the children who did not survive illnesses (ibid). According to Mark Shen (President of the medical centre) and Krista Gregory (Resiliency Centre and Medical Centre manager) the services performed to celebrate the life of those children are, in fact, "glorious" (ibid). It seems that through nature, symbolism, and social support, the darkest days as parents could be brightened.

Recommended reference:

<https://www.dellchildrens.net/about-us/building-details/healing-power-of-art-and-nature/>

9. FIVE EMOTION GROUPS

In this chapter I present the results from the bridging.

The full texts of the data inputs were searched for pairs of keywords - respond (emotion or behaviour) and environment (physical setting). Those pairs present links which were grouped by similarities, causation and possibilities for counteracting (see example at image 15). In total, 64 links were identified and they were grouped in five groups based on those emotions they represent. These groups are:

1. *Less intensive feelings, boredom, fall in self-esteem, excitement and wonder*

This group includes motions like fun, happiness, joy, receiving positive energy, likes, delight and safety (Linguist, 1997; Moore, 1999; Nebelong, 2019; Syllfors, Persson & Andersson, 2019) can successfully counteract boredom and prevent fall in self-esteem before it drops.

The spatial qualities found are such as: structured games and active play (Whitehouse et al., 2001), settings to interact with water (Moore 1999; Bozkurt et al., 2019; Casey & Westwood, 2017), sensory experiences (Nebelong, 2017, 2019; Moore 1999), e.g. smell (Moore, 1999 ;



Image 12. Example of links based on the emotional group 1.

Whitehouse et al., 2001), safe challenges (Nebelong, 2019), storytelling (Nebelong, 2019; Whitehouse et al., 2001; participant 1), edges for interaction (Mårtensson, 2013; observations at Play therapy, Lund), a place to hide (Green, 2018), openness (Green, 2018; all three of participants), childhood memories (participant 3), spaces for gathering (psycho-social therapies). Those qualities are meant to induce happy state and that is why I include them in space types called *Joyful spaces*.

Self-esteem

Self-esteem was related to self-regulation (Baumeister, Vohs, & Tice, 2007;), confidence and pride (Laird, 2007; Norman, 2004), independence and freedom (Green, 2018); fall in self-esteem Laird (2007); connectedness (Schwartz, 2008); self-expression (Casey & Westwood, 2017; Nebelong, 2017, 2019); depressive conditions (Dolidze et al. 2013).

The spatial qualities I identified as beneficial was such as: suitable for physical activities (Massey et al., 2013); creative activities (Czikszentmihalyi, 1975; Quarrick, 1989), opportunities for prospect (Green, 2018); inclusion of surprising objects and beautiful artworks (Nebelong, 2019); proximity, easy access (Green, 2018); a big space (all three participants); opportunities for manipulating materials with hands and feet, avoiding red colour, use of more than four colours (Dolidze et al., 20013). I call these kinds of spaces *Spaces for self-esteem*.

High intensity negative feelings

In this group I include rage, anger, disturbance, fear and recurring fear, phobias, discomfort, uncertainty, insecurity, (Tosheva, 2019; Syllfors, Persson & Andersson, 2019; Barta, 2019; Dolidze et al., 2013), grief and contemplation (Dell Children's Medical Centre of Central Texas, 2019; Tosheva, 2019), feeling of hospital (participant 3).

Spatial qualities would offer settings to lead out negative emotions and to build emotional balance (Dell Children's Medical Centre of Central Texas, 2019; Norman, 2004; Tosheva, 2019). Such spaces could be adventure settings, places for interaction and community space (Jansson, 2016; Kotlyar & Sokolova, 2014; Sutton, 2019) and also memorial gardens (Dell Children's Medical Centre of Central Texas, 2019) with attention towards avoiding senses of hospital (like smell). I call these types of spaces *Palliative spaces*.

Familiarity, empathy and connectedness

This group includes feelings of cosiness, peacefulness, safety, relaxation, need for intimacy, need for privacy, homesickness and nostalgia, need for utilizing extensive energy. These were related to feelings of familiarity, empathy and connectedness (Dell Children's Medical Centre of Central Texas, 2019; Pelander, 2007; Syllfors, Persson & Andersson, 2019; Tosheva, 2019). Such spaces include settings for solitude and intimate conversations. Since most of the physical qualities were related to cosy, home-like environment I called this space type *Cosy spaces*.

Intrinsic motivation

This feeling is essential for counteracting depressive and regressive predisposition, lack of vigour and energy, denial and repression of stress, unwillingness to communicate, repression and withdrawal (Dolidze et al., 2013, Tosheva, 2019; CentralTexasGardener, 2016). The characteristics of the physical qualities are that they offer opportunities for physical activities (Tosheva, 2019) , positive feedback about achievements, social interaction (Laird, 2007) and anthropomorphism (Norman 2004), and thus I call such space types *Spaces for motivation*.

10. GUIDELINES FOR EMOTIONAL SUPPORT

The following design guidelines were compiled to further process the second objective of this thesis. They are used here as a base for the concept design for the case hospital in Ystad, Sweden but also could be used at other sites because they are not site specific. The guidelines suit as a summary of the results so far.

10.1. Design aspects

In these design guidelines there are three aspects suggested to be followed during design:

:: **Architectural communication** is pointed out as important by Whitehouse et al, (2001) and discussed as a best practice example (Dell Children's Medical Centre of Central Texas, 2019). It depends on good location/proximity in relation to the relevant department and distinct entrance (Moore, 1999), visual access and understanding of the garden from the inside of the building (Bengtsson, 2015), and also clear signs which show that the garden is open for everybody (Whitehouse et al, 2001).

:: **In-between spaces** are viewed as providing comfort and effortlessness in accessing the outdoors (Bengtsson, 2015), to provide spaces open for interpretation (Bradley, 2008; Teysot, 2008), to allow flux and transformation (Mårtensson, 2013), and spaces free from territoriality (Kärrholm, 2012). Sensitivity to environmental change is addressed by comfort in terms of light, climate, humidity and smell (Fordham, 2008). The role of in-between spaces are to provide with gradual changes and so to allow the users to feel control of how much effort they are willing to make, while at the same time the environment is encouraging inner motivation to take one more step. Another type of in-between space is the flexible one which offers multiple scenarios at different occasions. Here, the use of the concept in-between spaces is achieved on spaces without predetermined function, e.g. spaces in between (Bradley, 2008), interstitial spaces (Kärrholm, 2012), and edges for flux and transformation (Mårtensson, 2013). In-between space as threshold (Teyssot, 2008) is encouraging social interaction between different users as also revealed by Nebelong (2019).

:: **Compatible space** is a combination of spatial qualities such as compatibility, spatial autonomy (Green, 2018), and self-identity (Norman, 2004; Proshansky, 1978). They are present in terms of (1) freedom and joy (Green, 2008; Feldman, 1996; Nilsson, 2010; Ward

Thompson & Travlou, 2007); (2) belonging and self-regulation (Hay, 1988; Proshansky et al., 1983); not being alone and connectedness (Schwartz, 2008); personality, mood and negative emotions (Jansson, 2016; Sutton, 2011; Thurber & Malinowski, 1991) (see section 8.1.)

10.2. Space types

10.2.1. Joyful spaces

Those kinds of spaces are intended to induce/allow happy experiences such as fun, enjoyment, entertainment, excitement, wonder (fascination), desire, wish, safety, delight and inclination while aiming to counteract boredom (Laird, 2007) and to prevent fall in self-esteem. The qualities required are spaces for interaction and gathering, and they are both in child and adult scale. This kind of spaces is focusing mainly on sensory experiences like touch, smell, sound, visual stimulation and bodily movement/behaviour. Provoking happy memories and imagination through storytelling and structured games (Whitehouse et al, 2001) is also important. Colours should be cheerful but in harmony in order not to make the space too complex. An edible garden is used in best practice example (CentralTexasGardener, 2016) for planting, tasting and stress relief.

The overall atmosphere should be opposite to a hospital environment feel. Instead these spaces should be frames of references to other, favourite, home-like, vacation-related, storytelling or reminding of places with happy memories spaces. Sensory experiences are particularly important for small children because they are influenced first at a visceral level. Water, animals and vegetation are the natural elements to focus emotional design on (Bozkurt et al, 2019; Casey & Westwood, 2017; CentralTexasGardener, 2016; Moore, 1999; Nebelong, 2017; Whitehouse et al., 2001).

10.2.2. Spaces for self-esteem

Fall in self-esteem could be targeted by design through retrospective and prospective reflections and also behaviour (Norman 2004). Emotional design for self-esteem works with concepts like self-identity (Norman 2004). Further, Laird (2007) proposes attention on posture, Nebelong (2019) - safe challenges, while information about achievements and possibilities to change the outer context are proposed by Korpela (2002) and Silbereisen et al. (1986). No ready solutions for play induce creativity (Nebelong, 2019) and the “safe challenge” setting could work as well here as in joyful spaces in order to build environmental trust (Bunting & Cousins 1985). Structures for straightening posture (Laird, 2007) could be found as example in outdoor gyms. Objects and settings which surround the users become a part of their self-identity if it is possible to assign positive meaning to them (Norman 2004) and therefore the concept of place-identity (Proshansky, 1978) should be considered.

Following this, design can focus on activities which train capacity. Red colour and reflections should be used with caution (Dolidze et al., 2013). Insecurity could be targeted by

feeling illusion (Laird, 2007), for instance, a lifted spot in the landscape (Green, 2018) to observe other people from a far, and, thus, perceiving one's own body as bigger. Smaller in size sculptures of human figures could also achieve the same feeling illusion (comparing one's self favourably - Laird, 2007). Self-regulation as important for adolescents is related to those activities which help them to achieve their goals (Massey et al., 2013; participant 2).

Raise in self-esteem is supported by self-expression in combination with a feedback. Equally important are, again, spaces for support in groups and intimate spaces (Barta, 2019; Manchester University NHS Trust, 2019; Elpida Association, 2019a) and spaces for flow/absorption (Czikszenmihalyi, 1975; Quarrick, 1989). Art forms, including created through patients' participation is also supporting the sense of achievement (CentraTexasGardener, 2016). Intimate conversations with close friends at privacy settings are much appreciated, especially by female adolescents (Nebelong, 2019; participant 3). Waterplay and unexpected beautiful artworks like drawing and mosaics can provoke speech and develop the language skills in children (Nebelong, 2019; Casey & Westwood, 2017). In that sense, collaboration with artists is a wonderful way to engage children and adolescents in order to increase their sense of importance. Design would respond to this kind of activities with elements of atelier/studio, possibly outdoor sink for cleaning after the creative activity or an engaging waterplay.

10.2.3. Palliative spaces

Palliative spaces are necessary for processing negative emotions like anger, fear and boredom and help utilizing extensive energy towards emotional balance (Norman, 2004; CentraTexasGardener, 2016). Emotional design focuses on initial impact, touch, feel, appearance (Norman, 2004). Patients and their families would experience negative emotions and the need to assign the blame somewhere. Emotional design knowledge has inspired the idea that objects like punchbags could help people to release negative emotions. Laird (2007) also proposes that physical activities can change negative emotions because the individual is attributing the arousal to the physical activity and not to illness. The negative emotion is, in that way, diminished. Children are especially dependent on this opportunity because they do not operate that much with reflections - the other way to adjust emotion according to Laird (2007) and Norman (2004).

At such places design should focus on preventing disturbance and annoyance (Nebelong, 2019). In outdoor settings, noise can be diminished with the help of vegetation like shrubs (ibid). The atmosphere should be comfortable and unlike hospital's in order to feel safe (Tosheva, 2019). Spaces for releasing anger should be for active use and have elements that prevent injury (Norman, 2004; Tosheva, 2019). Spaces for conversations should offer a gathering setting for support in groups or intimate private settings for letting out sadness and anger (Tosheva, 2019). To accommodate outdoor therapies in groups, the spaces need to be relaxing, with dimmed lighting, and possibility for playing calm music. Further they should provide weather protection, possibilities for eating and drinking. Intimate and private spaces should be inviting for parents and friends near the patient. Reflection could be inspired by artworks on life wisdom, love and hope. Spaces for ceremonies performed to honour the lost ones or to pray for healing should give the opportunity to light a candle (Tosheva, 2019). Evening hours should also be considered as suitable for adolescents and those who seek solitude (Barta, 2019).

10.2.4. Cosy spaces

Cosy spaces have qualities which match or satisfy a number of feelings such as relaxation, comfort, empathy, connectedness, familiarity, and privacy. Cosiness is a feel that this study has related to safe and relaxed state and the space qualities which create such feel are, from child and adolescents' and adults' perspectives, imagined as something unlike most hospital environments but rather, home-like or away-in-nature-like (Dolidze et al, 2013; Pelander et al., 2007; Syllfors, Persoon & Andersson, 2019, Tosheva, 2019; participants 1 & 3); reminder-sensations of children and adolescents' favourite places as a way to diminish feelings of nostalgia and homesickness (muf, 2000; participant 3). Blue colour is appreciated when children and adolescents feel in good emotional balance so calming cosy spaces can include blue elements (Dolidze et al. 2013).

Younger children experience a space as positive and secure when it is familiar and they can recognise characters there (Whitehouse et al. 2001). Qualities for those intimate spaces are such as: pleasant smell/not hospital-like (participant 3); good climate (Moore, 1999, Fordham, 2008); bright light in combination with filtered light (Fordham, 2008; Moore, 1999); settings for passive interactions with water (Bozkurt et al., 2019; participants 1 & 3); translucent but not transparent, soundproof, private, peaceful, familiar with opportunities for leisure and refuge (Tosheva, 2019; Syllfors, Persson & Andersson, 2019; participants 1&3). Such opportunities give elements like treehouses, dens, hammocks, gazebo with soft textile (ibid). Sounds of rippling water, sea, forest or relaxing music is adding to the atmosphere (Bozkurt et al., 2019; Casey & Westwood, 2017; Tosheva, 2019). Cancer treated patients could also benefit from such rooms but if protected from the sun (Syllfors, Persson & Andersson, 2019).

10.2.5. Spaces for motivation

Spaces for intrinsic motivation has been seen in this study as a way to diminish depressive conditions. Opportunities for physical and creative activities and fresh air are beneficial for children and adolescents with depressive and regressive predispositions (Tosheva, 2019; Dolidze et al. 2013). Creative activities on the other hand help the young patients to experience a state of flow and absorption through which they focus on achievements and something external as the object they create (Czikszentmihalyi, 1975; Quarrick, 1989). Regarding design, there should be room for personal choice in order to best match the needs of the users. Opportunities for learning can also be seen as a motivational factor to be outdoors (Whitehouse, 2001). Withdrawal and unwillingness to communicate with others could be handled by introducing animals and anthropomorphic inanimate objects (Norman, 2004). Lack of vigour and energy could be overcome by creating a good climate in terms of weather and amount of sunlight (Moore, 1999; Fordham, 2008).

11. DESIGN IN CONTEXT

In this chapter, the guidelines are tested in the context of the case hospital - the Hospital of Ystad. The proposal is a concept design with low level of detail and it is open for discussion.

11.1. Spatial analysis

The spatial analysis of the site as existing shows *movement patterns* of people and health-care logistics. The arrows on fig. 10 show movement from the elevators to both Children's and Children's Emergency department (blue and green respectively) and warm food coming to the kitchen from another location. This led to the decision not to use the elevator hall as an in-between space since it is already used also for a waiting room for other departments. Instead, I suggest that the entrance of the garden is expanded in the main outdoor setting.

The connection between the new garden and its surroundings is visual and auditory. On fig. 10 with an eye icon are shown the view angles which connect with the inner garden, the parking area in front of the hospital and further the in city, to the sea and the port. The soundscape would include the sounds like those from the inner garden (birds and running rill), people talking downstairs, low city traffic (maximum speed allowed is 30 km/h across the parking lot), and possibly cruise ship horn from the distance. In some cases, the smell of the sea will be present.

The site structure of the proposal is based on Laidlaw (2017) (fig. 6, p.34). To create the spaces, I compiled an emotional map (fig. 11) based on the guidelines. Since some of the space qualities can be used for more than one space type I added some examples of in-between spaces which can be used if the space is limited. On fig. 11 are shown some common spatial qualities identified which are used in order to connect the spaces and to optimise the space. Those qualities are active, intimate, relaxing, group+active, and private. Based on the guidelines, other qualities can be identified as shared and, thus, other emotion sequences could be created. Also different uses can be found in different times of the day or the season.

Gradual transition between indoors and outdoors is considered in the proposal and implementation is shown on the plan (fig. 12, p.79). The first level of transition is the space in grey (fig. 12, p.79) and it has the comfort qualities of the building (impenetrable roof and controlled climate) but with more light on demand (transparent walls with curtains). It can open up towards the outdoors by opening the curtains and the glass doors and thus,

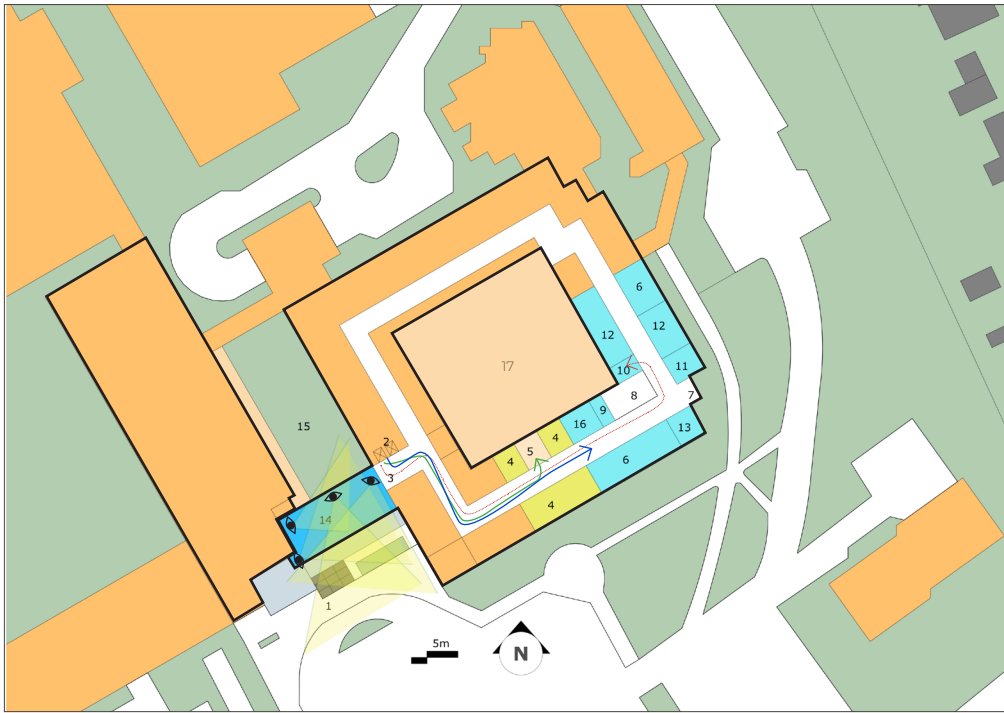


Fig.10. Site analysis. Hospital building bodies are marked in orange, except for its entrance which is in blue-grey and light grey. Residential buildings are marked in dark grey. Dark green is showing the green landscape consisting of low-cut grass, shrubs and trees. The section highlighted with black stroke is showing the fourth floor and the rest is lower buildings and ground level. The white spaces show infrastructure - asphalt and concrete plates for paths and parking lots at ground level, and corridors at the fourth floor.

Legend: 1. Main entrance; 2. Elevators; 3. Waiting room other departments; 4. Children's Emergency Department; 5. Waiting room Children's Emergency Department; 6. Children's Department (ChD) - patients; 7. Reading corner; 8. Dining room; 9. Play room (small children); 10. Kitchen; 11. Reception ChD; 12. Staff; 13. WC & bathroom; 14. New garden; 15. Existing inner garden-ground level; 16. Service/storage ChD; 17. Atrium - ground level

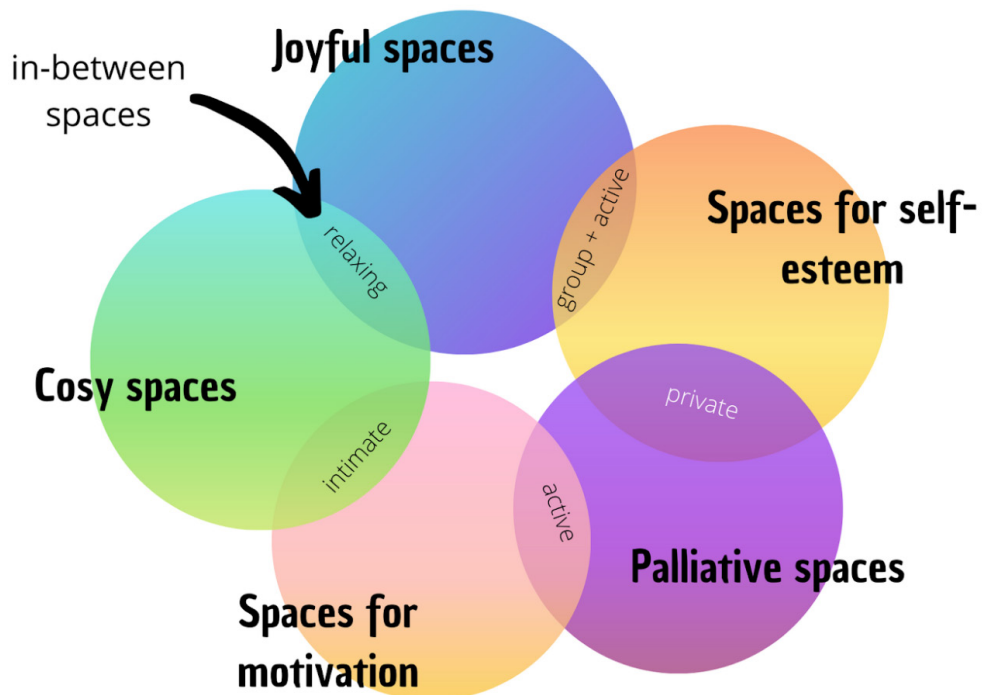


Fig.11. Emotional map with some examples of in-between spaces.

to provide with impressions, experiences and fresh air. The second level is marked with green (fig. 12, p.79) and is defined as a space, which provides more openness but still it is protected from wind, rain and bright sunlight (translucent, filtering roof, vertical vegetation serving as wind belt and sun screen). The last level of transition is offering only protection from the sun with the help of structures like pergola and climbing vegetation. At will, sun sails could be used for more flexibility. The rest of the garden is an open space.

The sun exposure is considered by providing shading above the sandpit and the social areas through trees. The space in grey can transform to let in just natural ambient light from a northern window but not direct sunlight, filtered sunlight or full sunlight. With that, the garden can provide all these four kinds of light. The building casts partial evening shadow from west and partial morning shadow from east. The new garden will not cast heavy shadows over the building.

11.2. Design concept

In order to provide all the types of spaces for emotional support, I followed the emotional map (fig 13). I propose a big fish tank which is visible on the way to the Children's and the Children's Emergency departments to act as a landmark, an object of wonder and excitement and a communication element. I also propose openness but with possibilities for flexibility in order to change the environment according to the users requirements. For example, a free space is available for a patient in a bed but the space can be used for social gatherings otherwise. Other elements which provide flexibility are the flexible glass doors. They rotate around their axis to be moved through a railing as wished, similarly to vertical blinds.

In relation to the first level of transition I introduce the main water feature which can both collect rain water or use water from the water tap. The water volume is not intended to be in big amounts but rather, the water feature should be easily crossed over with the help of stepping stones or small bridges. I leave the central space rather open since it was required by the participants and to provide some sense of freedom and prospect settings. It can also be used as bigger social gatherings. In the middle I place a butterfly garden with a small sculpture. The sculpture is inspired by the story of Thumbelina (Andersen, 1835/2004) because the main character is also vulnerable due to her small size. Thumbelina is chosen to offer the children a change of perspective by viewing someone as smaller. The storytelling could be supported by hidden in the garden clues about her location leading the children to find her in a flower.

In west there are spaces which provide privacy, exploration and palliative activities. The treehouse is slightly lifted from the ground and reachable by a ramp. It, on the other hand, is a place to hide or rest. Beside the treehouse, there is an outdoor gym for physical activities like punching and straightening posture. A hammock hanged between two trees for resting and some intimate settings are placed in north-west. On north, I have placed a small house for storage and a bench surrounded by raised plant beds. There are plants with sensory qualities and also climbing ones to help to define a three dimensional space (roofs and walls). The fun feature for the children is the sandy garden. It contains dwarf conifers found at beaches along the coast of Ystad. The sand pit has a sand table in the form of a beach café (in-between space). Next to the eastern facade, there is a place for art activities. Sensory plants placed in the plant beds and stepable plants placed as ground cover for the palliative space offer experiences like smell, taste and touch.



Fig. 12. (above). Concept design of garden for children and adolescents.

Density:

The sound of the water can be designed through the surfaces it touches while moving. The stones of the water feature also show how the sound would be. It is visible from this image that the water would be more rippling near the joyful space and the space to lead out negative energy (the Southern side of the Palliative space (see fig. 12); and calmer near the treehouse.

Legend:

1. Elevators
2. Waiting room other departments
3. Fish tank
4. Place for patients in beds
5. Water feature
6. Flexible doors
7. Desks/tables for art creation
8. Raised planting bed
9. Climbing vegetation
10. Sand table
11. Storage shelves
12. Butterfly garden with Thumbelina
13. Table and storage of pillows and blankets
14. Raised plant beds with sensory plants
15. Bench
16. Pergola
17. Translucent roof
18. Storage house for toys
19. Hammock
20. Outdoor gym elements for stretching and punching
21. Treehouse
22. Sand garden

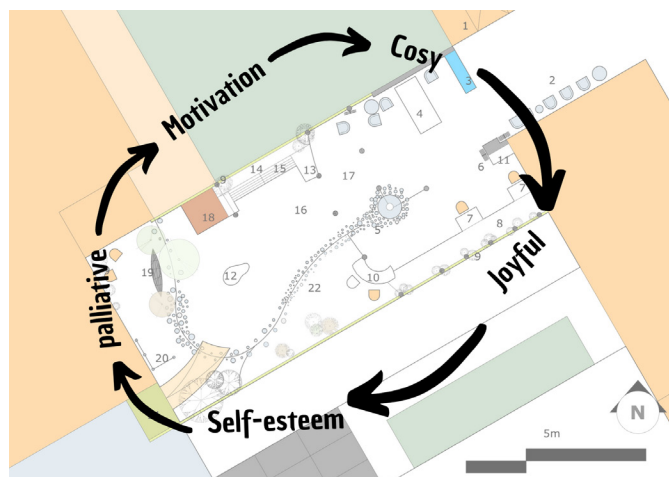


Fig.13. (right).Development of the space types at the site

11.3. Evaluation

Following the *iterative process* suggested by Refshauge et al. (2015) a short, final evaluation is presented here, based on the requirements set for the design process. The design has suggested sensory stimuli through plants, interaction with water and sand, sounds of nature. Loading the garden with too much complexity in elements is avoided but it still depends on choice of materials and colours, which is not decided at this stage. Further development should have in mind the design guidelines where special attention is focused on the use of blue and red colour and also the number of colours.

The proposal suggests spaces for different kinds of psycho-social support such as spaces for solitude, intimate conversations and group therapies and events. Both children and adolescents are considered, although the garden would benefit from even more space for play equipment and ball games. There are different settings to offer possibilities to be with family and friends and, thus to feel connected. Matching personalities has been only touched upon but in terms of mood and processing negative emotions, the garden offers satisfying settings. Although play equipment was not considered at this stage due to technical and safety requirements, the garden proposal at the moment encourages storytelling, imaginative games, arts and crafts, eating outdoors and relaxation.

The garden include in-between spaces open for interpretation, such as the water feature as both edge and an element to cross over, or the sand table which can be used from both sides. There also spaces with vegetation for hiding and undefined spaces like the one on the right of the storage house and between the sub-settings. The spaces are flexible in terms of transformation in use and time. For example the sand garden can take different shapes, the open space in the middle have space for riding three wheel bicycles and for a lot of chairs to listen presentations, watch performances, or to celebrate. The entrance is also flexible as it can be a calm place for a patient in bed to take fresh air, or it can facilitate a social gathering in a weather protected room. The implementation of the emotional map ensures the inclusion of the all five emotional groups, identified as important for the user group in focus. The design can elaborate even more on visceral, behavioural and reflective levels, for example with specific plants, choice of materials and lighting.

Through this proposal, the design would offer at least five spaces which are not hospital-like and also focused to five different atmospheres which offer a variation during hospital visit or stay. The garden reminds of those activities an individual likes to perform and thus, it is motivating the self-healing processes.

Using the *tool for assessment and development of playgrounds* (Jansson & Andersson, 2018), the garden was evaluated against qualities for play. The tool is intended to investigate the following aspects of a place: (1) playground qualities (quality and responsiveness of a place; inclusion; possibility for understanding the surrounding world; character); and (2) geographical context (proximity and accessibility; location and surrounding; children's possibilities for own places). The aspect (3), strategies is used in evaluation only partly because it includes assessment of performed management. The three aspect are evaluated only roughly because of the low level of detail at this stage of design.

(1) playground qualities

The topography qualities of the garden are challenging for this project. Attempts to create variation in topology are made with the help of the treehouse which is raised and the sand garden. At the same time, the garden is already above ground and is excellent in terms of prospect. This would be, though, possible only if the design of the railings allows enjoying the view. At least at the first level of transition, the windows in north can be designed from floor to ceiling to allow enjoying the view of the inner garden below. For the proposal of the new garden there are considered also small trees to hide in between and flowers and fruits to pick. The raised flower beds offer sensory experiences like texture, smell and taste. Loose materials for play like branches, leaves and cones can be provided by the trees, especially the conifers. Other loose materials are such as sand and stones.

Understanding the perspectives of the users as patients has contributed in high requirements towards accessibility and inclusion. That is why thoughts about different abilities has been in focus, although not discussed a lot. Continuing the design on a scale like 1:200 can show examples of transition between different materials in ground cover. At this stage, the elements are arranged in such way that a hospital bed can reach every space in the garden except for the tree house which has shorter length than a hospital bed. It is, however accessible for patients in wheelchairs. Alternatively, the length of the tree house could be adjusted but only inward because of a window on the facade. In that case the ramp will be shorter and this results in the treehouse needing to be closer to the ground.

With this garden proposal I aim to create a specific atmosphere with the help of the five different types of spaces. The element which is central and is present in all of them is the water feature.

(2) geographical context

The location of the garden is chosen as close as possible to the Children's department but it is still not close enough for those patients which need most motivation. Optimally, they should have access to outdoors directly from their rooms but it is impossible due to the challenges of the site preconditions. The users can observe the surrounding from the garden, for instance, they see the main entrance, the inner garden of the hospital, the city and the port. They can also see who is coming to visit them because the parking lot would be visible from the garden.

(3) strategies

The user's perspectives are taken into consideration and the users have been involved in participation but the sample is still too small - just three participants expressed their views and it is hard to generalize.

12. DISCUSSION

Development of concepts

With the help of Self-perception theory, the Jamesian theory of emotions and emotional design the central concepts from the theoretical framework were utilized to build up this thesis. Two of the concepts used for theoretical framework has been developed further, mainly through literature review.

Compatible spaces had for a starting point the compatibility concept based on five statements (Hartig et al., 1995, p.182) which were not further defined by those authors. Thus, compatible spaces grew to include terms like spatial autonomy (Green, 2018), self-identity (Proshansky, 1978), and palliative places (Thurber & Malinowski, 1991). CERI and Environmental personalities (Bunting & Cousins, 1985) as theory has been used to the extent that the participants were predisposed with the help of image choices based on the 8 personalities (appendix iv-A). The small sample of participation showed that CERI is important and could be used in larger extend but it only could be beneficial if the participants are larger in number. Environmental trust (ibid) has been used in relation to analysis of self-esteem and motivation, and also Need Privacy (ibid) helped interpretation of the drawing by participant 1. If the participants were more in number, it is possible that more of the environmental personalities were in use.

In-between spaces has been in use in terms of analysis and design. The transition zone by Bengtsson (2015) has been useful for design and also analysis on motivation. Edges of flux and transformation (Mårtensson, 2013), Threshold (Teyssot, 2008) and interstitial spaces (Kärrholm, 2012) has contributed mainly to the design stage by creating entrance and some sub-settings which are both encouraging social interaction and mixing of different territories and use. The concept of in-between spaces had been further developed here during emotional mapping by finding similarities in the space types to be used as links to the neighbouring space type.

Discussion of the methodological approaches

In the overall methodological strategy, I included steps which involved implementation of an interdisciplinary perspective into the study. Combining core psychology into landscape design has been a challenge for my strategies. Fortunately, some support has been found within the theory of emotional design, which was, though, originally developed in terms of industrial design and technology. However, only through this additional effort the connection between emotions and landscape design has been possible. The triangulation of different strategies has resulted in relatively big amount of data which was processed by pairing of keywords - 64 links in total. This made it easier to find similarities and differences in order to group the data in a more general manner but if added more data (for example much more participants), it would be hard to handle manually. In such case I recommend software tools.

Art-based participation with children and adolescents patients has also been a challenge. It needed preparation in the topics of moods, emotions, and also environmental preferences. As inexperienced in the field of psychology and the practice of counselling, I may have influenced the results in some way. For example, it is arguable if I have explained the task well enough, did the the participants really thought freely about a dream garden, discarding all their previous hospital experiences? In that sense, a question may raise about the wish for privacy in all three cases: is it coming from the experienced lack of privacy so far being in hospital, or is it a matter of internal preferences? In my opinion, an experienced in psychology researcher could perform this kind of participation even better being able to identify internal factors from past experiences.

A reflection about my role as a researcher regarding this tactic is that it takes a lot of energy to make this kind of research if not professionally used with. The participants are at the same time patients with their specific health issues and inner thoughts about these issues. It takes time and effort to redirect their thoughts to something positive like a dream, desire or wish. You should also have communicative skills to unfold what is hidden behind clues.

Even with a lot of preparation and planning, only three participants were reached. They used different ways to express themselves and also the duration was incomparable - 15 min, 45 min and 2 hours. From that point of view it is arguable if the results can be generalized. However, many of the statements were confirmed by the rest of the data (literature and interviews). The art-based participatory approach which I used is probably not suitable for much younger children since it would be hard to explain the task and it would present difficulties in interpretation. To complement this gap, I Included additional strategies. For instance, the knowledge about the view from the baby stroller was informed through the adults' perspectives strategy, and in particular during the walking interview with Helle Nebelong.

Having in mind the limitations, has the inclusion of children's own perspectives contributed to better results? Although there were data which already exist in the literature or were shared in the interviews, the participation helped me to better understand the participants. For instance, I noticed that they had an internal need to be heard. I also felt the pressure and worries in their mothers' worlds. The adolescents' perspective were also particularly important to the study because the literature is still not comprehensive regarding adolescent patients and emotions. The male adolescent, only 17 years old had already begun to experience the stress and anxiety of the adult's life. On the other hand, the female adolescent seemed very confused and

seem to not feel in her place. She started to feel better, safer and a little bit happier only first when she started to describe her favourite and imaginative places. What was new as data from this approach was that all the three participants wished for a *big* open space.

In the course of the investigation phase, many different kinds of data input appeared necessary. However there is a problem to dig deeper into each due to time constraint. Since the aim of my study is to present an interdisciplinary methodology, the bigger picture has been considered more important. In a professional case it is possible to delegate the inputs to different specialists who, then, can go into a deeper level of detail.

The guidelines are the summerized result of this thesis but they need to be tested in real-life project. Although they were tested in context real-life projects present far more variables. For instance, the property owner has not been an active side during the development of this thesis.

Design discussion

If the proposed garden would be built one day, the child and adolescent patients would benefit by finding a place to deal with their emotions toward a balance. After the evaluation for playground qualities the garden showed lack in some play values. These are mainly due to the small available space and the fact that the garden is located above ground. The main disadvantages are such as lack of shifting terrain and spaciousness. However, the fact that the garden is above ground had unexpected advantages. According to Green (2008) children search for high spots in the landscape to be able to observe people and things. Changing perspective in that way is, on the other hand, beneficial for self-esteem (Laird, 2007). Thus, it depends on the design to carry forward this advantage by including railings with windows and good gazing opportunities.

The final design meets the main goals of the study but there is still more to be wished. A larger space or the possibility for multiple spaces could include more of the important elements which were revealed. The final design is meeting most of the needs discussed but some users who wish for more active play may find this proposal not fully satisfying. For example, swings and a slide were not included because there is not enough space considering the safety requirements. Instead, the proposal has included some swinging elements such as hammocks. The proposal could be reviewed in relation to playground products which was not performed in this thesis.

The input of emotional knowledge has changed the character of the garden in relation to such kinds of spaces for children and adolescents which focus on deep psychological needs. Also, through this study, adolescents were included in spaces for small children and children were included in spaces for adults. The main contribution is, however, the inclusion of negative emotions which also must find a place in healthcare settings and in general. The creation of an emotional map is a step which could be used creatively in each context. For example, the five space types do not need to overlap if the available space is relatively large. In such case, the garden could consist of five different rooms with in-between spaces as links, which are external for the space types.

Further development

Alternative lines of the thesis

The thesis have stepped upon many lines which could be developed separately, e.g. developing of spaces for children and adolescents based on their environmental personalities, focusing on sub-groups by age or nature of illness, processing of negative emotions and healing landscapes for children and adolescents in particular, or art-based participatory studies with larger number of participants.

Initially, I had included social media search to investigate children and adolescents perspectives from first hand. Sources like personal online blogs and youtube could be valuable self-reporting sources providing with larger quantity of data. One issue to consider about this strategy would be the fact that the researcher has no means to communicate directly with the informers, or at least, in many cases it would be hard to reach personally to them. This step, dropped off due to lack of time. Regardless, I consider it a good tactic to implement in further studies on children's and adolescents' perspectives.

The importance of self-confidence

Another issue is the drop in self-confidence in child and adolescents patients which include symptoms like feelings of helplessness, anxiety and guilt, ambivalence towards one's own body, insecurity, inadequacy, perceived lack of privacy and psychological uncertainty. Although I have touched upon all these nuances in design terms, there is a need to look more deeply on those self-confidence issues - maybe in further studies.

Children and adolescents at the Hospital of Ystad: the bigger picture

If a larger healing garden is created at the place of the old one, the Garden for children and adolescents proposed in this thesis can become a part from a bigger route used for longer walks (see fig. 14).



Fig. 14. A vision for future development of gardens for well-being at the Hospital of Ystad.

13. CONCLUSION

The thesis has answered the main research question “How can a landscape design be developed with the aim of achieving emotional balance in child and adolescent patients within healthcare settings?” through the processing of the two objectives. Each objective has its own questions as presented in the method section.

Objective 1

The strategies for objective 1 aim to answer the question: (a) What kinds of emotions do child and adolescent patients experience in relation to hospital visit or hospitalization? (b) What is the mechanism for altering emotions from unpleasant to pleasant?

The children and adolescents experience hospitals through the prism of their fear and insecurity. Deprived from their daily routines and freedom for play, they can also feel anger. High intensity feelings are approached by landscape design through sensory experiences following Norman (2004). Reflection can also diminish the effects of those group of feelings and could be achieved by anthropomorphism (ibid).

Due to their strong empathy towards their parents, children and adolescents may also fall into depression and withdrawal in order not to worry their loved ones. Therefore, family settings should be considered to influence positively even the parents. Furthermore, in relation to illnesses, children and adolescents have issues with less intensive emotions like fall of self-esteem and motivation which are, however, linked to other more intensive emotions on the negative side of the scale. Self-esteem issues could be addressed by supporting physical activities for straight posture, achievements and safe challenges. Intrinsic motivation diminishes negative effects low self-esteem if positive feedback is received in relation to performance. Gradual transition of indoor-outdoor links helps to overcome lack of vigour and energy. Positive effects of familiarity are achieved by providing home-like, cosy and safe environment and avoiding hospital-like environment.

Flow and absorption state is counteracting boredom and remove focus from comparing one's self unfavourably. Excitement and wonder provokes speech and self-expression.

Objective 2

Objective 2 is answered through strategies both for research and for design. The strategies for research aim to answer the questions: (a) What in the physical environment is contributing to emotional regulation?; (b) What are the psycho-social practices performed nowadays towards emotional regulation and what are the requirements for the physical environments to accommodate those activities? (c) Which features of design of outdoor environments for children and adolescents in healthcare settings are compatible with their emotions? (d) Which emotions are addressed in such design?

(a) Both children and adolescents in healthcare settings need channels to lead out the negative emotions, and to receive positive ones. Adolescents need further to sustain self-regulation which means their ability to balance cognition, emotions and behaviour towards a goal. This could be achieved through psycho-social support and emotional design.

(b) Psycho-social support is provided in the form of play and art therapies, school classes, events like various life performances, meetings of children with adolescents who have previously in life gone through the same illness, workshops, sensory experiences, storytelling, art, to mention some. Together with psycho-social support landscape architecture can contribute to the feeling of connectedness with family, community and the wide world. Providing intimate, cosy spaces for meeting family; cheerful atmosphere with settings for gathering for group activities and nature elements to observe wildlife and reflect on bigger systems are some suggestions revealed by this study. Unfortunately, these important activities has been provided only where there is a place for them. Further, it seems that the beneficial effects of these activities increase if they are provided outdoors.

(c) Emotionally compatible spaces are revealed through interdisciplinary theoretical bridge between psychology and design. Developed for industrial design, emotional design has given some tools to extend this knowledge to the field of landscape architecture. The study has also looked at the Self-perception theory, along with the Jamesian concept of emotions to find a theoretical bridge between emotions and landscape design. Emotional design provides with tools to work with emotions on visceral, behavioural and reflective level. The search has resulted in the discovery that emotions can be changed if the behaviour is changed and/or if the reflections are redirected. Further, pleasant emotions can be induced through sensory stimulation such as visual impressions, appearance, touch, feel, smell, sound, etc. Working intentionally towards positive emotional state the design can contribute to the healing process.

Design aspects proposed for supporting emotional and, in general, self-regulation are architectural communication, in-between spaces and compatible spaces. The types of

spaces in the guidelines include Joyful spaces, Spaces for self-esteem, Palliative spaces, Cosy spaces and Spaces for motivation to reflect and help processing the five different groups of emotions.

(d) Landscape architecture was informed by the concept of healing gardens for children and the effect some important nature elements have on children's and adolescents' emotions. The qualities identified were familiarity, contemplation, architectural communication, user diversity and high-quality of social environment, a good climate and lighting, vegetation, animals and water. The emotions targeted were high-intensity feelings (negative), less intensive feelings (positive), self-esteem, intrinsic motivation, boredom, familiarity, excitement and wonder, empathy, feeling of connectedness.

The strategy for design aim to answer the question: How has the inclusion of emotions contributed to landscape architecture?

Through the strategy of bridging, the process of grouping pairs of keywords showed that similar responses are linked to physical elements and settings that together create five very defined space types. Inclusion of emotions in general has contributed to a deeper understanding of behaviour and developing better design strategies by understanding behaviour and emotion as one process. In that way children's and adolescents motives to act were brought to the surface.

The design in context also helped to realize that emotions related to self-esteem need to be supported by an accessible outdoor space. Although raised above ground gardens may have their limitations, through emotional design and knowledge about motivation, the landscape environment can provoke feelings to lead the user to take the next step and search for other available spaces on ground level, even if further away. Such strategy would raise confidence in one's own capabilities and possibly lead to increased processes of self-healing. In real-life projects, landscape sites can be developed by using the guidelines both as general reference and in a creative way by using the five space types to create an emotional map. The emotional map could vary dependent on aspects like site size, entrance location, north direction, content of the surroundings, etc.

Summarised conclusion

At the end, the main research question "**How can a landscape design be developed with the aim of achieving emotional balance in child and adolescent patients within healthcare settings?**" can be answered as follows:

In this thesis, the landscape design has been developed by the creation of design guidelines by identifying five space types for outdoor environments to support emotional balance for the focus group. Along with that, the terms of compatible spaces and in-between spaces has been analysed in terms of the thesis topic. The five space types are gathered in a design guidelines which are open for creative input during implementation.

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Fig. 8. Map of the City of Ystad: Background layer retrieved with the ArcGIS map tool at <http://ystadskommun.maps.arcgis.com/apps/webappviewer/index.html?id=304386577dda4f01a8d6dad326120182>.

IV. APPENDICES

iv-A. Environmental personalities

Eight environmental personalities from the model adapted for children in age 9-16 years old called CERI (Bunting & Cousins 1985) were used to choose images for predisposition of the three participants in art-based participatory workshop. These are as follows:

(P) Pastoralism. “A positive response to natural environment, outdoors, and open spaces”(Bunting & Cousins 1985, p.731). There are two hypotheses explaining these preferences. The first is that people, and children in particular, are genetically predisposed according to the Evolutionary theory (Appleton, 1975; Balling & Falk, 1982). The second advocates that children are attracted to natural environments as contrasting to urban settings, and as affording indefinite access to vast variety of materials and possibilities for manipulation and self-discovery (Nicholson, 1971; Lynch 1979). However, not all children are attracted to natural settings in the same level (Tuan, 1978).

(U) Urbanism. “A broad attraction to the human man-made environments and to the complexity and diversity of city living” (Bunting & Cousins 1985, p.731). The children and adolescents characterize also with interest in cultural activities, they are positive/tolerant to different types of social groups and behaviours (ibid). These are mostly city children and this preference has with no regard to sex but increases with age for both urban and rural children, though it appears earlier for urban children (age 6-8 years old) (ibid).

(SS) Stimulus seeking. “An affinity for increased activation via stimulation from the environment and attraction to unusual and adventurous environmental settings”(Bunting & Cousins 1985, p.732).

The authors consider this treat as necessary for the individuals maturation process but highlight the importance to inform about possible extremes like in autism and hyperactivity. Some examples of places and activities inspired by this category are adventure play-grounds, stories, TV shows and video games (ibid).

(A) Antiquarianism. “Emotional responsiveness to the historical past and old-fashioned or traditional environmental design” (Bunting & Cousins 1985, p.733). Children who gave the highest scores in this category are recognised through their attachment to places which

seem old; responsiveness to mystery; interest in history; and custom to collect things (ibid).

(Meters) Mechanical orientation. “An attraction to mechanized structures and the enjoyment of manual activity”(Bunting & Cousins 1985, p.734). Individual characterized as mechanical orientated seem to like model building, repairing (e.g. bicycle), making a tree-house, and also have an interest in industrial fabrication and technological development.

(NP) Need Privacy. “A positive appreciation of solitude and need to be free from distraction from the external environment” (Bunting & Cousins 1985, p.733). According to the authors, an average child has certain times and spaces where privacy is especially important. However, there are children who are more likely to seek personal and private spaces both indoors and outdoors (ibid).

(ET) Environmental Trust. “A sense of confidence and trust in all types of environments both human-made and natural” (Bunting & Cousins 1985, p.733). Children in this category are described as “capable” and “well-rounded” (ibid.) and can be recognized as they like exploration activities. Children who give low scores for ET often experience homesickness and fear of the dark (meaning environmental distrust) (ibid). It is argued that emotions derived from environmental distrust are essential for the child’s survival, especially in early ages (ibid). These emotions are also helping the child in learning problem-solving and way-finding. By learning to deal with unfamiliar or complex situations, the children gain self-confidence and, thus, they develop more ET.

(EA) Environmental Adaptation. “An optimistic lack of concern about human intervention in the natural environment along with the believe in the right of the human to use technology to adapt and dominate nature” (Bunting & Cousins 1985, p.732). According to the study, the scores for this category tend to drop with age since it involves learning about applying moral standards to environmental issues (Bunting & Cousins, 1985). Urban children as a rule give higher scores because they seem more exposed to technology and used to adapting nature to human life than rural participants (ibid). An interesting finding is that the general trend for urban children is deviating for participants between 8th and 10th grade where the scores are abruptly rising (ibid). This is explained with two suggestions - either the lack of environmental educational programs for these students, or it is a manifestation of adolescents’ rejection of established values (ibid).

iv-B. Information sheet for participation of child and adolescent patients



Sveriges Lantbruksuniversitet
Swedish University of Agricultural Science

INFORMATIONSBLAD

Om deltagande i undersökning i samband med masterarbete

Forskare: Galina Ekström
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Outdoor Environments for Health and Well-being
Handledare: Märith Jansson, SLU, Alnarp

21 November 2019
Ystads Lasarett, Barnavdelning och Barnakutmottagning
Ystad

Beskrivning av deltagandet

Forskaren kommer att erbjuda 8 st bilder på trädgård som deltagaren kommer att välja utifrån sina egna preferenser.

Därefter kommer deltagaren att uttrycka sina önskan om en dröm trädgård för barn och unga.

Deltagaren kan uttrycka sig på vilket sätt de vill, t.ex. genom teckning, bild, låt eller dikt.

Forskaren har med sig kriterier i färg, papper och mobiltelefon med internetuppkoppling. Deltagarna får om de har lust att diskutera sina "svar" med forskaren eller närstående. Forskaren kan ha några frågor kring resultatet som ställs antingen till deltagaren eller till närstående.

Deltagandet är frivilligt och kan avslutas när som helst, även under tiden själva deltagandet pågår. Inga bilder på personer kommer att tas, deltagandet kommer inte att spelas in. Dokumentering: anteckningar, ev. bilder på material producerad av deltagarna. Namn kommer att skyddas isf.

Forskaren behöver inte vara själv med deltagaren. Till deltagarnas bästa, under deltagandet vårdpersonal och/eller närstående kan vara med.

Etik och sekretess

Med sikte på att skydda deltagarnas identitet, deras namn kommer inte att avslöjas, samt det kommer inte avslöjas om deltagaren är inlagd på avdelning eller har träffats på väntrum.

Eftersom de deltagarna är under 18 år, forskaren har ansvar för deras säkerhet under deltagandet. Det är också forskarens ansvar att informeras om i fall det finns några hälso- eller psykiska tillstånd som är viktiga i samband med deltagarnas säkerhet.

Forskaren har ansvaret att redogöra deltagandets resultat på ett objektiv sätt.

Samtycken är en pågående process, deltagaren kan avsluta deltagandet när som helst.

Barn och ungdom har rätt att få sig hörda.

Barn och unga har rätt att uttrycka sig på alla möjliga sätt, inte bara verbalt (på vuxnas villkor).

v. ACKNOWLEDGEMENTS

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At last but not least, I am grateful to my family, and especially my husband Mathias. Without you, this thesis would never be finished! Adrian, my little one, you have been my greatest inspiration and every page here is full with love for you!

Sincerely yours,
Galina

Skåne-Tranås, 2020

