Beyond Functionality:

Exploring the benefits of Restorative Environments for youths in Malta

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June, 2023

FACULTY/INSTITUTE/CENTRE/SCHOOL FACULTY FOR THE BUILT ENVIRONMENT

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Acknowledgements

I would like to take this opportunity to express my sincere gratitude to all those who have contributed to the completion of this project. First and foremost, I would like to thank my supervisor, Perit Dr Alexia Mercieca, for her invaluable guidance, support, and encouragement throughout the process. The expertise and insights given throughout the study were crucial for the development of this dissertation.

I would also like to thank the participants who gave their time and energy to participate in the study. Without their contribution and perspectives, this study would not have been possible. Moreover, I would like to thank my colleagues and friends who generously offered me feedback, advice, and support that significantly improved the quality of my work.

I would like to extend my sincere appreciation to the tutors, Perit Ella Fleri Soler and Perit Mark Borg for sharing their knowledge, experience and time during the research process.

Finally, I am deeply indebted to my family for their support and understanding throughout the journey.

I take full responsibility for any shortcomings in this dissertation.

Abstract

As a man-made imposition, the built environment should aim to serve as a biologically sufficient space and a pleasurable visual-sensory experience. Recognising that only a portion of the built environment meets such aspirations demonstrates the extensive work that needs to be done by those involved in its design and planning. This dissertation sheds light on the local realities concerning youths' mental health that tend to be overlooked during the design and planning of public space. As individuals interact with their physical setting daily, the role that surrounding environments have in worsening or alleviating a person's mental health conditions become apparent.

The study delves deeper into the benefits of restorative environments together with their specific characteristics that promote psychological restoration from cognitive overload. The research focuses on youth's perspective of different settings based on experience, preference and feelings so as to better understand the relationship between mental well-being for youths and their environment.

The research process developed into an interactive workshop incorporating a range of qualitative research techniques. Focus groups conducted an online survey, an informal discussion using a scenario method and a drawing exercise. An analysis and comparison of results illustrated a preference for natural environments, substantiating past research. In addition, the study revealed ways in which indoor spaces and local urban settings can be rethought so as to ensure that the needs, interests and experiences of youths within such environments can be enhanced given the limited access to natural environments and increased urbanisation. The need for specific environmental components, such as shading, sunlight and an affordance for leisure or physical activities emerged, that demonstrates how external factors shape a person's overall experience within a given environment, going beyond the mere physical attributes of a space.

By understanding restorative environments, the several aspects that promote restoration and their ability to contribute to improved mental health, we can better translate the theories and studies revolving around such environments into design options.

Keywords: restorative environments, psychological restoration, cognitive overload, preference, affordance.

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Glossary

Affordances

The perceived and potential actions that an environment offers to a user.

ART (Attention Restoration Theory)

A theory proposed by Kaplan & Kaplan (1989) suggesting that exposure to natural environments or settings retaining certain characteristics can restore mental fatigue from sustained directed attention.

Attentional fatigue

Also referred to as cognitive fatigue or mental fatigue, refers to a state of reduced mental alertness, cognitive performance and a sense of tiredness due to conflicting attentional demands.

Being-away

A state of psychological detachment or escape from the typical stressors, routines, and responsibilities of daily life.

Categorisation

The process of organising scenes into distinct groups based on shared characteristics or features.

Cognitive resources

The mental capacities and processes involved in administering information, problem-solving, decision-making and other mental activities.

Compatibility

The degree to which the qualities of an environment align with an individual's aspirations, preferences, and inclinations.

Directed attention

The cognitive process of consciously focusing and concentrating mental resources on a specific task, activity, or stimulus.

Documented Perspectives

A recorded description of one's point of view based on knowledge, experiences, and personal biases.

Environmental content

The physical features, informational elements and sensory stimuli characterising an environment.

Extent (coherence/scope)

The degree to which an environment feels spacious, connected and familiar, eliminating the need for new mental representations during temporary experiences.

Indicators

Measurable variables or observable occurrences that provide evidence or insight into a particular concept, condition, or phenomenon of interest.

Mental fatigue

A psychobiological state of reduced cognitive functioning and alertness resulting from prolonged phases of demanding cognitive tasks.

Predictor Variables

Variables used in statistical or predictive models to determine the value or outcome of another variable of interest, known as the dependent variable.

Preference ratings

Numerical or qualitative assessments given by individuals to indicate the level by which they favour certain options or stimuli.

Stress

A physiological and psychological response to external pressures or demands, often referred to as stressors. Such stressors may consist of anticipated events which has been assessed and deemed to be threatening or detrimental

Scene

A specific view within an environment perceivable by individuals. It typically involves a visual representation of a particular location or context and the arrangement of elements within that environment.

Visual complexity

The level of intricacy of visual stimuli within a scene, measuring the number of distinct elements or patterns present and the degree to which they vary from one another.

Visual narrative

An illustration used to convey a story and communicate information. In this study drawing is used as a medium to communicate youths' perspective on ideal restorative environments.

Chapter 1: Unspoken realities

This chapter describes the intent of this research, introducing the literature review which follows. It addresses the local concerns that have motivated the study in relation to previous studies on the subject.

1.1 Introduction

Despite the merits of modern living, it is undeniably and tragically driven to generate excessive levels of anxiety and psychological distress. Today's meritocratic society presents an ideal that one must reach so as to be successful and recognised. Reaching this ideal is a struggle that youths face as they strive to develop problem-solving mechanisms, emotional control and interpersonal skills simultaneously, which similarly involve significant mental effort. This highlights the significance of supportive environments for youths both at home and within the community.

The struggles faced by youths in Malta resulting in mental health implications tend to be overlooked, possibly due to the considerable stigma associated with mental health issues. The reality about the current scenario was brought to light by a local NGO, Richmond Foundation, through a study carried out in 2021. Richmond Foundation works to generate awareness about mental health issues, provide adequate support for individuals in need and advocate better education on the matter. Results obtained illustrated that seventy percent (70%) of 417 participants aged between 13 and 25, admitted to experiencing long-term anxiety during three months preceding the survey. Sadness and depressions were amongst other reported issues with twenty-six percent (26%) of respondents stating that such feelings were encountered often. Thirty-seven percent (37%) of respondents stated that when encountering issues they choose to resolve them alone rather than seeking help, which contributes to the substantial increase in demand for services (Richmond Foundation, 2021). The alarming response should be a caution light to anyone who in some way may have the power to affect and improve the mental health scenario in Malta.

This, accompanied by the progressive eradication of natural environments, the lack of available spaces for congregation, increased noise and air pollution amongst other detriments brought about by rapid urbanisation, has generated a strain on youths in Malta who seek to combat social isolation, find a sense of identity and build a professional foundation for their future, despite all obstructions (Shalan, 2023). Overlooking youths' mental health conditions in various sectors will inevitably result in long-term consequences as such issues will extend to adulthood (Buttazzoni et al., 2022).

The link between communal health and the provision of open green spaces that are easy to access is recognised by most individuals. Despite this, awareness of this link has been subdued, if not completely repressed for several years when it comes to the public policy agenda. The present green spaces are being converted into undistinguishable green deserts thanks to the 'one-size-fits-all' approach being taken (Worpole, 2007).

Figure 1: 'Health of the People', Plaque on the Public Health Service Department in the
Metropolitan Borough of Southwark, opened 1937
Source: Worpole, 2007

1.2 Research motivation

Considering the aforementioned local scenario, I chose to further explore the extent to which architecture can respond to such undesirable results. This builds on a dissertation submitted by Nicole Kenely to the Faculty for the Built Environment in 2022 titled, 'Space, Place & Youth: Exploring the Relationship between Space, Place & Youth Mental Health & Well-being', particularly in analysing "how spaces and environments influence and contribute to young people's well-being and mental health" (Kenely, 2022, p.3).

1.3 Research objectives & research questions

Through this study I seek to better explore youths' perception about different natural and urban environments as well as the qualities of environments that promote mental well-being which make them superior to others. This would help identify what vital elements are absent in today's urban fabric that may, to some degree, contribute to the diminished mental well-being we are currently experiencing. The study will start by exploring the subject theoretically by delving into the notion of restorative environments and five emergent research themes based on Kaplan & Kaplan's (1989) study. Such theoretical analysis will then be used to shape a practical analysis concerning the local scenario, involving young adults in an interactive fieldwork study, as shown in Figure 2.

This outlined research process responds to the following research objectives:
   (1) To determine the impact of natural and urban environments on youths' psychological well-being.
   (2) To discover what components of preferred spaces, induce restoration in youths.

(3) To demonstrate how the densification of urban spaces lacking restorative qualities play a role in today's diminished psychological well-being.

(4) To demonstrate the need to view the role of an architect as a promoter of health and well-being that goes beyond creating functional spaces.

The research questions addressed throughout the study are;

(1) How are youths influenced by their environment in terms of fascination and guidance?

(2) How can restorative environments be better integrated within our local urban setting?

(3) What components of restorative environments can influence future urban planning for improved psychological well-being?

1.4 Dissertation structure
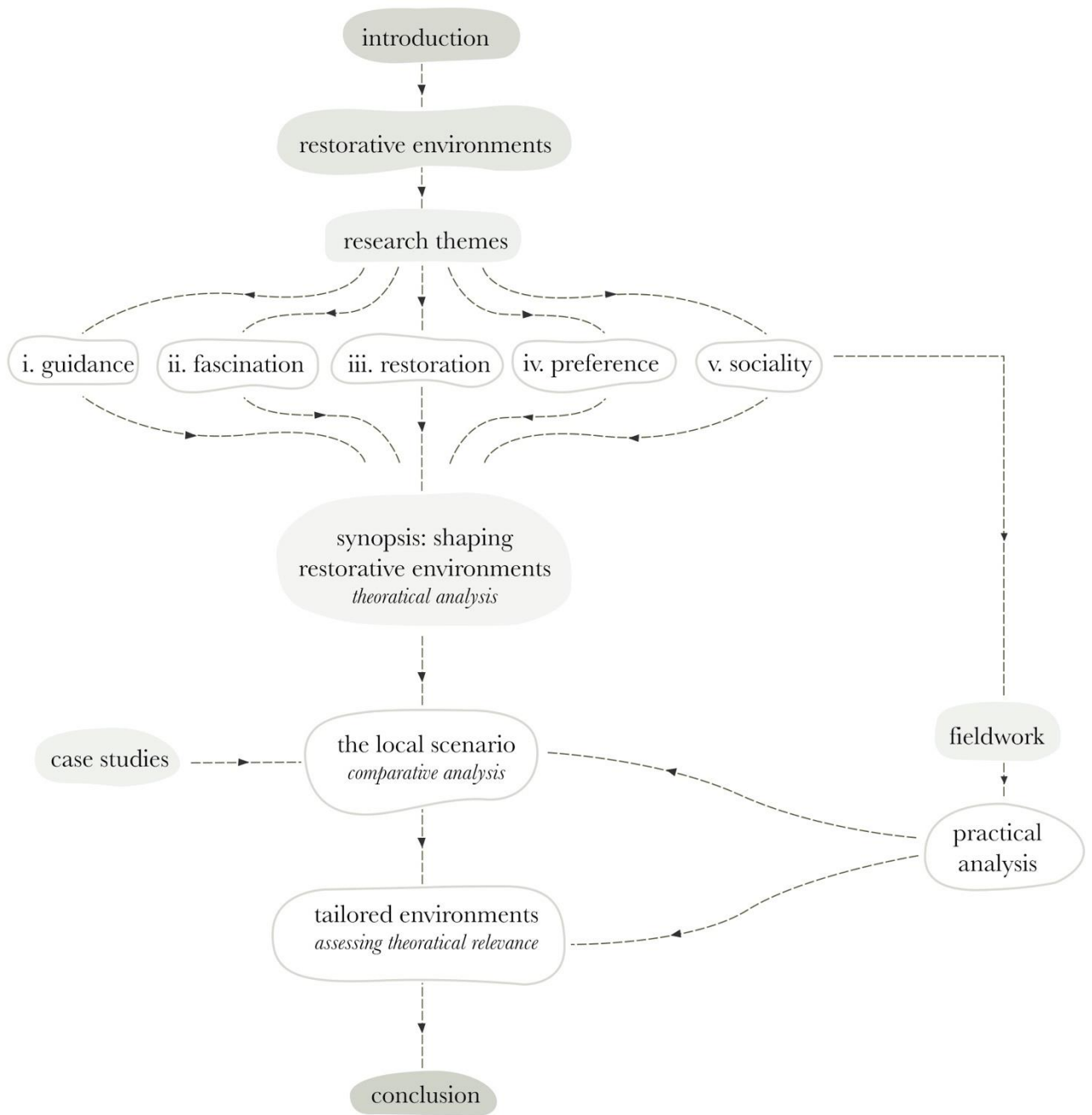
Figure 2: An analytical, theoretical and practical process
Source: Author, 2023

Chapter 2: Person-Environment compatibility

This chapter starts by discussing the notion of restorative environments particularly based on Kaplan & Kaplan (1989). The chapter outlines five emergent themes that the study focuses on, which emerged when conducting research about restorative environments. Chapter 2 concludes with a theoretical analysis of the discussed research themes in comparison to other studies that similarly tackled concepts.

2.1 Introducing the literature review

Restorative experiences are a source of numerous cognitive benefits that are often overlooked or left undefined. In spite of this, four benefits were identified by Kaplan & Kaplan (1989) that can be classified as those stimulating 'attentional recovery' and those stimulating a sense of 'reflection'. Benefits associated with 'attentional recovery' encourage individuals to omit any cognitive noise which typically results from daily task demands, that may be causing attentional fatigue whilst disrupting the person's decision-making capabilities. Benefits associated with 'reflection' allow an individual to reflect on any imminent, unresolved issues, whilst providing an opportunity to reflect on goals, situations and prospects (Herzog et al., 1997).

It is believed that, in recent years, work associated with teenagers and outdoor environments has not been given the priority it requires (Travlou, 2006). This is particularly worrying considering the current, critical, local scenario with regards to youth's mental health (Richmond Foundation, 2021). There are several possible motives explaining the decline in political interest with respect to outdoor leisure facilities. Amongst such motives are;

- The increase in vehicles dominating streets and open spaces.
- The increase in commercialisation of gyms, fitness centres and sports facilities.
- The increase in indoor leisure facilities as a symbol of social regeneration.
- The increase in graduates with sports administration degrees that are more inclined towards indoor sports facilities than parks.

These are in line with the illustration provided by Gehl (2007) shown in Fig.3, depicting the shift in outdoor activities as a result of public life development between 1880 and 2005.
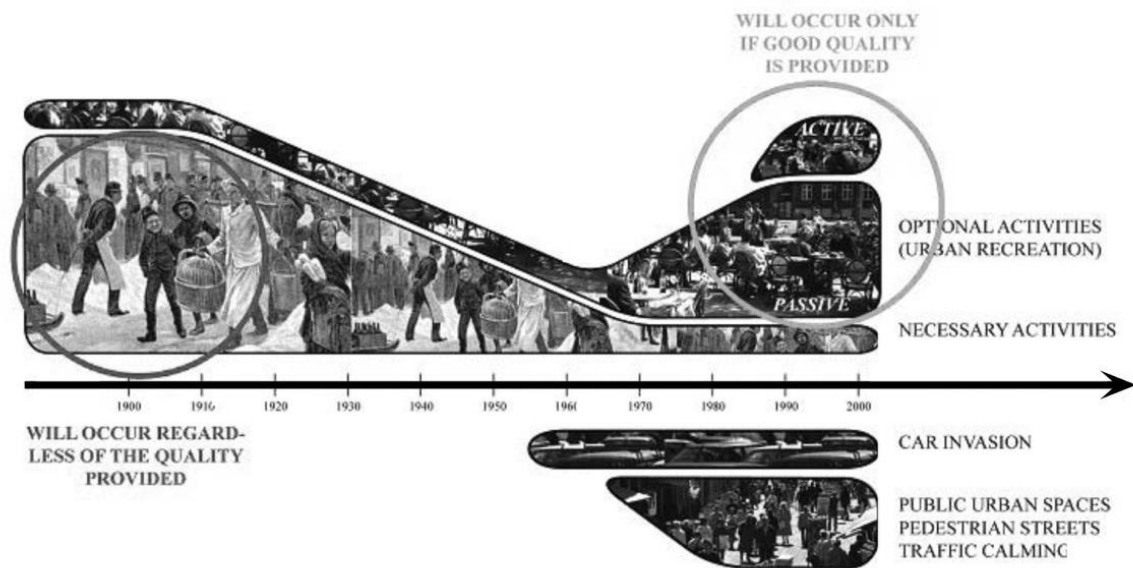
Figure 3: Public spaces corresponding to a developing public life
Source: Jan Gehl, 2007

This shift in priorities does not align to the intensifying crisis of public psychological well-being which questions why public policies are not motivated to support any forms of outdoor recreation despite the circumstances? Realistically, public investment in outdoor leisure facilities may result in superior return with respect to public health compared to a surplus of indoor facilities. The latter has shown to offer very little benefits to public health despite the focus it is given (Worpole, 2007).

Notably, the benefits of natural environments, outdoor open spaces and restorative environments at large are experienced during early stages in one's lifespan. In fact, one's positive memories of unstructured recreation in outdoor environments and woodlands throughout childhood were found to be linked to the person's inclination towards such environments for recreation or therapy throughout adulthood (Bingley & Milligan, 2004; Everard et al., 2004). Therefore, it is crucial to ensure that adequate access to such natural environments is available to the public today, to better understand one's experiences within such environments and to question;

"How important are physical aspects of the environment and what kind of difference might we make through our plans and designs?" (Thompson, 2007, p.24)

Figure 4: 50% of people in the Netherlands commonly cycle or walk.
Cycling in Amsterdam, Vondel Park
Source: Worpole, 2007

Figure 5: Outdoor aerobics class in Stockholm Park
Source: Worpole, 2007

Studies on restorative environments seem to offer a few answers to such questions. Researchers have undergone several tasks to better understand the potential of a restorative environment as a resource of mental and physical health (Hartig, 2007). Kaplan & Kaplan (1989) present a suitable basis for such studies by defining what constitutes a restorative environment through the 'Attention Restoration Theory'. This focuses on the notion of **restoration** and examines factors that make certain environments restorative, such as **guidance** and **sociality** amongst others. Such factors draw on issues related to **fascination** and **preference**, as essential determinants of restoration with significant psychological benefits. Each of these five emergent themes were further studied by numerous researchers who sought to understand their relevance, their correlation and their benefits. These five themes were chosen as a framework for this study so as to understand the relevance and implication associated with each, within the local scenario. 'Restoration' was chosen

to give a basis on the restorative processes induced by such restorative environments. 'Fascination' and 'preference' provide a basis for the notion of restorative environments. 'Guidance' and 'sociality' were chosen to better understand their relevance based on more recent studies that have focused on uncovering the benefits associated with each of these two themes.

ATTENTION RESTORATIVE THEORY (ART)
(Source: Kaplan and Kaplan 1989, Kaplan, 1995)

| BEING AWAY Opportunity to escape Interact with nature (physical contact, view and imagination) | EXTENT The interrelated components within an environment that make one's feel being away | FASCINATION Interesting elements in a setting (flora, fauna, water, play of light) | COMPATIBILITY A setting that allows people to meet their needs and desire (e.g. choice of privacy and place to sit) |

'SOFT FASCINATION' - RESTORATIVE STATE OF MIND
(Does not require mental effort for restoration)

RESTORE MENTAL FATIGUE FROM DIRECTED ATTENTION
(directed attention involves prolonged concentration on demanding tasks)

Figure 6: Framework of ART outlined by Kaplan & Kaplan (1989), Kaplan (1995)
Source: Idris et al., 2022

2.2 Restoration

The incessant demands of modern life have led to an increased occurrence of mental fatigue which signifies a psychobiological state that stems from prolonged phases of demanding cognitive tasks (Van Cutsem et al., 2007). This presents a difficulty in retaining attention focused on a specific stimulus, as a result of interfering distractions which may be inherently more attractive (Ohly et al., 2016), leading to implications in several aspects of everyday life. Mental fatigue contrasts with 'stress', which is commonly used to refer to situations that are essentially cases of 'mental fatigue', yet the two are rather different. Stress specifically refers to the notion of planning for an anticipated event to occur which has been assessed and deemed to be threatening or detrimental (Kaplan & Kaplan, 1989).

Research in environmental psychology has presented numerous ways in which certain environments can promote improved mental health, mood and psychological well-being. This can be done through the process of restoration that enables the recovery from mental fatigue by allowing the individual to solely depend on interest-driven, effortless attention. This will allow one's cognitive

mechanism to rest instead of having to impede distractions from more interesting tasks (Hartig, 2007). It is therefore much harder to maintain attention on a task within complex and cluttered environments, highlighting the central role that one's surroundings have on the degree of mental fatigue, as advocated in Kaplan & Kaplan's 'Attention Restoration Theory' (Kaplan & Kaplan, 1989).

Figure 7: Driving in an uncluttered rural road (left) vs. a cluttered road (right)
Source: Edquist, 2008

2.2.1 Directed attention (fatigue)

When speaking about ART, the notion of 'voluntary and involuntary attention' outlined by James (1892) comes to play. His philosophy revolved around those exceptional things which, despite being attractive, do not attract attention themselves, therefore exercising involuntary attention and promoting restoration. This led to the discussion about how one can sustain a thought about something which needs to be done, but is struggling to do so due to interfering thoughts demanding voluntary attention. James (1892) stated that sustaining a principal thought from inferior competing ones is not done by strengthening the former, but by inhibiting the latter (James 1892). Despite being termed as 'voluntary attention' by James, the concept has developed and undergone extensive research resulting in what is now collectively termed as 'directed attention' (Kaplan & Kaplan, 1989 as cited in Kaplan, 1995). According to ART, the antidote to attention fatigue resulting from prolonged directed attention, is to refrain from attention-demanding tasks by spending a substantial amount of time in natural environments that do not put a strain on our cognitive resources. In doing so, attentional capacities can be restored (Ohly et al., 2016).

The process of restoration can be said to involve two main requirements. Primarily, it necessitates an environment that enables restoration such that it is free from any demands that bring about the need for restoration. Secondly, it necessitates an environment that stimulates restoration so as to combat demands that are not environment-related but are being experienced by the person as a result of personal issues, traumas etc. Environments that stimulate and promote restoration are

those which not only omit negative features but which also retain positive ones that are able to prolong a restorative experience (Hartig, 2007). Several uncertainties have been brought up as extensive research on restorative environments continues to be conducted. A link between aspects of restoration and the benefits of physical activities was made, which led Bodin & Hartig (2003) to question whether the degree of restoration brought about by physical activity is affected by the environment in which it is performed and its restorative properties, going beyond the activity itself. The results obtained by Bodin & Hartig (2003) supported the hypothesis that the park would enhance restoration during a physical activity more significantly compared to urban environments. Similarly, Staats et al. (2003), question whether individuals seeking restoration would find a physical activity in an environment which is unpreferable and moderately restorative more attractive than the same activity in a green, highly restorative environment. Their findings illustrated that preference for natural environments over urban environments, was twice as strong when experiencing attentional fatigue. This could be explained by the higher likelihood of restoration in natural environments combined with a more favourable evaluation of recovery when fatigued (Staats et al., 2003).

A contrasting yet complementary theory is 'The psychoevolutionary theory' (Ulrich et al., 1991) which revolves around stress reduction more than attention restoration. It highlights the beneficial emotional and physiological impacts that take place as a person observes 'a scene', where a scene containing ordered complexity, a focal point, natural features and water is bound to minimise stress. This corresponds to the philosophy that humans are biologically set to positively react to natural environmental features that indicate opportunities for survival (Ulrich et al., 1991). Restoration manifests itself through physiological parameters like blood pressure and muscle tension that are often recorded variables in studies which measure the degree of restoration offered by different environments (Hartig, 2007).

STRESS REDUCTION THEORY (SRT)
(Source: Ulrich, 1984, 1999)

CONTROL	EXTENT	MOVEMENT & EXERCISE	NATURAL DISTRACTION
(Actual & Perceived) Access to privacy Temporary escape	Among patients, visitors and staff	Mild exertion Physical Rehabilitation	Plants, flowers, water, nature sound, wildlife

STRESS RESTORATION AND BUFFERING
(Enhances Coping)
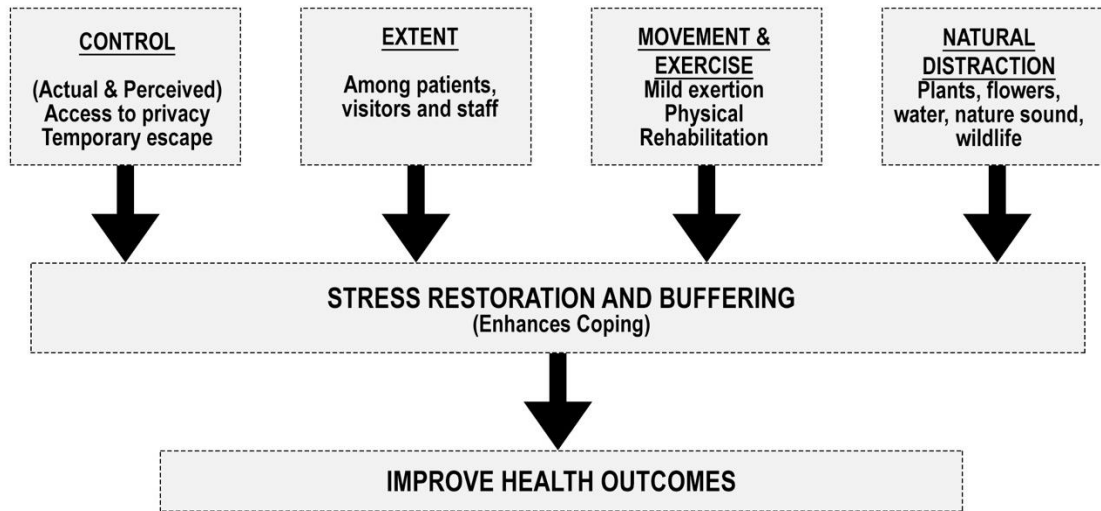
IMPROVE HEALTH OUTCOMES

Figure 8: Framework of SRT outlined by Ulrich (1984, 1999)
Source: Idris et al., 2022

Findings about restorative environments hold significant value which was occasionally recognised and translated into design opportunities (Marcus & Barnes, 1999). For instance, studies displaying the restorative effect of looking at a natural scene rather than built features characterising urban environments, led to several options for locating natural elements appropriately within urban areas. The latter demonstrated that restoration does not simply depend on broad green spaces and large leisure parks detached from the urban fabric (Hartig, 2007).

2.2.2 Understanding Restorative Environments

When attempting to define restorative environments using Kaplan's ART, four qualities generally emerge, these are: *being away, extent, compatibility and fascination.* A sense of 'being away' allows individuals to mentally detach from activities which require directed attention that instigate mental fatigue. This affords more of a conceptual rather than physical shift from obligations of daily life (Scopelliti & Giuliani, 2004). Therefore, a change in environment is not necessary for restoration to occur. Any environment can become restorative when it provides an opportunity to direct one's attention away from the ordinary (Kaplan, 1995). 'Extent' can be defined through connectedness and scope. The former refers to an environment that can be perceived as a sum of coherently connected elements whilst the latter refers to an environment's ability to engage an individual's thoughts by giving the impression that there is more to it than what is instantly visible (Kaplan, 1992). 'Compatibility' expresses the degree to which an environment's characteristics are in line with the individual's intents and preferences (Scopelliti & Giuliani, 2004). Essentially, "the setting must fit what one is trying to do and what one would like to do" (Kaplan, 1995, p. 173) such that

the environment provides adequate information to its users who can in turn, carry out activities effortlessly and comfortably (Kaplan, 1995). 'Fascination' expresses the environment's ability to involuntarily capture an individual's attention without requiring mental effort. The extent to which one environment differs from another in terms of fascination will be discussed further in section 2.3.

2.2.3 Applying ART to different settings

Studies about environmental psychology have traditionally focused on the benefits associated with natural environments (Kaplan & Kaplan, 1989). In order to establish empirical evidence of such benefits, natural environments are constantly compared to urban environments. Berto (2014) argues that despite the automatic association made between natural environments and restoration, Kaplan's theories do not state that all urban environments fail to display potential for restoration. On the other hand, some natural environments are deemed as dangerous and therefore lack restorative properties whilst certain urban environments, such as monasteries or heritage sites retain a degree of restorative qualities whilst being more accessible and compatible with the inhabitants of the city (Collado et al., 2017). This stresses the importance of urban green spaces and urban restorative sites, particularly due to today's increased urbanisation detaching residences from natural restorative environments. Gallou et al. (2022), similarly question whether certain urban environments can offer restorative experiences, despite most of the conducted research being done on natural environments. Results from Gallou et al. (2022) displayed that heritage sites can provide a positive impact on one's well-being, suggesting the potential therapeutic advantages associated with visiting such sites autonomously.
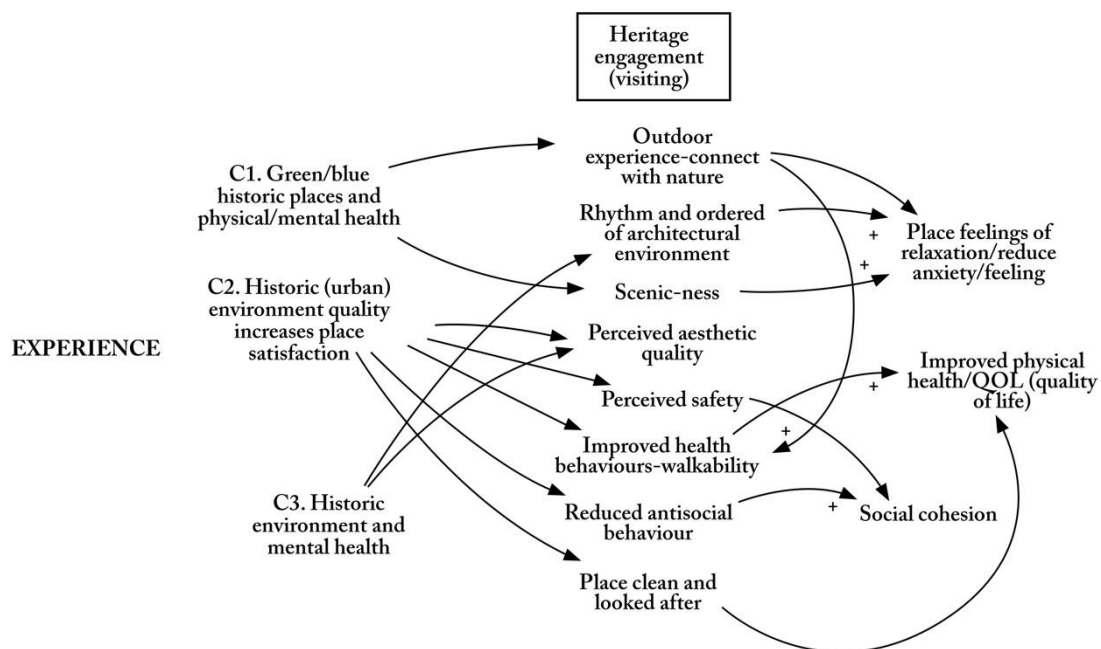

Figure 9: Pathways to well-being when experiencing a variety of heritage sites
Source: Gallou et al., (2022)

That being said, in comparison to natural environments, such heritage sites may place a more significant cognitive load on visitors as one may need to engage more mentally so as to fully appreciate their surroundings. This would therefore require directed attention, giving rise to a limitation of Kaplan's ART which solely focuses on the restorative effects of an environment and not the causes of attention within the environment. The latter may be detrimental to environments which despite showing restorative qualities defined by ART, still require individuals to display a degree of directed attention that inhibits restoration. Ohly et al. (2016) add to the dispute by stating that research needs to better define which measures of attention best assess the level of restoration within an environment. Such measures are not considered by ART.

A shift in research towards potential restoration within urban environments is gradually being implemented. Studies assessing the relationship between biophilic design and psychological well-being are being done to determine whether implementing natural characteristics (such as curvilinear forms, natural elements or textures) can contribute to cognitive and emotional restoration. Liu (2020) illustrates a relationship between the natural environment, mental health and the built environment through biophilic design, questioning how nature-based designs for outdoor spaces can be enhanced to support users' restorative experience as shown in Fig.10.
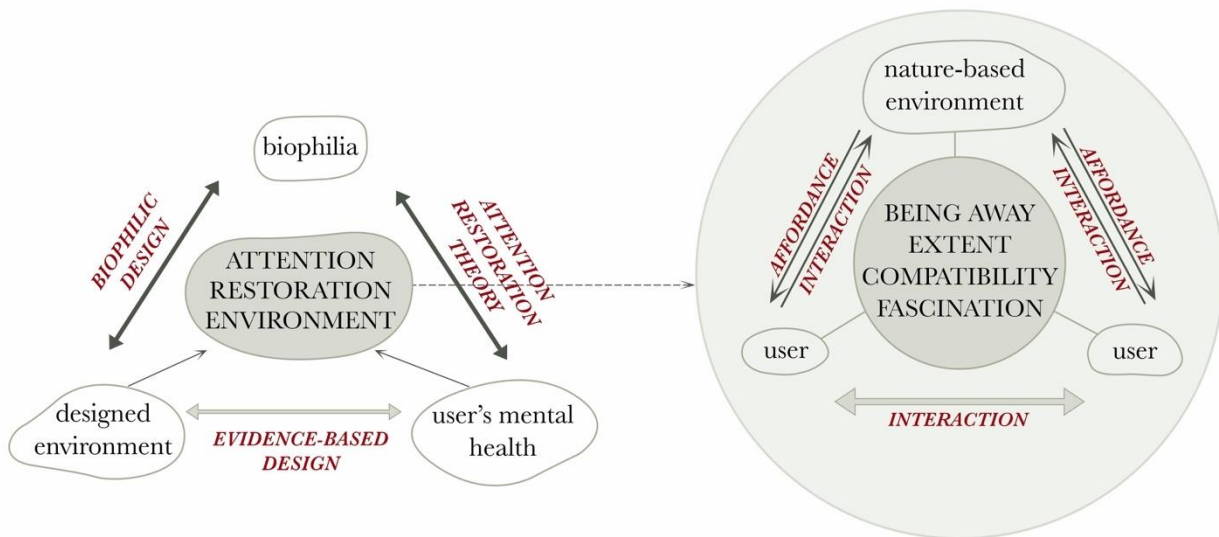
Figure 10: Theoretical framework outlined by Liu (2020)
Source: Author, 2023

However, considering the numerous benefits offered by natural settings, more extensive research is necessary in defining practical guidelines on how to better integrate natural features into the urban fabric. This would ensure that 'cognitive sustainable' urban environments are being produced that respond to people's need for restoration (Berto, 2014). Researchers need to further address questions like; how does the provision of restorative qualities within daily environments vary in relation to one's socioeconomic status? Which built settings have the potential to afford restorative

experiences that are as beneficial as those offered by natural environments? These would give rise to better debates about the health benefits associated with open spaces and the value added to everyday living by increasing their accessibility (Hartig, 2007).

2.3 Fascination

Amongst the four aforementioned restorative qualities outlined in ART is that of 'fascination'. Fascination plays a central role in a restorative experience but does not guarantee restoration if present in isolation, making it essential but not sufficient for recuperating directed attention (Kaplan, 1995).

2.3.1 'soft' v. 'hard' fascination

Fascination can be defined as the ability for an environment to capture one's attention involuntarily such that no mental effort is required (Scopelliti & Giuliani, 2004). This is one of two types of 'fascination' which is known as 'soft fascination' and is present in scenes that capture one's attention whilst stimulating positive feelings. Contrarily, 'hard fascination' takes place when individuals are forced to consume attention so as to inhibit distractions, as is the case with most urban environments (Pearson & Craig, 2014). In such settings, the degree of fascination may be excessive, fully capturing one's attention and leaving minimal opportunity to think about alternative things. This will inhibit restorative benefits like that of reflection, presented in environments that demand moderate levels of unforced attention combined with aesthetic beauty and thus displaying 'soft' or 'quiet' fascination (Herzog et al., 2003).

2.3.2 Sources of fascination

The types and sources of fascination can range from processes to environmental content. An example of a fascinating process is viewing sunrise or sunset that display a gradual visual narrative, or the process of carrying out predictions despite uncertainty, as done in gambling. Fascinating environmental content includes observing wild animals, caves or other elements that do not require directed attention (Kaplan, 1995). Van den Berg et al. (2016) similarly showed how natural scenes display increased intensities of fascination and perceived restorativeness compared to urban scenes by comparing levels of visual complexity. Whilst natural environments display moderate levels of visual complexity that seem to be optimal for attracting attention pleasurably, most man-made environments display high visual complexity, resulting in hard fascination or a complete lack of visual attraction, resulting in an inability to capture attention at all. Therefore, to some degree, visual complexity is a determinant of an environment's level of fascination and is not simply a result of the number of elements making up the scene but is also dependent on how structured and

systematic visual information is at varying scale levels (Nadal et al., 2010 as cited in Van den Berg et al., 2016). Such systematic representation of visual information promotes increased guidance within an environment that will be further discussed in section 2.4.

Studies measuring soft fascination typically consider an analysis of a group of people's behaviour and eye movements when looking at images with varying degrees of fascination, as shown in Fig.11 (Berto et al., 2008 as cited in Van den Berg et al., 2016). However, such an analysis fails to respond to the essential question regarding which distinct visual qualities make natural scenes more fascinating to view than built scenes. Ultimately, it is this question that needs to be addressed so as to generate more effective design solutions for urban green spaces which best utilise their health-supporting qualities for the benefit of their users (Van den Berg et al., 2016). Ulrich et al. (1991) discuss how analyses of an environment's restorative capabilities highlighting fascination must also consider that some natural stimuli, like snakes and heights, provoke strong 'involuntary' attention or fascination, but do not provide an overall restorative experience.

Figure 11: Visual pattern for high fascination photograph (left) vs.
low fascination photograph (right)
Source: Berto et al., 2008

2.3.3 Hierarchy of components

Through their studies Herzog et al. (2003) illustrate that the four qualities making up restorative environments retain varying relative effectiveness, which should be considered when using such components as a measure of the restorative capability of environments. Provided empirical data showed that 'being-away' and 'compatibility' are much more significant compared to 'extent' and 'fascination'. Comparably, Hartig (2007) outlines a relationship between fascination and extent, stating that an environment which presents itself as being articulately ordered and having considerable scope (extent) can sustain fascination. On the other hand, the significance of one's

personal inclinations at that particular moment, the environment's demands imposed on the individual and the ability of the environment to support essential activities (compatibility) is highlighted, such that a lack of compatibility is said to inhibit fascination, extent and a sense of being away, making compatibility the most important component.

2.4 Guidance

When examining the restorative properties of different environments, it is vital to note that human functioning is highly dependent on information. The way individuals understand the spatial qualities of their physical environment is influenced by its physical attributes (Ahmadpoor & Smith, 2020). These offer guidance to users, influencing their behaviour within the space and shaping their experience of it (Kaplan & Kaplan, 1989).

There are various components and physical attributes of an environment which contribute to how attractive and interesting it is to its users as well as the ease with which one can navigate through it. However, amongst the most significant characteristics are 'the spatial layout' and 'visual landmarks'. The latter enable users to capture a sense of orientation contributing to a feeling of ease within the space (Kaplan et al., 1998, cited in Karmanov & Hamel, 2008). A more complex spatial layout would contribute to a sense of ambiguity, suggesting the need for discovery and exploration (Kaplan and Kaplan, 1989).

2.4.1 Cognitive mapping

Lynch (1960) as cited in Ahmadpoor & Smith (2020) related the form of a space to our ability to generate a mental depiction of it through the concept of 'legibility'. Cognitive maps or mental representations are constructed as individuals attempt to locate themselves within an environment. These are a product of past experiences combined with present perceptions that help organise our movements within a space in order to make our way through the present environment easily (Kitchin, 1994). The process of cognitive mapping starts by identifying and memorising landmarks. Eventually, landmarks and other points of reference that encourage wayfinding, are used to generate routes. Routes are then linked to create networks that display a more universal representation of the environment. Simply walking in an environment whilst repeatedly experiencing the same environment enhances the accuracy of the generated mental representation (Siegel & White, 1975).

Contrasting studies suggest that we may visualise spaces as a combination of several levels of detail where, for instance, one level can consist of a significantly detailed illustration of the space surrounding one's house, a second level would consist of a less detailed illustration of the forest in

which the house is situated whilst a third level would consist of a cruder illustration of the district in which the forest is located (Kuipers, 1982).

2.4.2 Familiarity & Guidance

A correlation between guidance and familiarity is clear as an environment's potential for restoration is not only determined by its physical properties but also by the user's past experience and knowledge (Canter, 1977 as cited in Scopelliti & Giuliani, 2004). Therefore, it can be concluded that certain aspects of an environment, along with its associated experiential qualities remain inaccessible to an observer and can only be fully understood and appreciated by having previous experiences within that environment or though added commentary given before visiting the space (Karmanov & Hamel, 2008).

2.4.3 Categorising scenes

According to Kaplan & Kaplan (1989), environmental scenes can be categorised based on a number of factors. Patterns of categorisation can be described using two principal terms; the first being content and the second being spatial configuration. Spatial configuration groupings depend on the arrangement of elements within the scene. Contrarily, content-based groupings contain scenes that revolve around a central element which is referred to as the 'content' of that scene. For instance, a waterscape is an example of a content-based category (Kaplan & Kaplan, 1989). A study in which scenes were categorised based on content was conducted by Anderson (1978) in which a common characteristic amongst scenes in a category shown in Fig. 12, was 'red pine'.
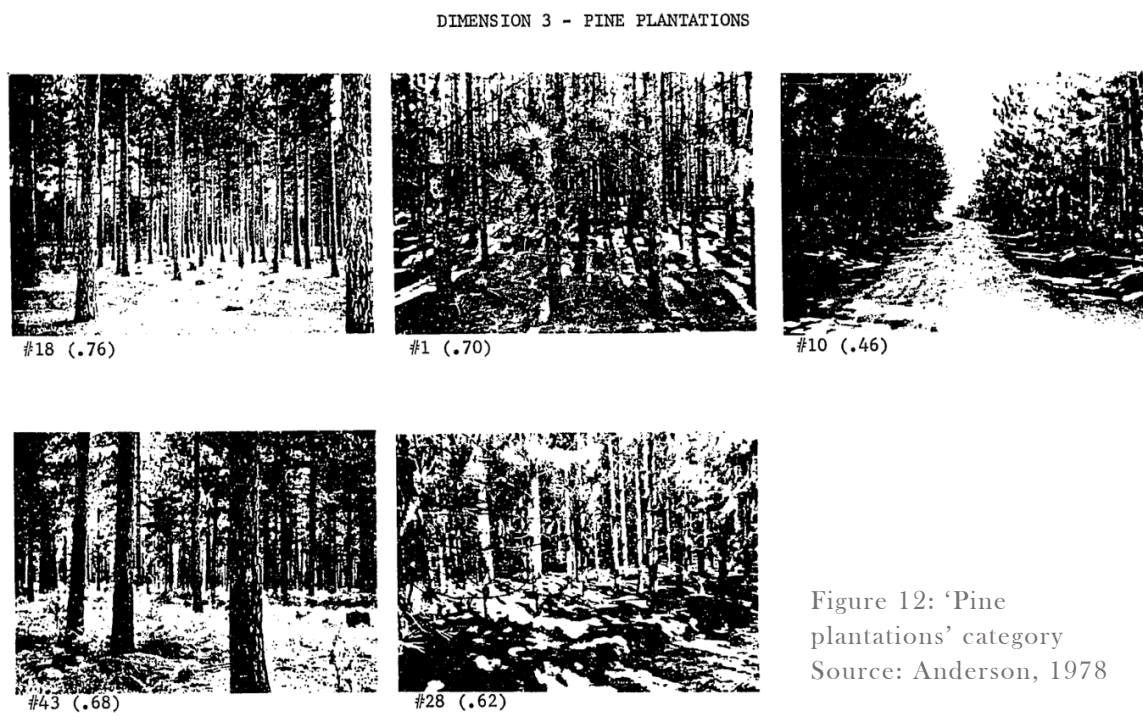

Figure 12: 'Pine plantations' category
Source: Anderson, 1978

Content therefore forms an essential component in environmental perception such that, categorising environments based on coherent content groupings enables individuals to react to several dissimilar situations in a similar manner (Kaplan & Kaplan, 1989). From such studies and analyses on the way in which scenes can be categorised, we can better understand the way in which people perceive environments as well as the way in which people lacking expertise in this area of study react to varying settings. (Kaplan & Kaplan, 1989).

2.4.4 Space, behaviour and movement

When making decisions regarding environmental compatibility in terms of guidance and preference, an unconscious assessment of a scene in that environment is made which is greatly influenced by the qualities of the space and the ease by which one can carry out tasks within it (Van den Berg et al., 2003). According to Golembiewski (2013), this decision-making process is intricately linked to neural mechanisms and affordances which are impacted by one's emotional assessment of the environment at that time. The ability to enter the space, obtain necessary information and retain one's orientation within it, appear to be essential components of preferred spaces (Kaplan & Kaplan, 1989).

People's functioning and behaviour within a space was thoroughly studied by psychologist James J. Gibson who proposed that environments present users with a set of possibilities, known as affordances, that can be seen as opportunities (positive affordances) or threats (negative affordances) and which characterise environments (Scarantino, 2003). Amongst the positive affordances are privacy that affords better social relationships, active outdoor spaces that afford a range of experiences, aesthetics which gives individuals an opportunity to decipher between things they like and those they dislike, amongst others (Golembiewski, 2016). Essentially, affordances have the ability to alter and guide people's behaviour by enabling self-agency (Golembiewski, 2016) and are therefore a means of understanding youths' behaviour in different environments.

According to Gibson's Theory of affordances, preferred environments afford functions which are detrimental and meaningful to users as well as activities which are not supported by other environments (Hadavi et al., 2015). A study conducted by Hadavi et al. (2015) displayed a set of scenes that depicted the highest affordance for pleasure and aesthetics chosen by participants based on attributes such as seating, shading and a potential for social activity.

Figure 13: Top 20 favoured scenes
Source: Hadavi et al., 2015

Clark & Uzzell (2002) comparably examined the affordances offered by a home, neighbourhood, school and town centre for young adults. Whilst an opportunity for social interaction and retreat behaviours were afforded by neighbourhoods, schools, and town centres, the home environment did not encourage social interaction but offered the affordance for retreat with close friends or family (Clark & Uzzell, 2002).

2.5 Preference

Kaplan's Attention Restoration Theory was primarily informed by literature concerning environmental preference, which combined aesthetics and emotional responses to environments. Therefore, an insight into such preference literature could stimulate new ways to effectively define and then evaluate the four primary components of restorative environments proposed by ART, discussed in section 2.2. Kaplan agreed with philosophies discussed in sub-section 2.4.1, proposing that environments which provide a sufficient mental map or a good understanding of the physical setting, improve survivability and are subsequently preferred environments (Neilson et al., 2019). Apart from this, Korpela et al. (2001) added that youths' preferred environments tend to be aesthetically attractive and afford retreat from societal pressures together with the freedom to express oneself and maintain a sense of control. This highlights the need for well-planned shared spaces that can accommodate such needs whilst catering for those required by other age groups.

Ultimately, preference ratings provide significant information and can be used to determine how much different scenes are liked or disliked, compared and categorised according to preference rating patterns (Neilson et al., 2019). Generally, we prefer environments that are expected to provide positive experiences and evade those that are expected to induce negative feelings (Veitch & Arkkelin, 1995 as cited in Forster, 2010). This, however, is highly dependent on each individual, as an environment that someone may perceive as restorative and aesthetically pleasing, may be perceived as ominous and dangerous by another due to past experience (Forster, 2010). Kaplan (1987) explored these philosophies further and suggested that the most fundamental environments that where historically used for acquiring food and achieving other basic needs received a higher degree of environmental preference. Essentially, environments in which we have effectively functioned throughout our evolutionary history, achieve greater positive reactions (Berto, 2019).

2.5.1 Aesthetic Variables

A study conducted by Kaplan (1987) required participants to rate photographs illustrating different scenes based on their preference. From this exercise four aesthetic variables were identified as indicators of environmental preference (Neilson et al., 2019);

- 'Coherence' that describes the degree of organisation present within a scene.
- 'Legibility' that determines the ease by which constituents making up a scene can be processed.
- 'Complexity' that describes how diverse the components making up a scene are.
- 'Mystery' that describes a scene's capability to deliver new information.

Such studies display the increased preference for natural environments and the importance of integrating natural elements within urban environments, despite the many challenges imposed by the natural environment on inhabitants including weather hazards, pests, earthqaukes and so on (Forster, 2010).

Behavioural indicators can also be used to show a preference towards the natural over the built environment such that, prices for properties in a natural environment or having views of a natural setting are higher (Van den Berg et al., 2003). This was substantiated by results carried out by Luttik (2000), where gardens or apertures overlooking water, views or open spaces generated a considerable increase in price as well as surrounding vegetation, public parks retaining water bodies in the vicinity and landscapes surrounding the property.

Although numerous studies have explored the possibility that a preference for natural environments enhances the restorative potential of such environments, there remains a gap in existing literature confirming the validity of this hypothesis. However, Ulrich (1979), Hartig et al. (1991, 1996) and Ulrich et al. (1991) as cited in Van den Berg et al. (2003), all conclude that through their research, natural environments have increasingly exhibited stronger restorative effects when compared to built environments. By assessing participants' mood ratings and performance after viewing four contrasting scenes shown in Fig. 14, Van den Berg et al. (2003) similarly concluded that natural environments seem to elicit positive changes to people's mood and an improved performance, compared to results obtained after the same individuals were exposed to a built environment.

Figure 14: Compared natural & built environment scenes
Source: Van den Berg et al., 2003

2.5.2 Environmental preference indicators

Kaplan et al. (1989) defined four predictor variables used as environmental preference indicators. These include;

- *Physical attributes*: Specific environmental components such as naturalism (the degree of human influence), height contrast (the change in level between adjacent masses) and slope (shift in elevation).

- *Land cover types*: The patterns of land cover present going beyond simply the physical elements, such as tree cover in forests, cultivated crops in agricultural land and woody plants in scrubland.

- *Informational variables*: These deal with the information one can extract from an environment, going beyond the presence of physical components in an environment to emphasise the organisation of such components within the environment. The way the space is organised would provide significant information about the way one could function in it. These include the previously defined aesthetic variables; coherence, legibility, complexity and mystery.

- *Perception-based variables*: These consider factors such as the 'openness' of the space which defines the extent of perceivable space to the viewer, 'smoothness' which defines the uniformity and height of the ground texture and 'locomotion' which defines the ease by which one can move through the space.

Defining and identifying effective predictors for preference so as to better understand scenic qualities is an essential process to perform before formulating policies for the management of landscape (Kaplan et al., 1989).

2.5.3 Place experience and restoration

The theory of place states that the meaning of a place is a product of the relationships created between the physical components, actions and hypotheses associated with it (Canter, 1977). In relation to this, Scopelliti & Giuliani (2004) suggest that the restorative meaning of places is derived from the values that different users attach to the experience they normally undergo within that place. The functions one performs in the space, with who and whether the experience is enjoyable, are all key components. Similarly, Korpela (1992) outlined an apparent association between youth's favourite places and the experiences they had within them. Experiences that greatly contribute to identity development and self-control. In this study, places that obtained high restorative ratings included both natural as well as built environments. Moreover, restorative experiences within such spaces were not only linked to feelings of relaxation, as was implied in previous studies, but also to feelings of anticipation and enjoyment, bringing new perspectives of restorative experiences to light.

Studies have recognised the impact that the four ART components have in the process of recovery, stating that relaxation is primarily a result of the 'being away' factor whilst cognitive restoration promoting the recuperation from directed attention is mainly acquired through compatibility and fascination and is highly associated to preference (Laumann et al., 2001 as cited in Scopelliti & Giuliani, 2004).

2.6 Sociality

2.6.1 The disregarded benefit of sociality

The term 'sociality' has been repeatedly used by anthropologists, psychologists, behaviourists amongst others in a variety of circumstances, yet the complete implications of what the term signifies have not been clearly defined (Long & Moore, 2013). Ultimately, sociality can be referred to as an ongoing "dynamic relational matrix within which subjects are constantly interacting in ways that are co-productive..." (Long & Moore, 2013, p.4). Sociality is an essential component in restorative experiences and its value increases with an increase in time available for restoration. The part that social interaction plays in developing an environment's restorative potential is commonly overlooked and needs to be further studied. Such studies would aim to measure the degree to which various environments allow for sociality to occur (Scopelliti & Giuliani, 2004).

2.6.2 Environmental influence on self-identity

In the process of developing a sense of self-identity and individuality, youths' daily environments play an important, principal role. Youths look for places that are pleasurable for themselves and their friends, places which allow individuals to 'be themselves' or 'by themselves' and which sustain one's social life. In both cases, a sense of ownership and individuality are vital whilst surveillance and intrusion by outsiders are less desirable (Thompson, 2007).

Figure 15: Intergenerational issues of shared spaces
Source: Thompson, 2007

The role of the family throughout adolescence is significant, to the extent that family roles seem to be the principal components influencing both leisure behaviours as well as one's perception of a restorative experience. For instance, conventionally, employed women also carry out housework and are involved in the family's upkeep. Therefore, the family is much more of a restorative setting for the men of the family than for the women (Repetti, 1989; Shaw, 1992; Freysinger, 1995; Larson, Gillman, & Richards, 1997 as cited in Scopelliti & Giuliani, 2004).

In addition to this, Scopelliti & Giuliani (2004) suggest that the relative value of the four aforementioned components proposed by ART, seem to be interrelated to the stage of one's lifespan and the time available for restoration to occur. For instance, a youth and an adult would seek the 'being away' component within a restorative experience far more thoroughly than an older person would (Scopelliti & Giuliani, 2004). A philosophy which is strengthened by additional studies that show the need for youths and adults to detach themselves from daily life demands (Iso-Ahola, 1980; Iso-Ahola et al., 1994; Freysinger, 1995; Arnett, 2000 as cited in Scopelliti & Giuliani, 2004). That being said, 'compatibility', which is shown to be the most significant attribute of restoration (Herzog et al., 2003), is independent of one's gender, lifespan and the time at hand for restoration. Therefore, despite the importance of sociality in a youth's restorative experience, such experiences are most effective when one's environment is compatible and therefore, aligns seamlessly with the person's purposes and desires allowing the person to function freely within it. Additional components such as social interaction and social activities should be there to enhance the overall potential for an environment's restorative experience (Scopelliti & Giuliani, 2004).

Despite this, one must acknowledge that, from a developmental standpoint, being alone in solitude can also play a significant role as it offers an opportunity for refuge that encourages self-discovery and reflection. Two pertinent aspects for defining one's identity (Larson, 1990; Korpela, 1992; Korpela et al., 2001 as cited in Scopelliti & Giuliani, 2004).

2.7 Synopsis: Shaping restorative environments

"It is only in the modern world that the split between the important and the interesting has become extreme. All too often the modern human must exert effort to do the important while resisting distraction from the interesting. Thus, the problem of fatigue of directed attention may well be of comparatively recent vintage."

(Kaplan, 1995, p.170)

As outlined above by Kaplan (1995), the issue of directed attention and mental fatigue is one of the consequences we are facing as a result of our chaotic 21st century lifestyle and the urbanised environment we have developed to accommodate it. The natural environment, which is the environment that man evolved in, is inherently fascinating and does not demand directed attention (Scopelliti & Giuliani, 2004). Results from many of the studies reviewed throughout this chapter showed that overlooking the public's preference for certain environments, particularly natural environments, over chaotic built settings, may result in considerable health consequences. The continuous growth of cities at the detriment of natural environments may not only disrupt the environment's intricate ecological stability but also seize essential restorative opportunities for humans themselves (Van den Berg et al., 2003). Ultimately, restorative experiences should be perceived as the outcome of intricate human – environment transactions consisting of several components. These components, some of which were outlined throughout the chapter, all play a role in the overall experience and therefore need to be considered. Therefore, the physical environment itself (such as the natural or built features), in which the restorative experience occurs, should not be perceived in isolation but as part of the overall experience taking place behind the construct of place (Canter, 1977). Karmanov & Hamel (2008), similarly highlight this analogy stating that restoration does not solely depend on the physical properties of an environment but also the knowledge and experience associated with that environment.

2.7.1 Limitations of ART

Although ART has provided a good basis for environmental preference literature, which combined aesthetics to affective environmental responses, the theory still seems to show a gap when precisely defining the depletion of directed attention resources. Consequently, an uncertainty regarding whether directed attention is based on a single resource or on multiple resources may create

alternative perspectives of what such directed attention is and how it can be measured. Therefore, it is currently uncertain whether directed attention or a type of the latter is essentially a cognitive resource which is being depleted and then repaired through the restorative effect, as suggested by ART, or if the restorative effect is much more complex such that it effects multiple, interrelated cognitive processes (Neilson et al., 2019).

The four characteristics outlined by Kaplan (1995) seem to be relatively vague, difficult to measure and therefore challenging to implement. Moreover, literature associated with aesthetics and environmental preference that inspired ART also seems to fall short in providing clear definitions and measurable variables of interest. Despite this, subsequent research has merged perceptual and landscape design variables, making it easier to understand which aspects of the natural environment are related to preference. It is necessary that researchers effectively define directed attention so that this definition could then be used to inform the tasks being carried out to measure restoration. Researchers must justify the depletion of directed attention by specific task(s) and outline a control condition in which directed attention is not being depleted or is being depleted less. In doing so, designers can make use of such tools to better examine whether people within an environment would benefit from the implementation of a restorative component, knowing their earlier degree and type of directed attention depletion (Neilson et al., 2019).

Chapter 3: Youths' perspective

"...designers need to understand the uniqueness and complexity of young people's use and experience of public space, often imbued with tensions and challenges, but still fundamental for their development and well-being."

Thompson & Travlou, 2007, p. xviii

This Chapter discusses methodological framework employed to put the research into effect. A multi-method approach was taken in which focus group participants carried out a range of interactive exercises. These exercises are discussed together with the contexts selected for the study, participant recruitment parameters, data collection methods and the study's limitations.

3.1 Introducing the methodology

The previous chapters have created a basis for the development of this framework, ensuring that a theoretical foundation is present before taking the subject further into the local scene. This study intends to understand how the current environment is successfully or unsuccessfully combatting the realities we face with respect to youths' mental wellbeing within our community. The lack of informed decisions taken when designing urban green spaces, preserving natural environments and developing new infrastructure is challenging rather than supporting youths in becoming resilient to the increasing demands of modern life. In response, this chapter aims to better understand youths' perception, so as to help generate better informed choices when planning future communities.

3.2 Structuring the process

The research framework started off by firstly analysing the results obtained by Kenely (2022) in the study, 'Space, Place & Youth; Exploring the Relationship between Space, Place & Youth Mental Health & Well-being', building up further on the discussed themes of 'Nature & Open Space' and 'Making Space for Youth'. These results were used to identify three relevant, comparable settings described further in section 3.4, against which the theoretical framework can be put to test. By examining the experience that each of the three environments offers and the emotions it triggers, a better understanding of the relationship between mental well-being for youths and their environment could be deduced.

"Researchers and policy-makers have suggested that, in order to facilitate the integration of young people as users into large-scale and public places, the environment needs to be investigated from the young persons' viewpoint." (Travlou et al., 2008, p.309). This mindset will be employed to examine the relevance of the theoretical analysis in the local scene.

For the purpose of the study, I opted for multi-method approach which primarily acquires a collection of qualitative data. A number of focus group participants were recruited to participate in a workshop consisting of a survey, informal discussion and a drawing exercise. All the required ethical considerations were taken throughout the study and will be outlined in this chapter. Prior to carrying out the workshop, a pilot study was conducted to peers in the architectural field, so as to better determine the duration required for the workshop, identify any changes that may need to

be done to ensure that questions and tasks are comprehensible, and determine the best data collection methods to be used.
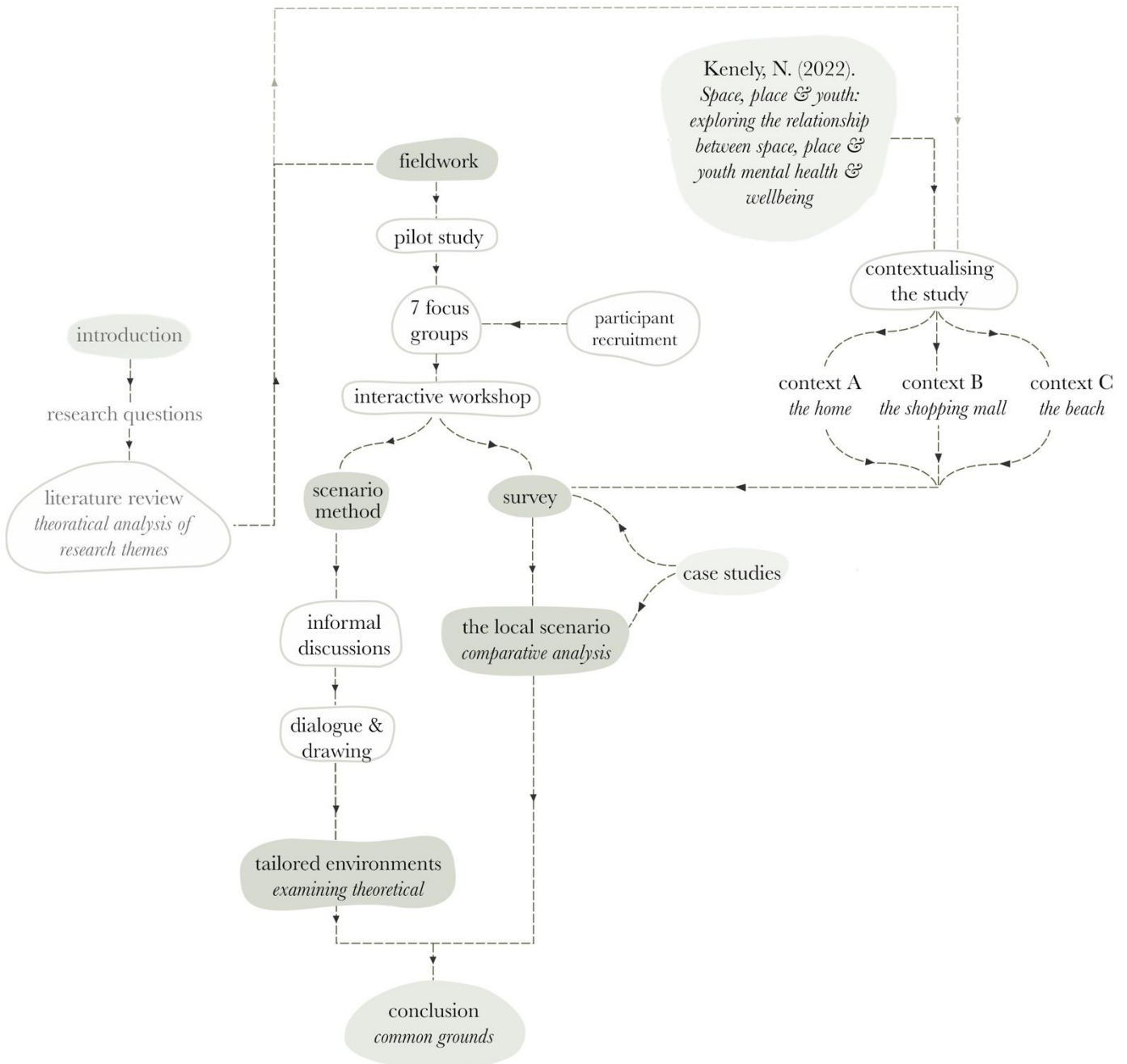
3.3 Methodology diagram

Figure 16: Research methods: Complementarity of outlooks
Source: Author, 2023

3.4 Contextualising the study

Throughout the online survey, reference to three specific settings was made. These include: the home, the shopping mall and the beach. The three environments were chosen based on the results obtained by Kenely (2022) through the online survey conducted, which compared a number of settings in terms of preference and familiarity, together with the theoretical outcomes discussed in the literature review. The different settings ranked high, low and moderate respectively on the restoration, fascination, guidance, preference and sociality scale with one environment displaying more of a certain component than the other. This helped generate a broader range of emotions and experiences, allowing for better comparisons to be made.

Site A: *The home*
According to Kenely (2022), the space ranking highest in terms of preference was 'the bedroom', with twenty-five percent (25%) of respondents picking this space when asked; "Where was/is your favourite space/place growing up?" (Kenely, 2022, p.33). As studies clearly display, amongst the primary environments needed by young people are the home, the neighbourhood and the town centre that allow for two crucial activities to take place, that of social interaction and that of retreat (Clark & Uzzell, 2002). Despite the home, and specifically, the bedroom, not forming part of the natural environment, it still seems to offer a strong sense of 'being-away', such that "young people's bedrooms are often also a place of escape" (Kenely, 2022, p.53). Exploring this site would help test the relevance of the connection made between restoration and preference in studies like that conducted by Staats et al. (2003) in which expectations for restorative recovery and reflection proved to generate a source for environmental preference. In order to test this relation, Staats et al. (2003) made use of a *scenario method* in which individuals taking part in the study were provided with a scenario that urged them to associate with a condition of attentional fatigue. Following this, participants were asked to evaluate a set of slides depicting urban or natural environments and respond to a number of 'items' reflecting their preference and attitude towards each of the settings. Using such a scenario method, allowed participants to reference a common state of mental fatigue before contributing to the study by expressing their preference (Staats et al., 2003).

Throughout the online survey, participants were asked to describe their bedroom through a series of questions. These were formulated based on a past dissertation submitted by Judith Hunter to the Faculty for the Built Environment in 2021 titled "Architecture of Well-being: a post pandemic reality", which gave an account of the role that 'the bedroom' plays in one's daily life, its relation to other spaces in the home and its correlation to a person's psychological well-being.

Site B: *The shopping mall*

According to Kenely (2022), the space ranking lowest in terms of preference was 'the shopping mall' despite the high level of sociality it offers, with only ten percent (˜10%) of respondents picking this space when asked; "What kind of spaces do you wish to see more of?" (Kenely, 2022, p.47). This site would therefore offer a strong comparison to Site A in terms of preference, restorative capabilities, guidance and fascination whilst also serving as a means of testing the relevance of the connection made between sociality and preference in studies like that of Scopelliti & Giuliani (2004) which states that sociality is a fundamental factor in the effectiveness of restorative experiences.

Site C: *The beach*

The beach is one of the key local, natural environments which is often taken for granted for its significant benefits to our well-being. This 'ideal' natural environment will be studied in relation to the previous sites in terms of preference, restorative capabilities, guidance and fascination whilst also tested against the theoretical framework for restorative environments proposed by ART. Uncertainties like whether this 'ideal' environment is always restorative in different circumstances or when viewed from varying standpoints, will be considered to better understand what this environment signifies to youths, to what degree it promotes restoration and which components it retains that makes it a popular space for youths to congregate. Its popularity for social activities was outlined by Kenely (2022) as participants were asked "Where do you enjoy hanging out with friends?" (Kenely, 2022, p.34) to which 34% of youths responded 'the beach'.

3.5 Participant recruitment

The parameters that defined participant recruitment included age and field of study. Throughout her study, Kenely (2022), grouped participants into two age brackets. Those aged between 13-18 years of age were analysed separately from those aged between 19-24 years of age. Taking such a wide age range resulted in fewer participants within each age bracket, leading to limitations associated with generalisability (Kenely, 2022). In this study, participants' age was limited to 19-24 years, so that a larger sample of individuals that fall within this age bracket was considered.

Focus groups were made up of students that are currently reading for a bachelor of science (Honours) in built environment studies or for a master in architectural design. This parameter considers the influence that an education in architecture has on the way one perceives his/her environment. "Beyond just the design and construction of physical spaces, an education in architecture teaches you a powerful method of critical thinking and analysis, which could be applied across multiple industries." (Prasad, 2017)

The design thinking process developed throughout an education in architecture drives individuals to understand problems in a holistic manner and acknowledge the diverse perspectives through which one could view space, taking into consideration factors like emotional responses, feelings and perception.

3.6 Research methods

Implementing a multi-method approach ensured "a complete analysis of the research problem" (Migiro & Magangi, 2011, p. 3757) whilst better understanding the correlations and inconsistencies that could result from using a single research method (Sieber, 1973). This ensured a better understanding of youth's perception on the topic at hand, by allowing them to communicate and express their thoughts using more than a single medium. Seven focus group participants were recruited to participate in a workshop following a brief overview of the study's objectives, aims and description. The workshop involved the following design methods;

Online survey

Upon their consent, participants were asked to undertake an online anonymous survey through which a series of questions were asked concerning their experience and perception on varying environments. Additional questions required participants to describe their 'bedroom', a setting they encounter daily, followed by a set of images depicting alternative settings to spend time in. Participants were then asked to pick their preferred setting from the given options based on preference, experience and other factors discussed in chapter 2. This helped to better understand the relevance and importance that certain environmental factors have over others for individuals within the 19-24 age group.

Scenario method

Upon their consent, participants were provided with a scenario that elicited attentional fatigue, urging them to picture themselves experiencing such a mindset before participating in a short informal discussion. The provided scenario included the following short text:

'You have just experienced a full month of work, studying and deadlines, making you feel stressed and overwhelmed. Several tasks still need to be done by the coming week but you feel as though you are unable to complete them with everything that is going on around you. You are unable to concentrate at home because of construction work and traffic that seems to be limiting your productivity. You are given a couple of hours to spend in a space of your choice to get away from daily stresses and demands. Which setting would you choose to spend this time in and why?'

As previously discussed, Staats et al. (2003) similarly made use of a scenario method in which antecedent conditions were defined at the start of the exercise resulting in participants depicting a

given circumstance which corresponds to a psychological state that they are familiar with. Similarly, a relatable circumstance was described that participants could familiarise with. In doing so, the following hypotheses, stemming from those outlined in Staats et al. (2003), were put to test:

- The preference for built over natural environments for youths in such a situation.
- The impact that certain circumstances can have on the degree of restoration that an environment can promote and therefore, the possible impact of changing the perspective of an environment on its potential for restoration.
- The impact that increased environmental complexity has on restoration.
- The different components within the studied environments that promote or inhibit restoration.

Visual Narrative

The capacity of drawing to reflect real life scenarios was used as the concluding task of the workshop. Here each participant was asked to visualise their ideal environment described during the scenario method discussion and translate it into a drawing, highlighting any fundamental environmental components and keeping certain parameters in mind by responding to the following questions;

- Is it a built or natural environment?
- Are you alone or accompanied by other individuals?
- Is it an indoor or outdoor setting?
- Are you performing a particular activity?

Drawing makes use of several interacting mechanisms such as the perceptual system, motor skills, perceptual feedback and social interactions. It can be considered as an avenue through which one can convey ideas (Mannay, 2015). The use of drawing as the concluding medium used in the workshop, was therefore a means of obtaining each participant's perception in a more detailed manner such that they were able to display environmental components and feelings that were difficult to describe verbally.

3.7 Data collection & Ethical considerations
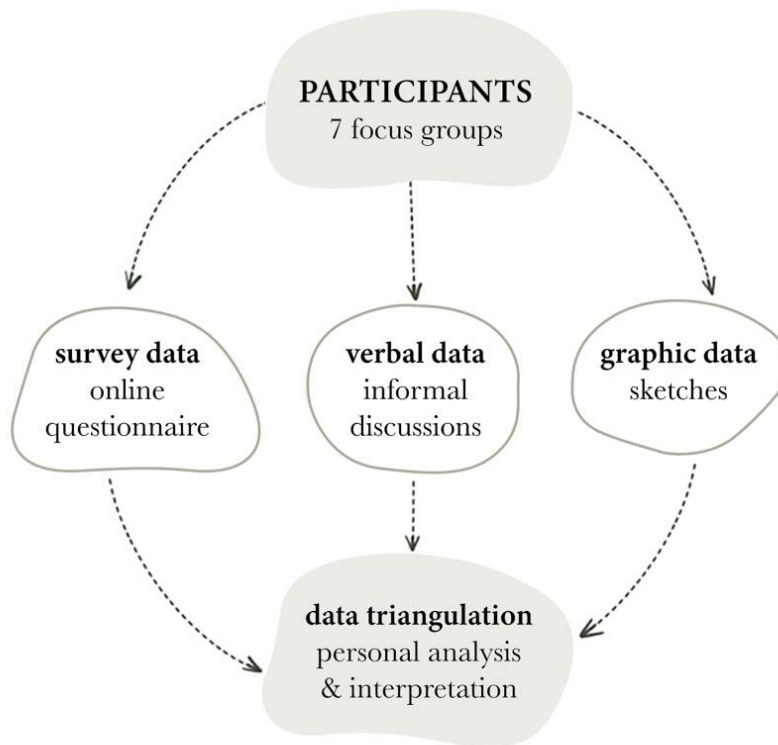
Figure 17: Data collection framework
Source: Author, 2023

Once focus group participants were recruited based on the outlined criteria, workshops took place on the University campus prior to design tutorials and were carried out over about three weeks between April and May 2023. Prior to the commencement of each workshop, participants were provided with a brief description of the study and its objectives, together with an overview of the workshop structure and a declaration stating that it is a contribution to my degree in Master of Architecture (refer to Appendix III).

It was ensured that all ethical considerations were considered throughout the workshop, particularly with respect to acquiring informed participation consent. Before starting the online survey, participants were provided with a description of the project and an online participation agreement (refer to Appendix V). Before the start of the informal discussion, a physical copy of the consent form documented in Appendix IV was provided to each participant which gave a description of the project and allowed participants to give their consent for participation in writing. Participation in the study was strictly confidential.

Data from the online survey was collected and stored securely on my personal Google Drive account. Data obtained from the scenario method discussions was tabulated into a physical data table, where each individual's response was inserted in an organised manner. Following each individual's response, tabulated in data sheets (refer to Appendix VII), a more personalised sketch of each individual's perspective was done on a provided sheet that displayed a basic diagram shown in Fig.18, which each participant was asked to draw into.

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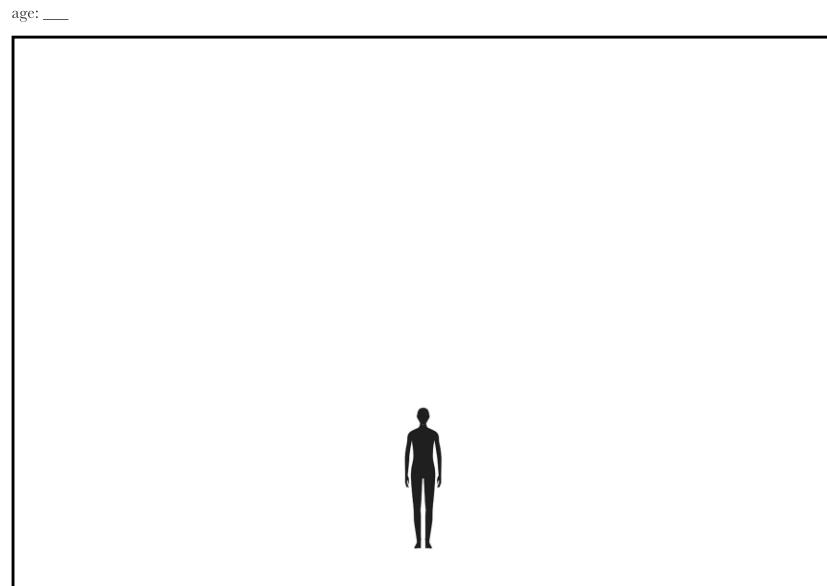
Figure 18: Provided diagram
Source: Author, 2023

3.8 Limitations

The primary limitation of the study is the participant typology, which is not representative of all youth. Focusing solely on architecture students aged 19-24, offered a more detailed understanding of this specific group's perspective but was limited in representing an accurate viewpoint of all youths. Including a larger number of participants from diverse backgrounds and fields of study would provide a broader overview of young people's perspective on the topic and therefore overcomes the limited generalisability.

A participant's response during focus group discussions may have been influenced by the response of preceding participants resulting in an inaccurate representation of the individual's perspective, however, requesting a personal sketch by each participant helped mitigate this limitation.

The ability of a participant to convey a visual narrative through a sketch is highly dependent on the person's artistic capabilities that varies from one individual to another. The inaccuracy in using this medium was counteracted by the focus group discussions.

When using the scenario method, it is impossible to deduce how well respondents followed instructions and therefore, how closely their mental state during the subsequent discussion corresponded to that outlined in the scenario.

Chapter 4: Examining the restorative potential of environmental components

"Far from being a matter of typology of environments alone, the restorative meaning of experiences stems from the interaction of physical and social components, and can be characterized by different affective dimensions"

Scopelliti & Giuliani, 2004, p.423

Throughout this chapter, an analysis and interpretation of the obtained results will be done supported by any observations made throughout the workshops, with the aim to assessing theoretical relevance.
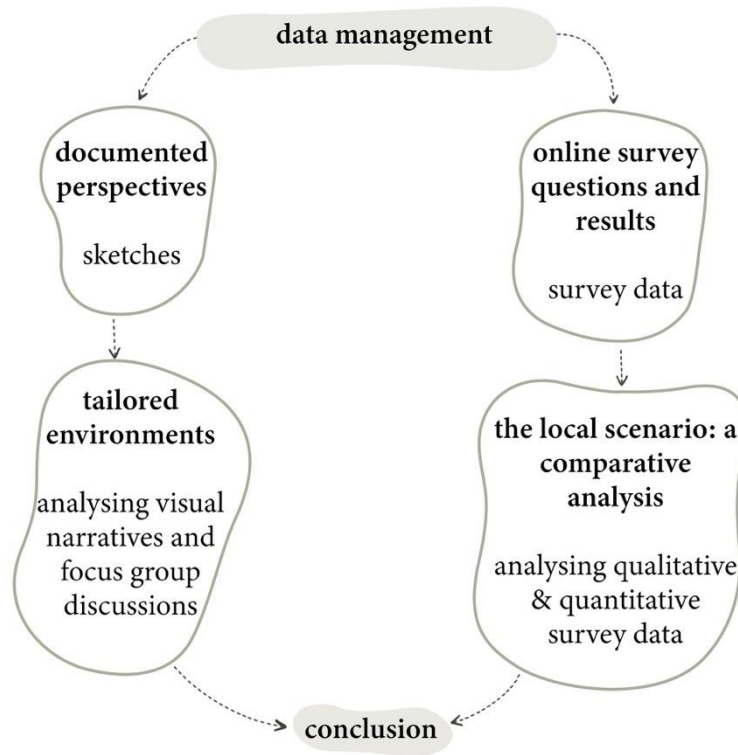
Figure 19: Process of analysis
Source: Author, 2023

4.1 Documented perspectives

The restorative environmental components described in Chapter 2 emerged throughout the workshop as participants described their ideal restorative environment for the given scenario outlined in section 3.6 (refer to Appendix VII for data collection sheet documenting each participant's perspective). In doing so, the significance or irrelevance of fascination, guidance, sociality, preference and restoration within different settings was revealed and a comparison between the importance of each component was done.

These outlooks were translated into visual narratives through drawings that were documented into separate categories derived from the predictor variables outlined in Kaplan et al. (1989), discussed in section 2.5.2 (refer to Fig.20). These drawings gave a better insight on each individual's documented perspective outlining certain components that were crucial for each participant.
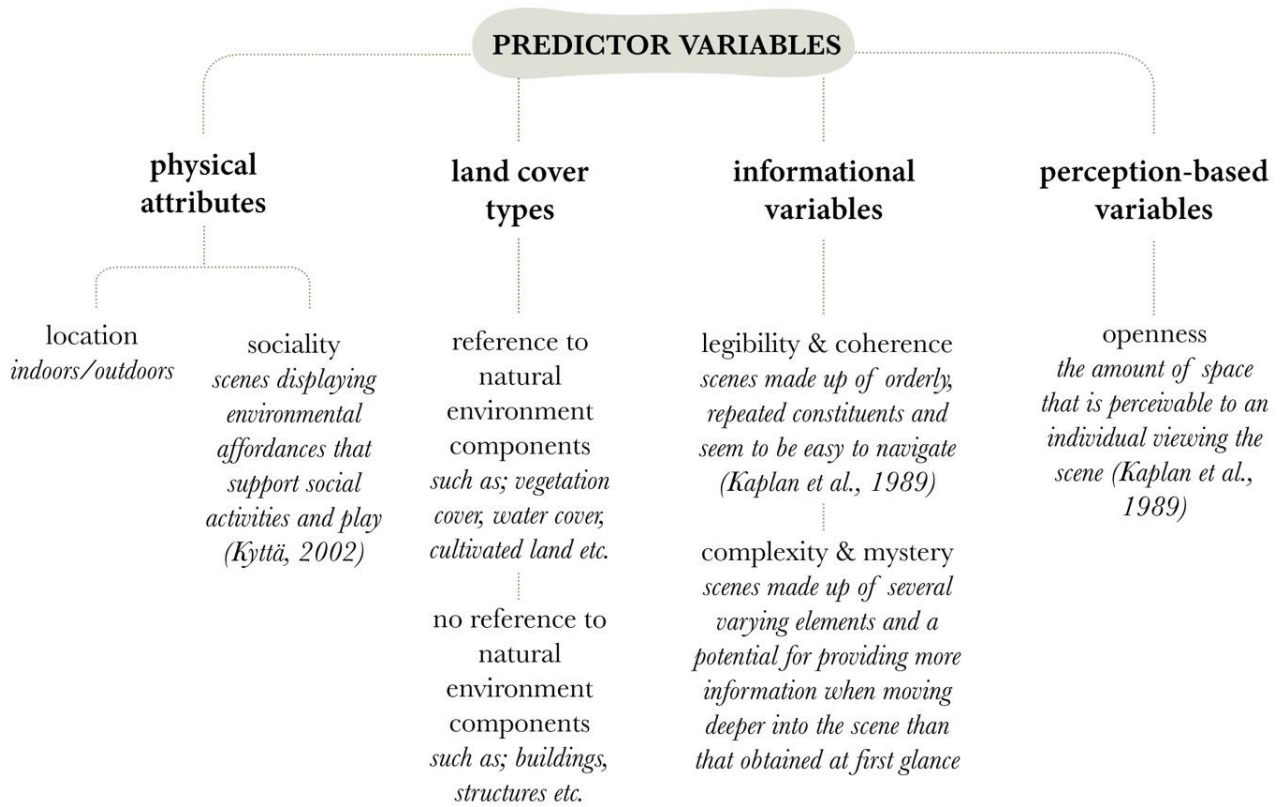
Figure 20: Categorising narratives based on Kaplan et al. (1989) predictor variables
Source: Author

Such categorisation was similarly used in a study conducted by Hartig et al. (1997) in which sites were grouped using comparable parameters as shown in Fig.21, relating to the theory-based expectations outlined in ART and the psychoevolutionary theory.
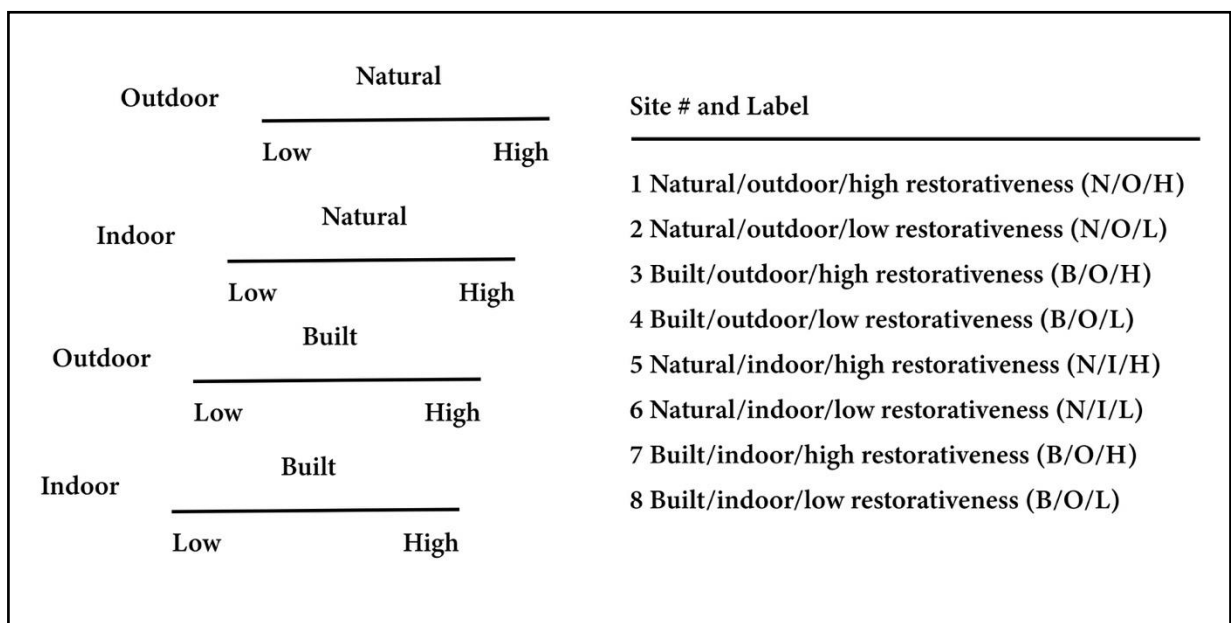
Figure 21: Site grouping parameters
Source: Hartig et al. (1997)
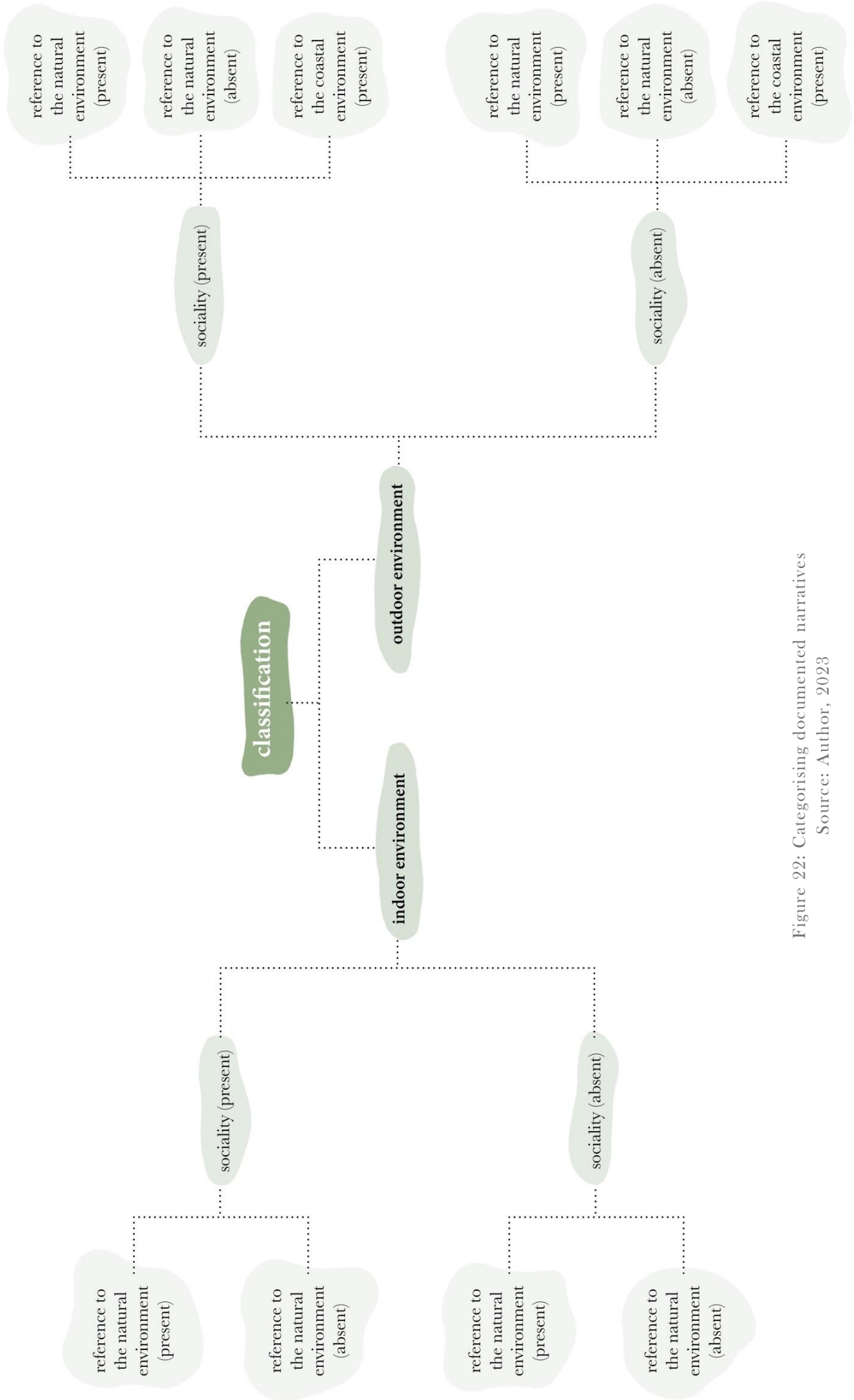
Figure 22: Categorising documented narratives
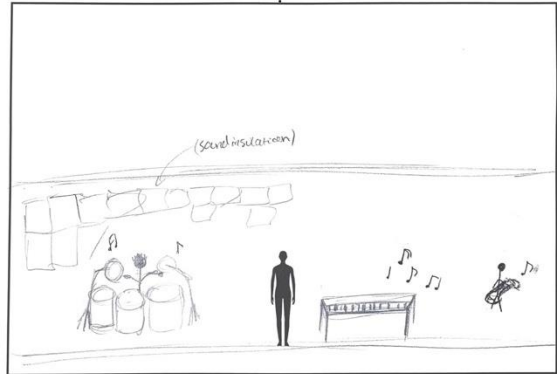Source: Author, 2023

indoor environment

sociality (present)

reference to the natural environment (present)

age: 20

age: 19
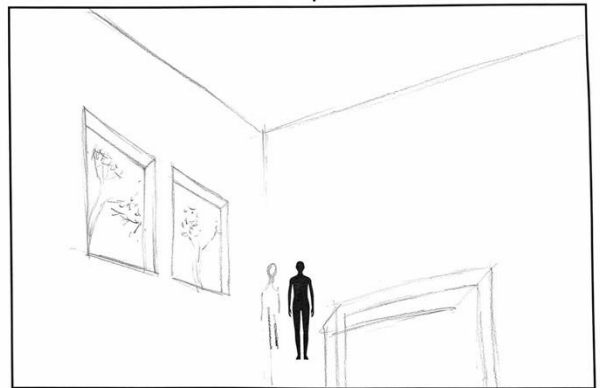
recurring components in the illustrated visual narratives:

sunlight, openings, furniture enabling physical activities

legibility & coherence (present)
complexity & mystery (absent)

age: 20

indoor environment

sociality (present)

reference to the natural environment (absent)

age: 19
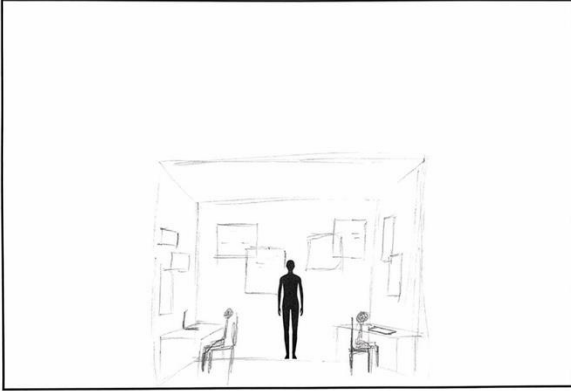
age: 20
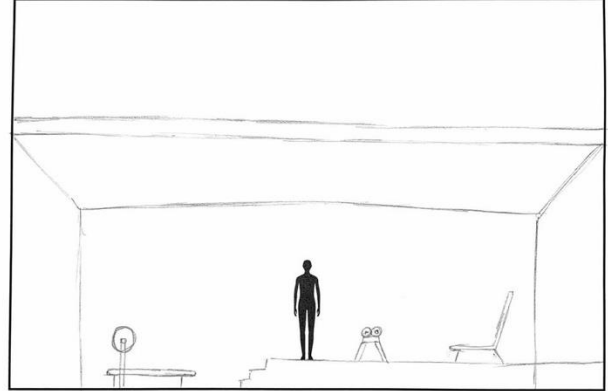
Despite not drawing other individuals, the participant indicates in the informal discussion that they would prefer being accompanied by friends. (Refer to Appendix VII: Group 4 datasheet, participant 6)

recurring components in the illustrated visual narratives:

furniture enabling physical activities, enclosed space

legibility & coherence (present)
complexity & mystery (absent)

indoor environment

sociality (absent)

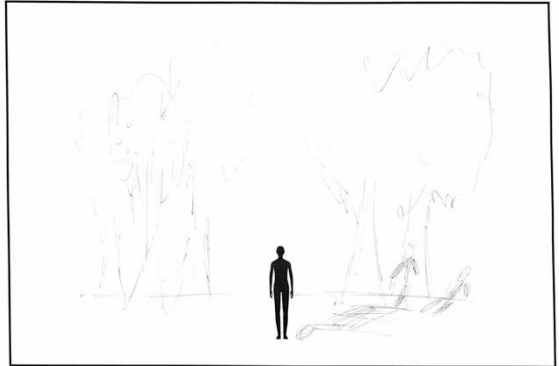reference to the natural environment (present)

age: 20

DIRECT NATURAL LIGHT FROM SKYLIGHT.

WORKSPACE.

LARGE-SPAN WINDOW
ABOUT 3M wide.

age: 19

age: 20

age: 21

SECURED TRANSPARENT
ENCLOSURE SURROUNDED BY NATURE
→ NEED FOR PRIVACY
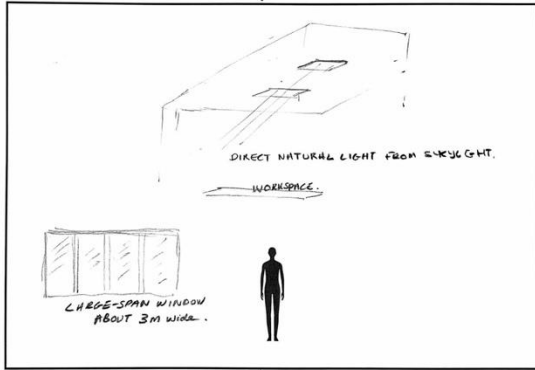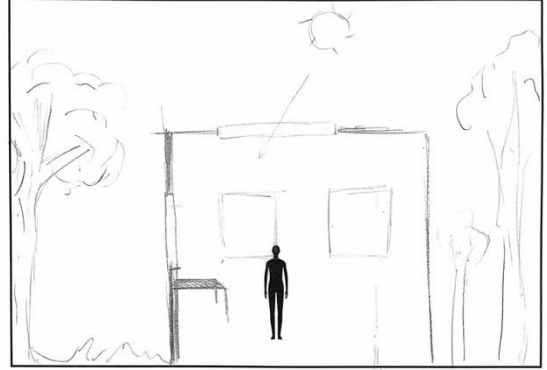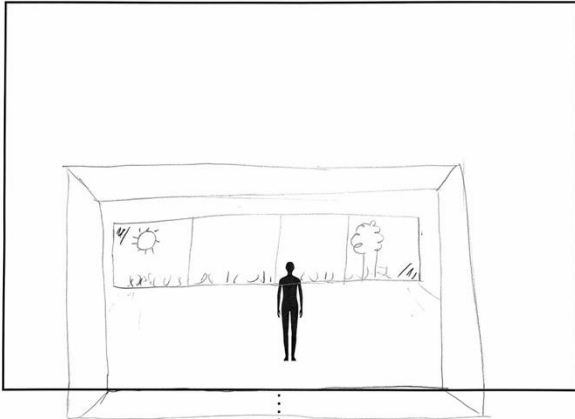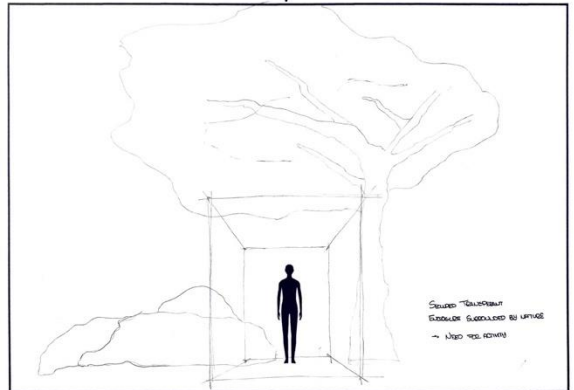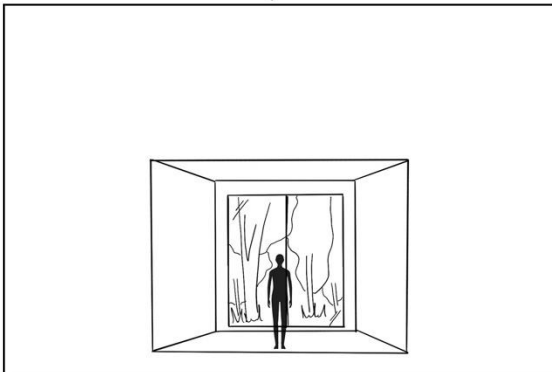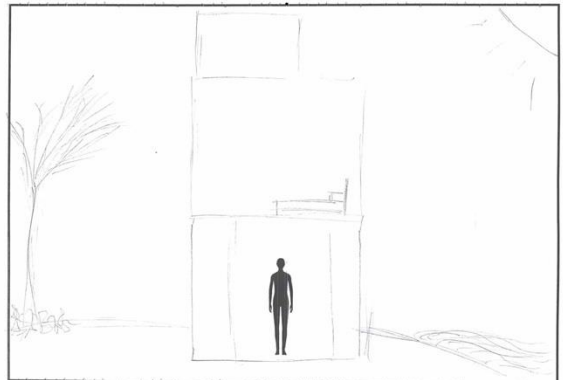
age: 23

age: 19

age: **23**
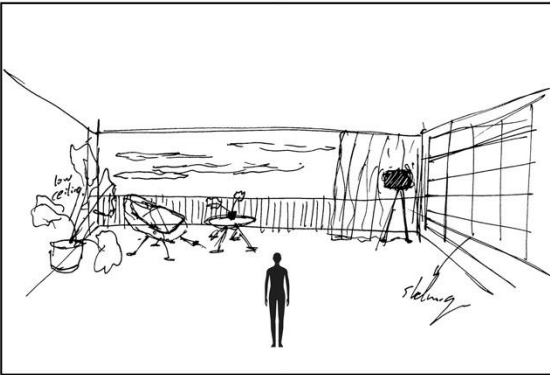
age: 19
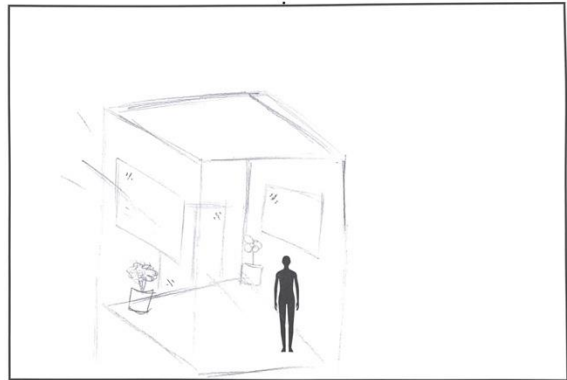
age: 24
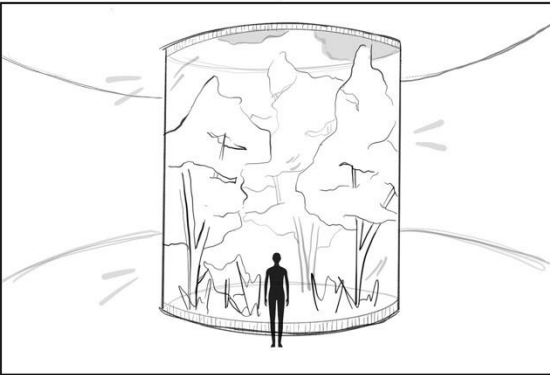
**recurring components in the illustrated
visual narratives:**

sunlight, large openings, outdoor vegetation,
distant sea views, indoor plants

legibility & coherence (present)
openness (absent)

indoor environment

sociality (absent)

reference to natural environment (absent)
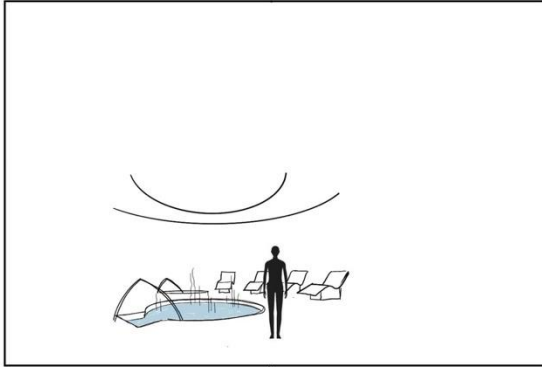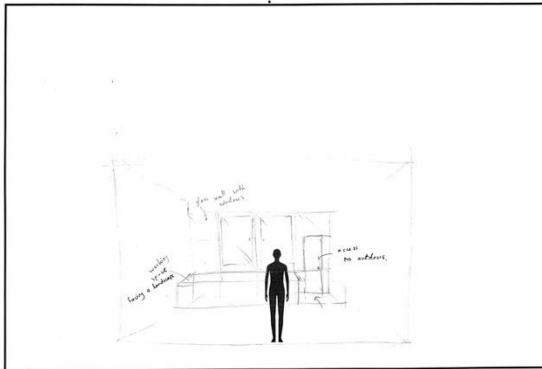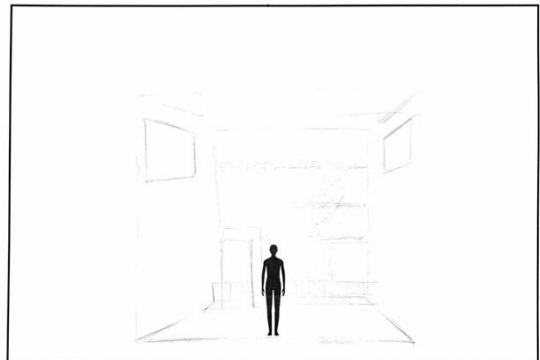
recurring components in the illustrated visual narratives:

large openings, indoor-outdoor connection, furniture promoting leisure activities

legibility & coherence (present)
openness (absent)

outdoor environment

sociality (present)

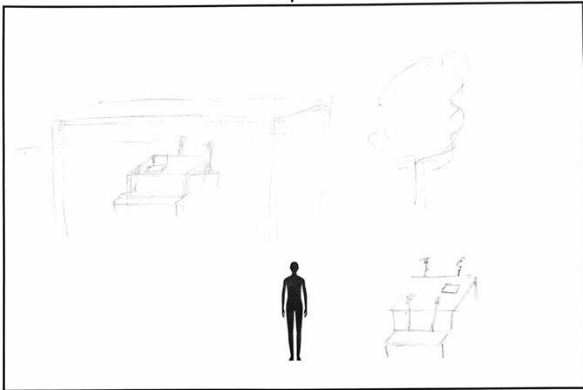reference to the natural environment (present)

age: 19

age: 19

age: 19

age: 19

age: 19

age: 19
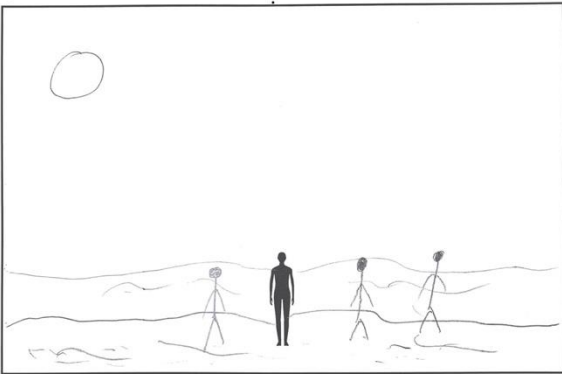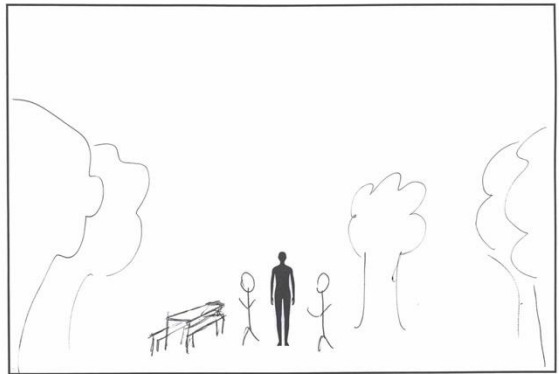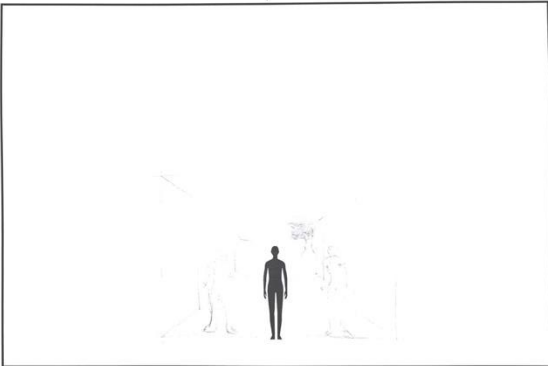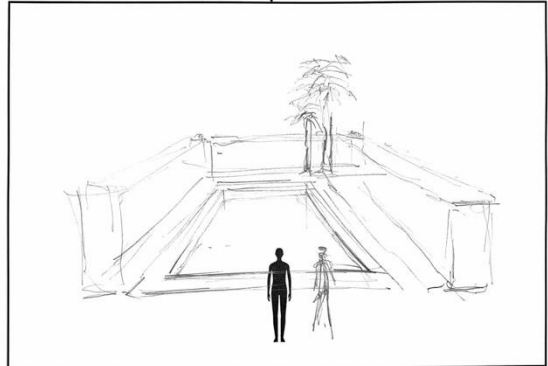
age: 20

recurring components in the illustrated visual narratives:

sunlight, openness, seating, large trees
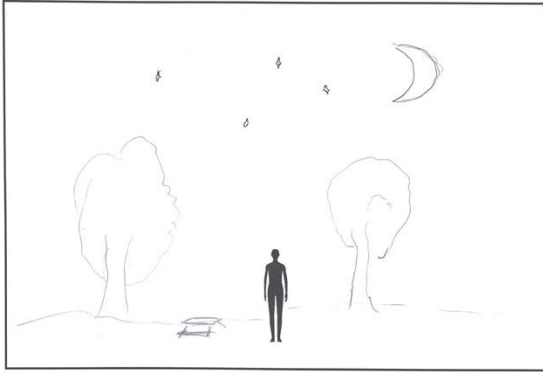
legibility & coherence (present)
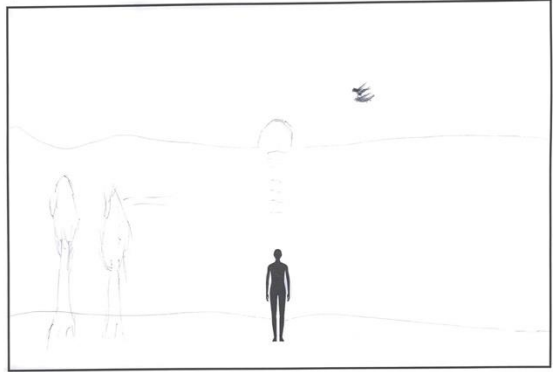openness (present)

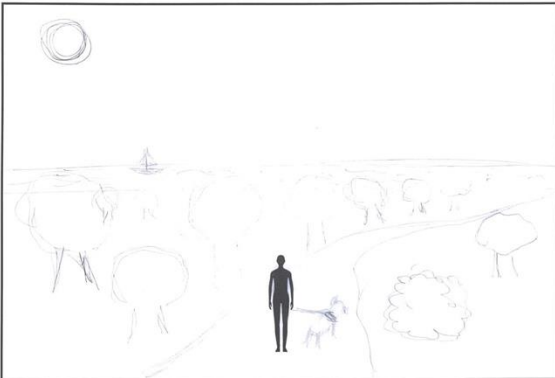# outdoor environment
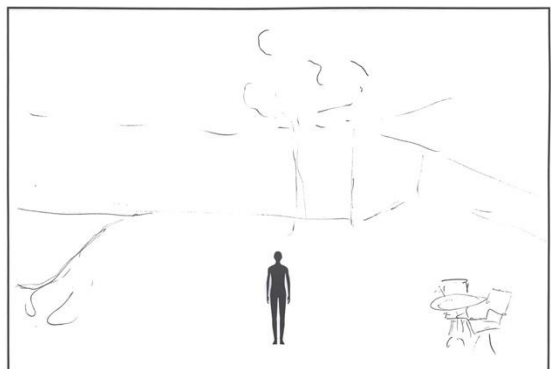
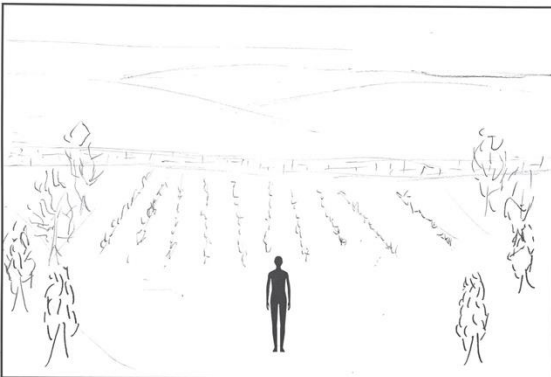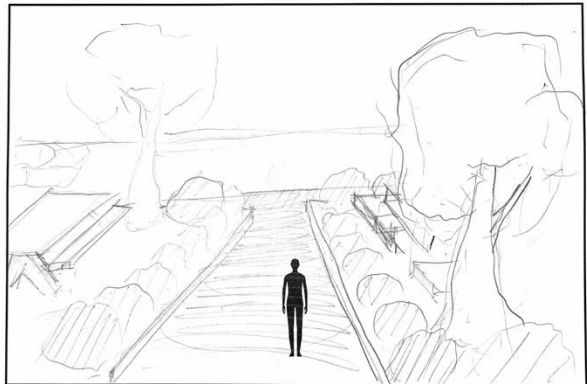sociality (absent)

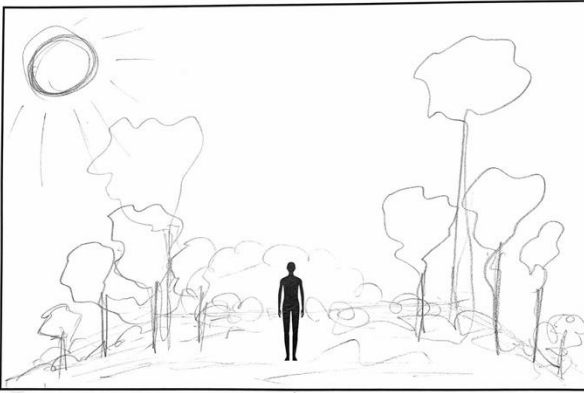reference to the natural environment (present)

age: 19

age: 21

age: 20

age: 19

age: 21

age: 23

age: 19

age: 19

age: 21

age: 20
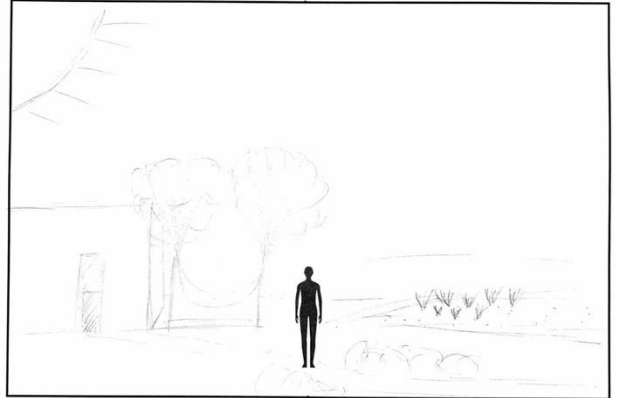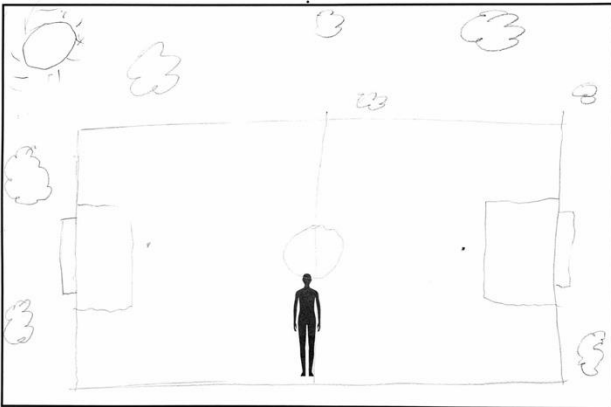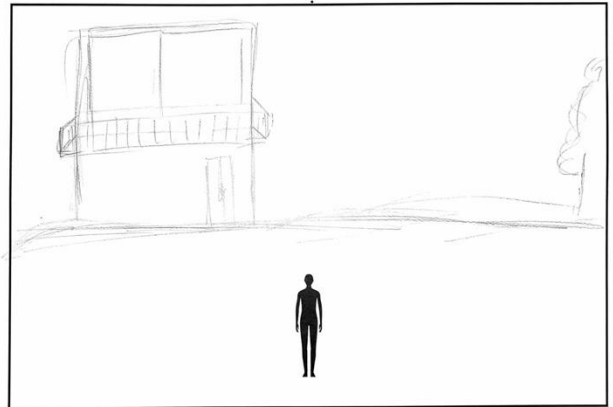
age: 19

age: 19

A football pitch generally implies a social, team sport activity, yet the participant indicates in the informal discussion that they would prefer being alone on the pitch.

Refer to Appendix VII: Group 3 datasheet, participant 12

age: 22
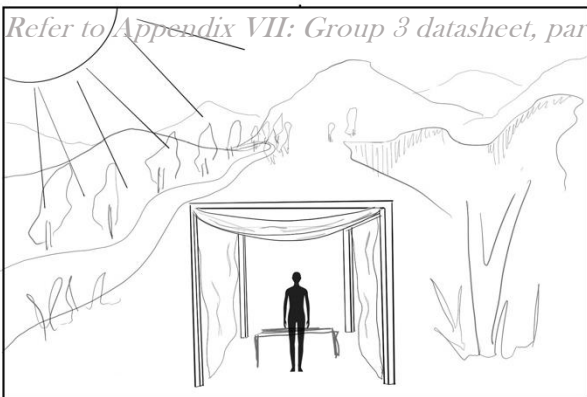
recurring components in the illustrated visual narratives:

sunlight, seating, trees, crops, footpaths, sunset, distant landscaping, physical activity zones, pets

legibility & coherence (present)
openness (present)

outdoor environment

sociality (absent)

reference to the natural environment (absent)

age: 22

A football pitch generally implies a social, team sport activity, yet the participant indicates in the informal discussion that they would prefer being alone on the pitch.

outdoor environment

sociality (present)

reference to the natural environment (absent)

age: 23

recurring components in the illustrated visual narratives:

physical activity zones, furniture promoting leisure activities

legibility & coherence (present)
openness (absent)

outdoor environment

sociability (absent)

reference to the coastal environment (present)
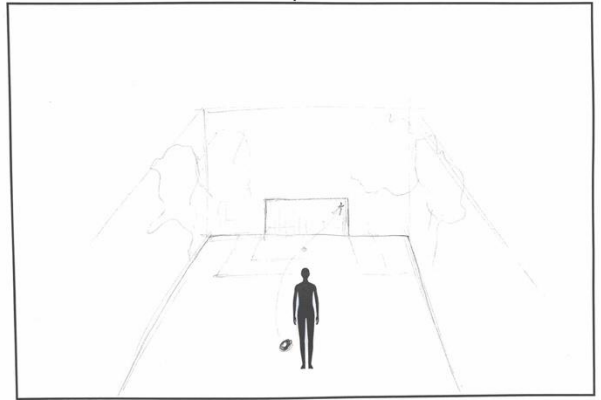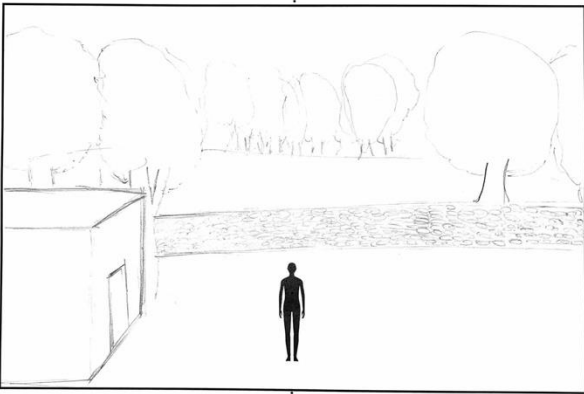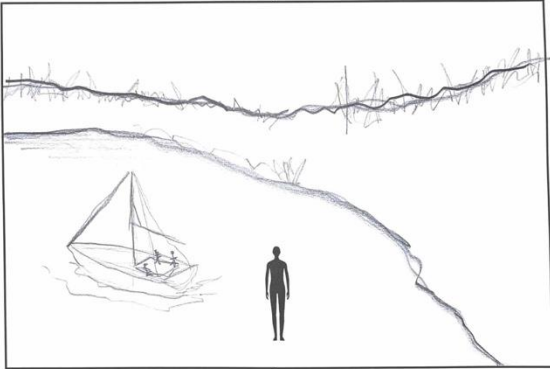

age: 19

age: 20
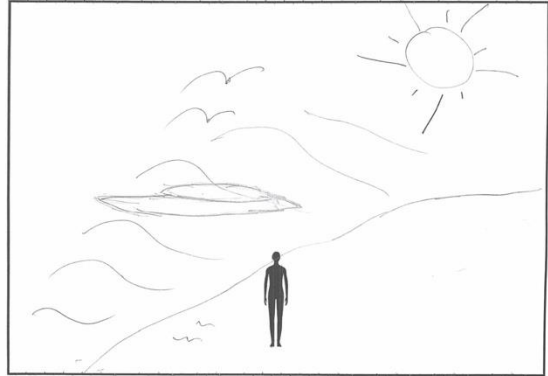
age: 19
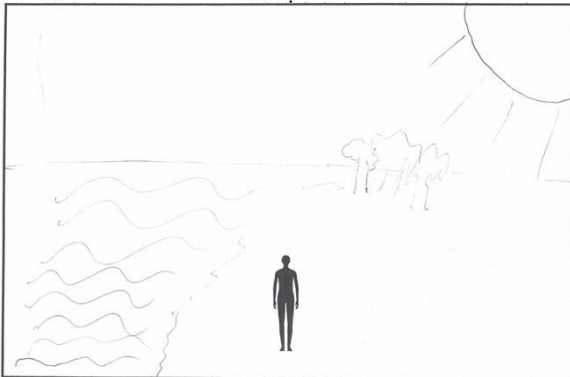
age: 23   Riviera beach
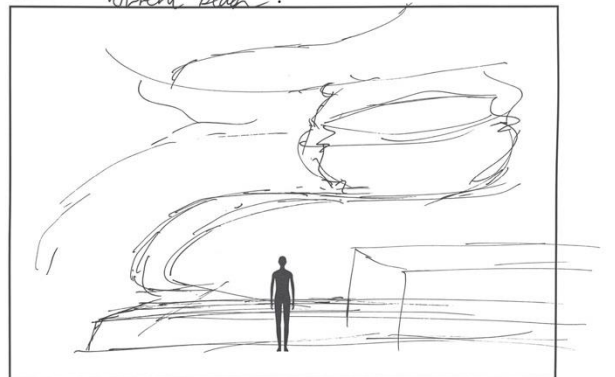
age: 19
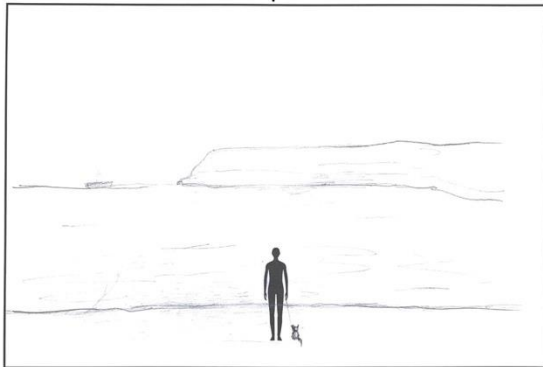
age: 20
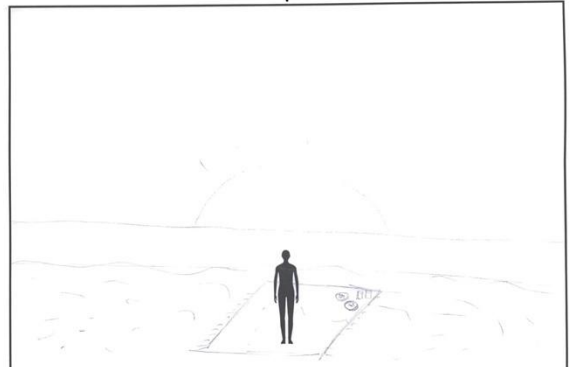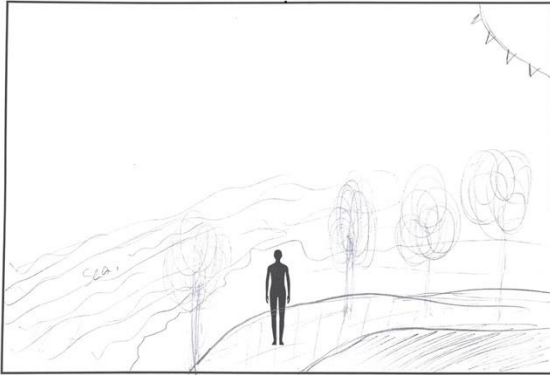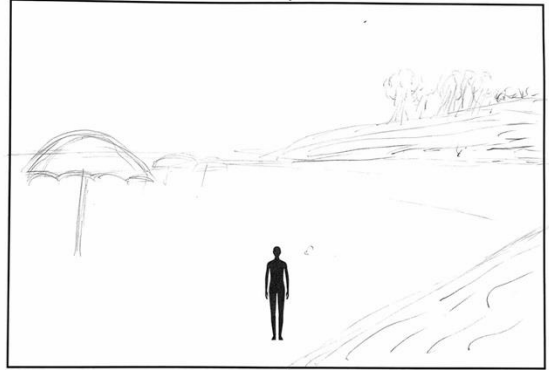
age: 21

age: 19

age: 19
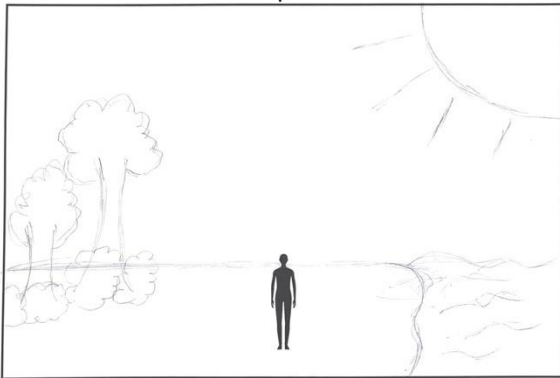
age: 23
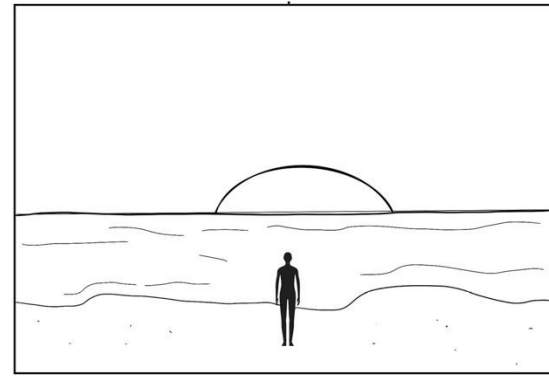
age: 21
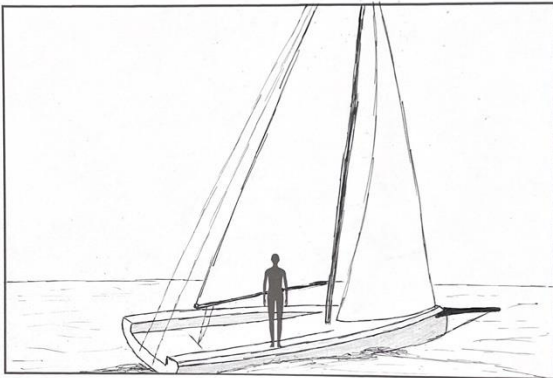
recurring components in the illustrated visual narratives:

footpaths, shading elements, seating, large trees and shrubs, water in close proximity, pets, sunset, boats
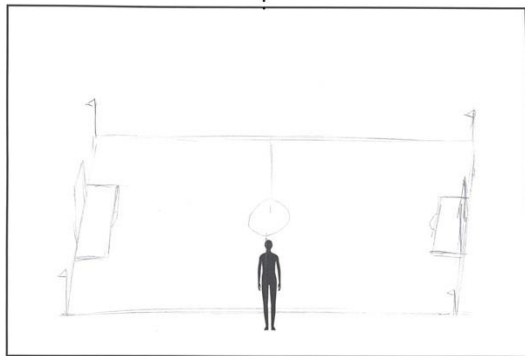
legibility & coherence (present)
openness (present)

outdoor environment

sociality (present)
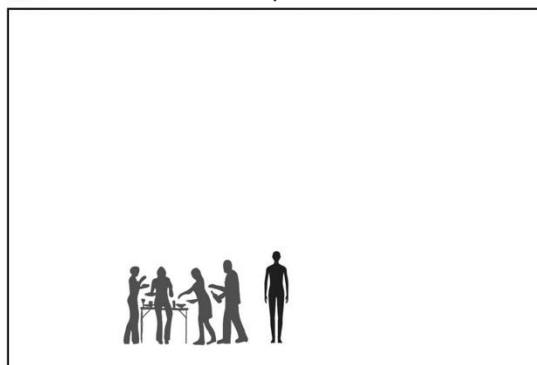
reference to the coastal environment (present)
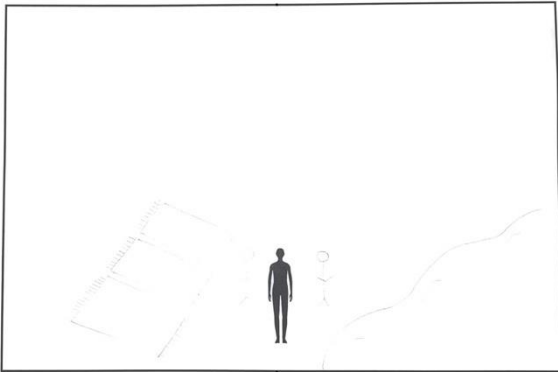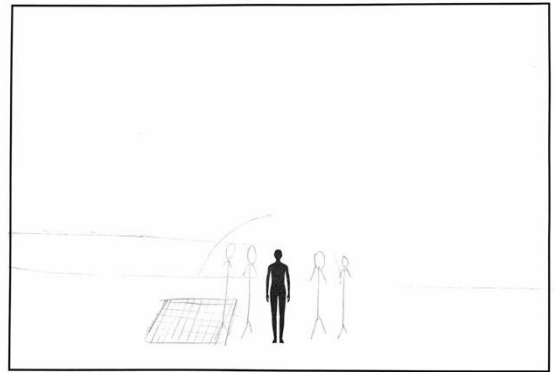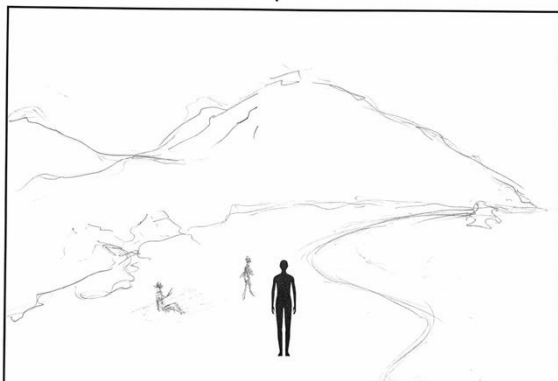
**recurring components in the illustrated
visual narratives:**

seating, sunset, distant landscaping, water in close
proximity

legibility & coherence (present)
openness (present)

keywords

- boats
- crops
- distant landscaping
- distant sea view
- enclosed space
- footpaths
- furniture enabling physical activities
- furniture enabling leisure activities
- indoor-outdoor connection
- indoor plants
- large openings

- openness
- outdoor vegetation
- pets
- physical activity zones
- seating
- shading elements
- sunlight
- sunset
- large trees
- shrubs
- water in close proximity

4.2 Tailored Environments: Assessing theoretical relevance

4.2.1 The indoors - outdoors synthesis

A significant area of study has focused on people's experiences in their favourite places, revealing a strong connection between restorative experiences, favourite places, and the formation of personal identity (Hartig et al., 1997). The qualitative data collected from the workshop indicated that the setting attributing the highest potential for restoration amongst participants and thus, the best restorative experience, is an outdoor space displaying elements of natural environments, experienced in isolation and displaying a sense of openness as a perception-based variable. This was followed by coastal areas which they would similarly prefer to visit without being accompanied by other individuals.

The settings that displayed the least potential for restoration were outdoor spaces having no components of natural environments, showing that indoor spaces having components associated with natural environments such as indoor vegetation, large openings allowing natural light entry and distant sea or landscape views, displayed a higher potential for restoration than outdoor spaces with no reference to natural environments. This correlates with Hartig et al. (1997) who stated that both natural and built environments being indoor or outdoor could offer different restorative potentials, the degree of restoration offered would depend on several other factors and experiences. Therefore, although access to green open spaces is bound to generate increased happiness, lower stress and depression levels, a better mood and improved concentration, it does not imply that restorative experiences are only achievable in natural outdoor environments (Berto, 2014).

Such results suggest the need to consider a wider range of opportunities for incorporating natural elements into urban environments. Kapoor et al. (2021) state that in developing countries, people spend around 90% of their lifetime indoors. Therefore, restoration efforts do not have to be limited to large green areas but can manifest in indoor environments that people are more likely to spend time in on a daily basis. As outlined by Worpole (2007), a fundamental principle of the modernist movement was the seamless integration of a building with its surrounding landscape, dissolving the boundary between indoor and outdoor space. The 1938 Berthold Lubetkin's Finsbury Health Centre in London, displays a clear representation of this notion as it drew inspiration from Lubetkin's earlier designs for a Palace of Soviets. The building is constantly illuminated by natural light thanks to the implementation of glass bricks and an open plan layout. The bright, optimistic setting uses orientation and natural surroundings to its advantage showing the impact of good interior design and environmental quality on health (Francis, 2002).
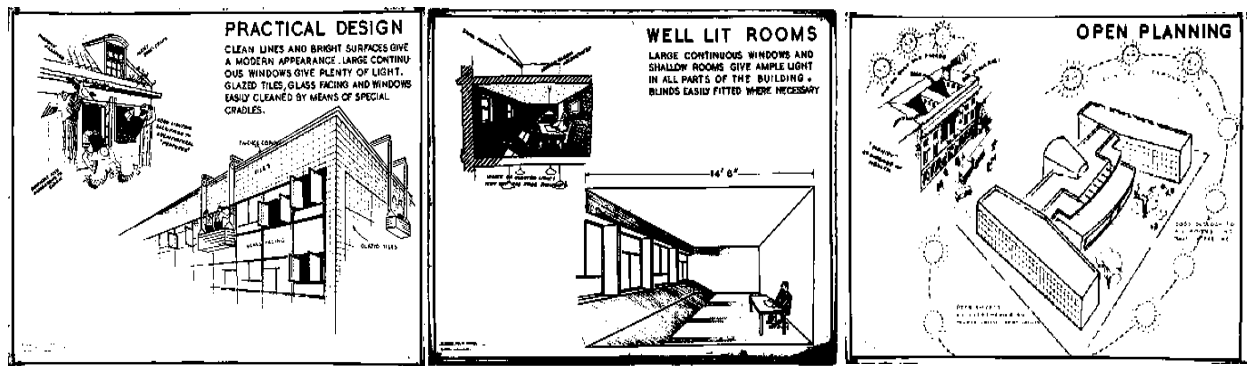
Figure 23: Three of the Exhibition display panels describing design features of Finsbury Health Centre (1938)
Source: RIBA. Retrieved from https://www.ribapix.com/Exhibition-display-panels-explaining-features-of-the-design-of-Finsbury-Health-Centre-Pine-Street-Finsbury-London-Well-lit-

4.2.2 Fragmenting visual narratives

The sketches compiled were grouped according the aforementioned parameters, however, several components seemed to be consistent amongst the different categories. The most consistent component was 'sunlight'. Similarly, a study conducted by An et al. (2016) concluded that the impact of sunlight on mental health is significantly stronger than that of other natural elements. Exposure to indirect sunlight resulted in approximately twice as much variance in depression than that obtained with exposure to natural elements (An et al., 2016). The difference was even more apparent when it came to anxiety levels. The findings support existing literature, indicating that exposure to natural elements, particularly sunlight, positively impacts mental health and job mindsets of employees. Findings like that outlined by An et al. (2016), suggest that organisations and policymakers should give greater consideration to the incorporation of natural elements and adequate design features within working environments and other spaces frequented by youths.

Kaplan (1995) and Fleury-Bahi et al. (2017) express that nature offers a plethora of fascinating objects and captivating processes which engage people's interest. As outlined in section 2.3, many of these captivating aspects are described as "soft" fascinations and include cloud patterns and unfolding processes like sunsets. The latter was another common component that repeatedly emerged in the documented visual narratives.

Another component that emerged was 'shading' through the incorporation of tall trees, canopies and roofed spaces. This correlates to Lyu et al. (2022) that illustrated the significant increase in 'fascination' and 'being away' rating when participants were exposed to an adaptive scenario combining sunlight and shade, compared to a scenario with only direct sunlight. Similarly, such results indicate that the adaptive prospect of semi-outdoor environments appears to enhance fascination, the feeling of being away and ultimately, the restorative potential. Such semi-outdoor

spaces provide a thermally pleasant environment which would act as a promoter of restoration rather than a stressor that imposes psychological and physiological demands on users (Lyu et al., 2022).

Another characteristic that emerged throughout the visual narratives and informal discussions was the incorporation of '**water**'.

"Sound is the most important factor. It helps promote clarity of mind"

(participant, group 1)
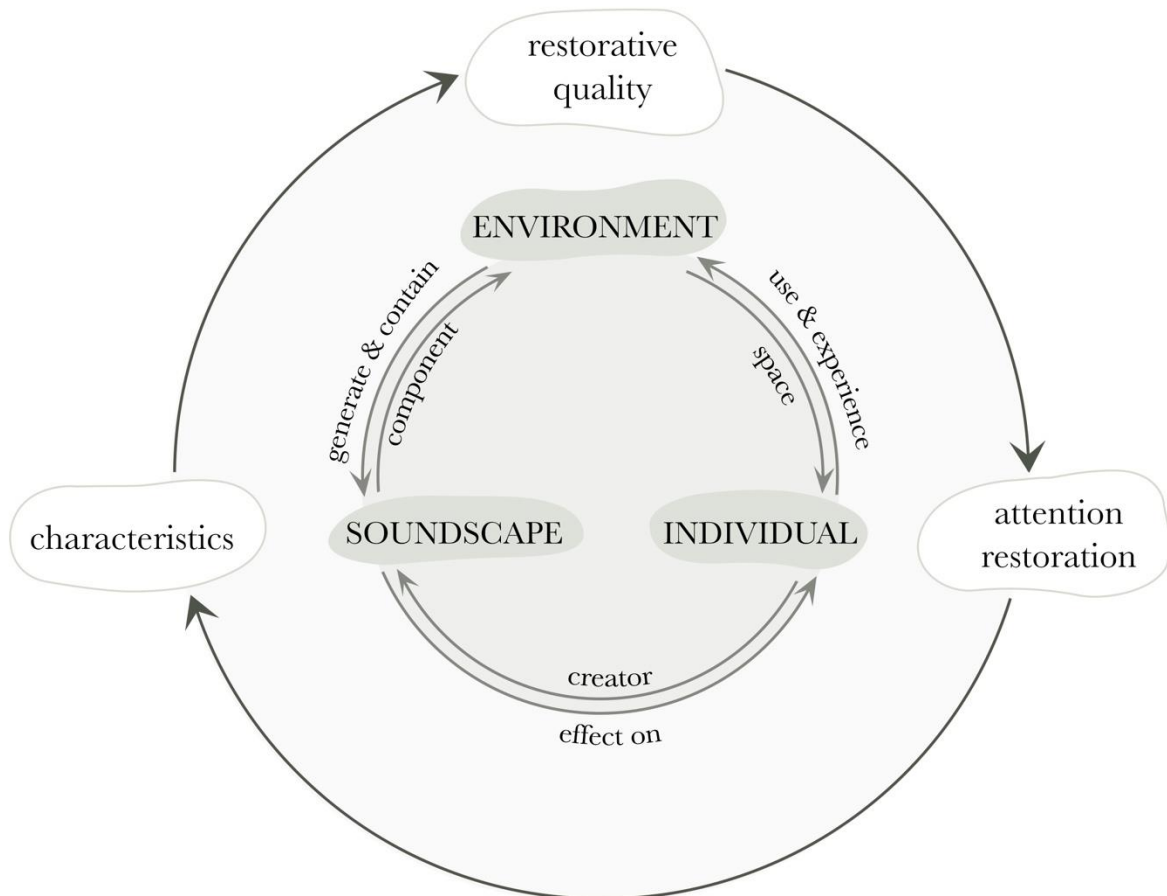
Figure 24: Analysis model of the relationship between soundscape and environmental restoration by Zhang et al. (2017)
Source: Author, 2023

The restorative effect of water is an area that has received relatively little attention in research on restorative environments and that has, so far, been inconclusive. Few studies have systematically explored the presence of water in scenes and its potential to induce restoration (Staats, 2012). Ulrich (1993) as cited in Karmanov & Hamel (2008) regarded the presence of water as a reliable indicator of an environment's potential for restoration. White et al. (2010) compared scenes containing built, green, and water elements and concluded that various measures, including perceived restorativeness, increased as the proportion of water in the scene increased. Similarly, another study by Karmanov and Hamel (2008) focused on water elements in urban scenes and

found that these scored almost as well as green scenes in terms of changes in affect indicative of restoration. Others (Van den Berg et al., 2003 as cited in Karmanov & Hamel, 2008) found no relation between the presence of water and restoration.

The restorative potential of water bodies in this study was also illustrated in their ability to cater for a range of **leisure and physical activities**, as outlined by a participant;

"I will go sailing or swimming to release stress through physical activity."
(participant, group 3)

Travlou (2007) stated that youths often feel limited as they are restrained in, typically indoor, physical and social environments that contribute to feelings of frustration. Therefore, spaces such as beaches, football grounds, gyms and parks that were illustrated in the workshop, seem to overcome such restrictive conditions by allowing youths to take up activities that encourage them to divert from mentally arduous thoughts.

Notably, the Mediterranean culture and our inherent connection to the outdoors may explain the widespread preference for sunlight and sea exposure. In Mediterranean regions, the climate serves as a unifying factor, conveying a shared identity characterised by a prevalence of outdoor activities, as shown through the popularity of open marketplaces, courtyards as central features in temples and houses, and numerous open-air settings (King et al., 2014). King et al. (2014) discuss our dependency on beaches and sunshine as the primary generators of recreation, tourism and activity. This has shaped our lifestyle and stimulated our preference for such environments.

Apart from coastal environments, another popular setting amongst participants was 'the home'. Both settings were included in the online survey as outlined in section 3.4, and will be discussed further in this chapter. The element of familiarity and comfort were the primary factors that led participants to pick their own home as a space that promotes restoration, corresponding to the study conducted by Clark & Uzzell (2002) that discusses the positive affordance of retreat and privacy offered by one's home compared to schools and town centres. However, external factors that inhibit the successful restorative process from occurring were also expressed;

"I would choose my home, specifically my bedroom, but transported to a green area so that we would be able to see greenery from inside not neighbouring buildings."
(participant, group 5)

"Unfortunately, we don't know if there will be construction work happening next door, this will produce a lot of noise so I will have to opt for another space"

Although 'the home' is commonly viewed as an ideal restorative environment, some obstacles outlined in literature may inhibit such restoration. For instance, one's home often demands regular paid and unpaid work including chores, unfinished tasks and maintenance needs. This can create ambiguity regarding the ability for restoration at home. To address this ambiguity, research has focused on identifying specific spatial, social, behavioural and temporal circumstances that either facilitate or hinder its restorative potential (Staats, 2012). For instance, mentally fatigued individuals found engaging in undemanding leisure activities at home more effective when alone rather than with a friend, compared to rested individuals (Staats, Van Gemerden, & Hartig, 2010 as cited in Staats, 2012).

In conclusion, the discussed factors display a relation between environmental components and mental health which resonate with the illustrated links outlined by Hartig et al. (2014), displayed in
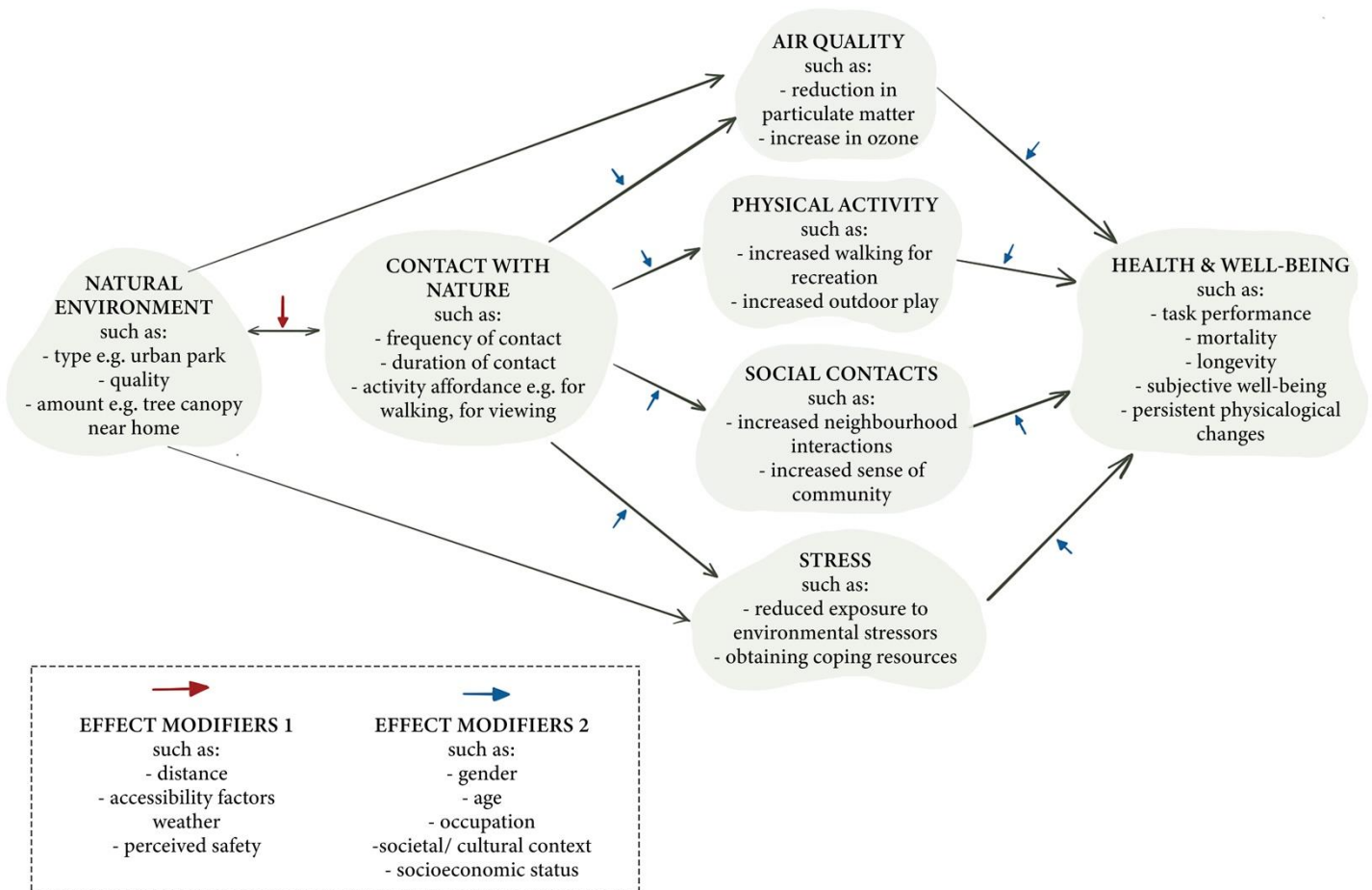
Fig.25.

Figure 25: Pathways connecting the natural environment to mental health
impacts outlined by Hartig et al. (2014)
Source: Author, 2023

4.3 Online survey questions and results

The following data represents the primarily qualitative data obtained from the online survey that was completed as part of the workshop outlined in chapter 3. Participants considered were between 19-24 years of age and were given 20 minutes to complete the task.

The survey was made up of 19 questions concerning the individual's demographics, perception on familiar environments, their existing bedroom, their ideal environment and their opinion on certain environmental components. A number of case studies were used throughout the survey to provide a comparison between settings and to better understand youths' preference for one space over another.

A total of 53 respondents participated in the survey. The inputted data was compiled into graphical representations, analysed alongside the results obtained through the scenario method and discussed in section 4.4.

Part A: Profile

4.3.1 Question 1: Gender
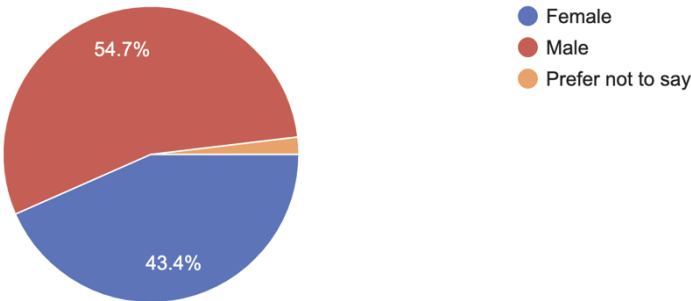
4.3.2 Question 2: Age
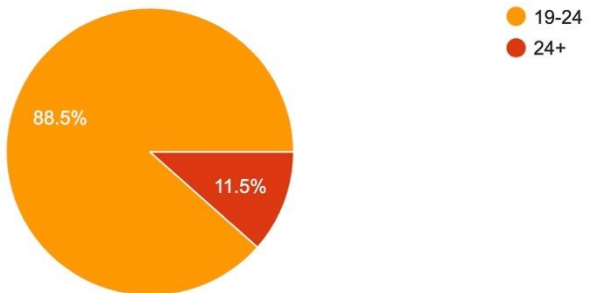
Part B: Questionnaire: *The following charts illustrate the degree of restoration (indicated by a sense of relaxation and comfort), guidance (indicated through legibility) and sociality that participants associated with the three chosen settings (the home, the shopping mall and the beach).*

4.3.3 Questions 3: Rate the following environmental qualities for each space based on your experience, from 1 (poor) to 5 (very good):

Sense of relaxation & comfort
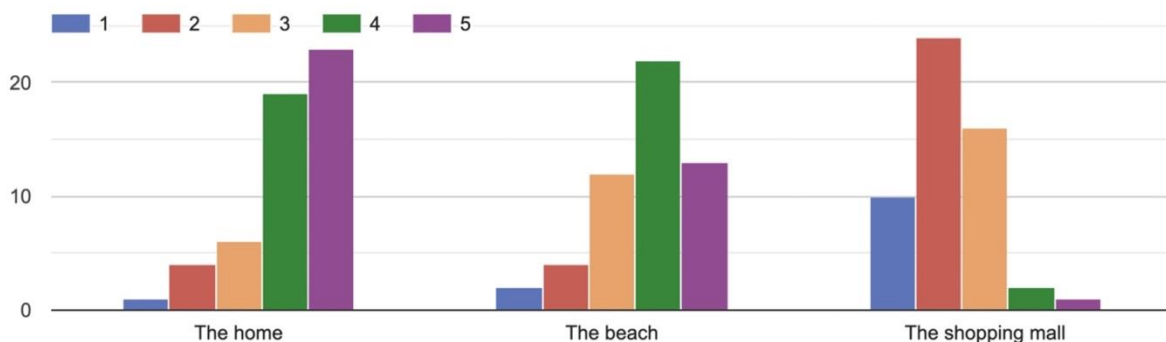
4.3.4 Questions 4: Rate the following environmental qualities for each space based on your experience, from 1 (poor) to 5 (very good):

Legibility - how easy it is to navigate through the space
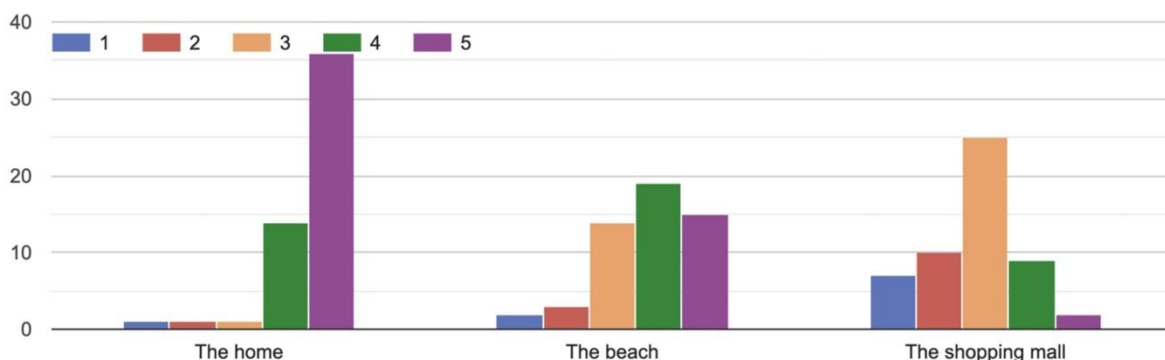
4.3.5 Questions 5: Rate the following environmental qualities for each space based on your experience, from 1 (poor) to 5 (very good):

Potential for social interaction - how ideal the space is to socialise with others
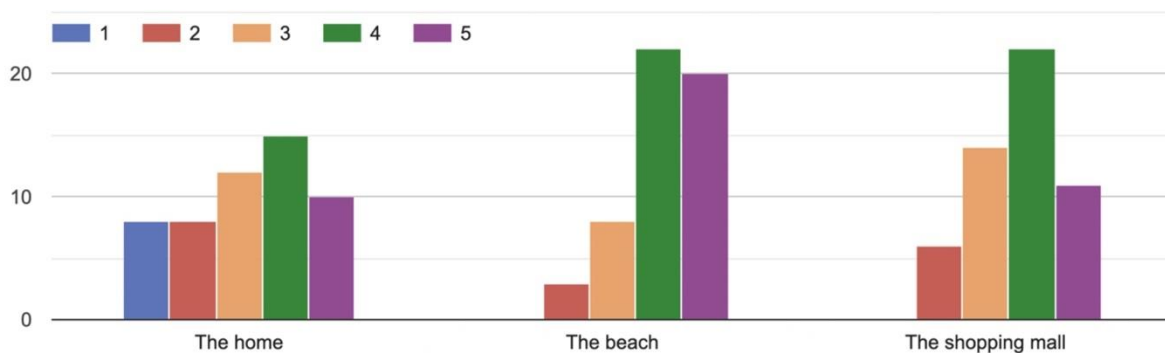
Part C: Environmental Analysis: *The following charts illustrate participants' description of their current bedrooms, which will be used as a comparison to their ideal bedroom setting described in Part D.*

4.3.6 Question 6: Do you share your room with other individuals
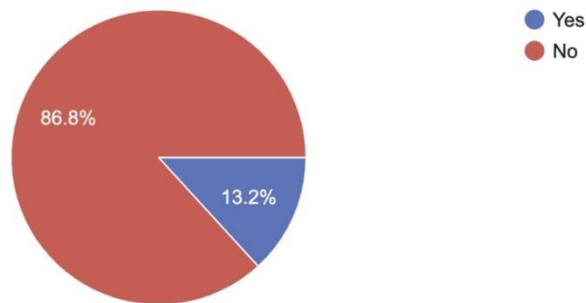
4.3.7 Question 7: Do you have any plants inside your bedroom?
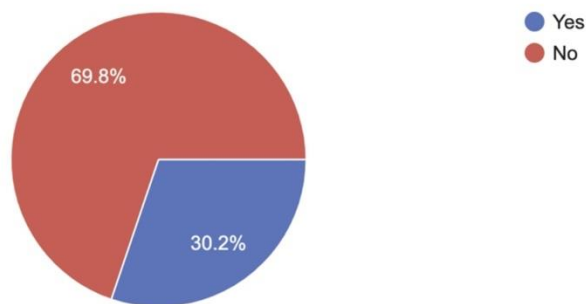
4.3.8 Question 8: How many openings do you have in your bedroom overlooking the external environment?
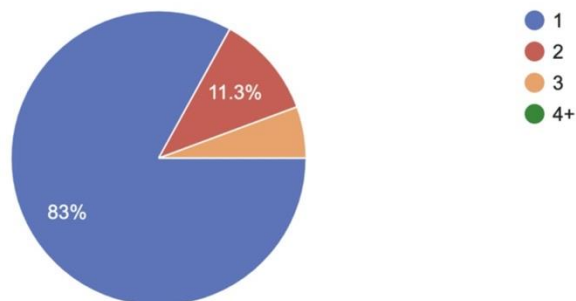
4.3.9 Question 9: What view do you observe through your bedroom openings?

- A view of the sea
- A view of green landscape
- A view of neighbouring buildings
- Shaft
- Internal Courtyard
- All of the above
- The internal courtyard
- A view of the opposite room's window…
- Central courtyard
- Back balcony looking over neighboring buildings.
- Internal yard
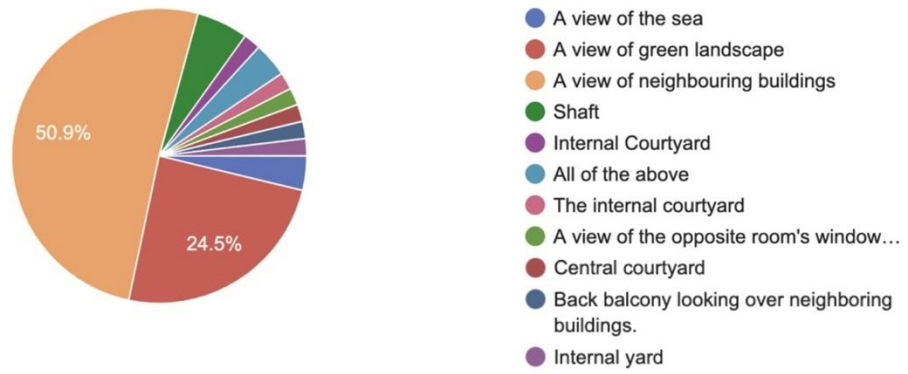
4.3.10 Question 10: Would you describe your room as a cluttered or uncluttered space?

- A cluttered space
- An uncluttered space
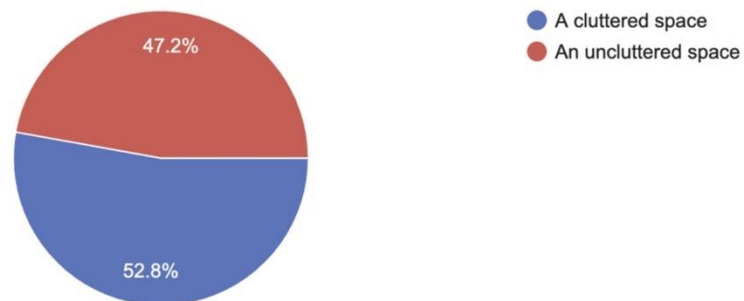
4.3.11 Question 11: What energy sources do you primarily rely on within your bedroom?
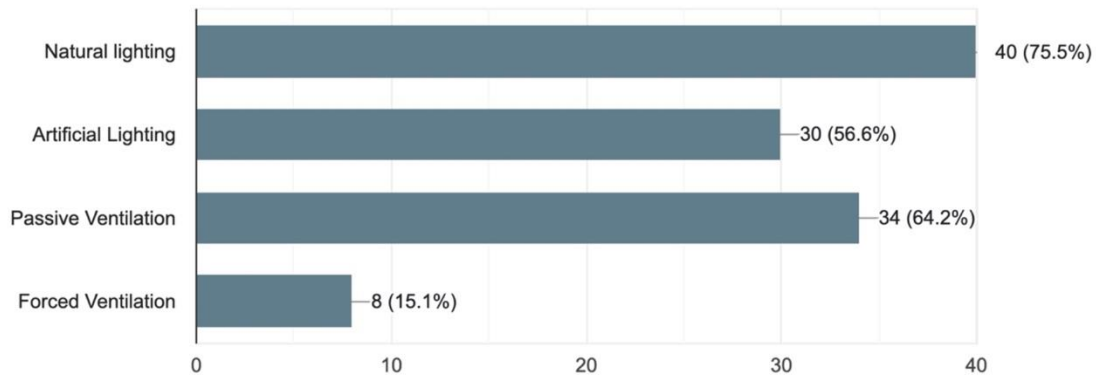
4.3.12 Question 12: Have you personalised or designed your bedroom yourself?
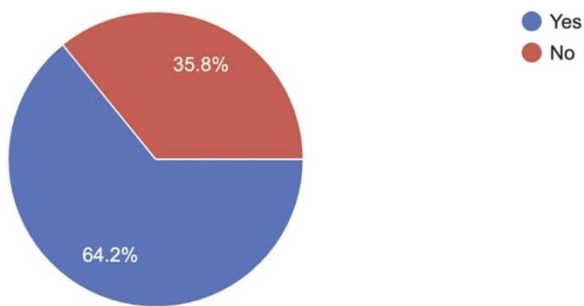
Part D: Environmental Preference: *The following charts illustrate specific environmental characteristics that participants chose when envisioning their ideal restorative environments.*

4.3.13 Question 13a: Pick the setting you would prefer to spend time in for each location:
The bedroom

1: no vegetation   2: surrounding vegetation   3: distant landscaping

- 1 - no vegetation
- 2 - surrounding vegetation
- 3 - distant landscaping

66%
28.3%
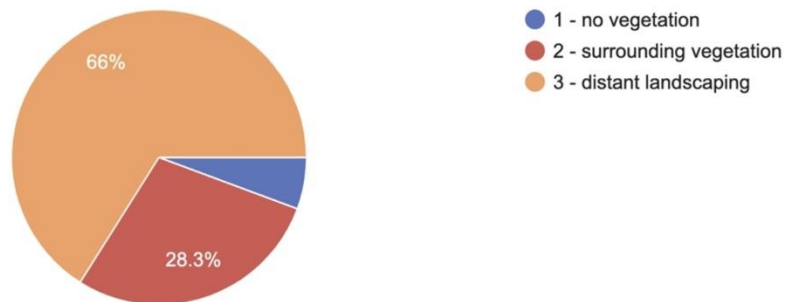
Question 13b: Give a reason for your choice:
The results for the qualitative research question 13b, will be discussed in section 4.4

4.3.14 Question 14a: Pick the setting you would prefer to spend time in for each location:
The bedroom

1: no openings

2: outdoor terrace

3: windows but no terrace

● 1 - no openings
● 2 - outdoor terrace
● 3 - windows but no terrace

11.3%

88.7%
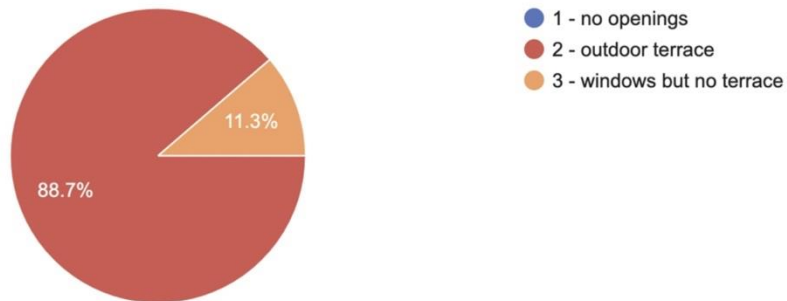
Question 14b: Give a reason for your choice:

The results for the qualitative research question 14b, will be discussed in section 4.4

4.3.15 Question 15a: Pick the setting you would prefer to spend time in for each location: **The bedroom**

1: individual room

2: shared room

● 1 - individual room
● 2 - shared room

100%

Question 15b: Give a reason for your choice:

The results for the qualitative research question 15b, will be discussed in section 4.4

4.3.16 Question 16a: Pick the setting you would prefer to spend time in for each location:

The beach

1: in close proximity to the sea

2: at a distance from the coast

1 - in close proximity to the sea
2 - at a distance from the coast

24.5%

75.5%
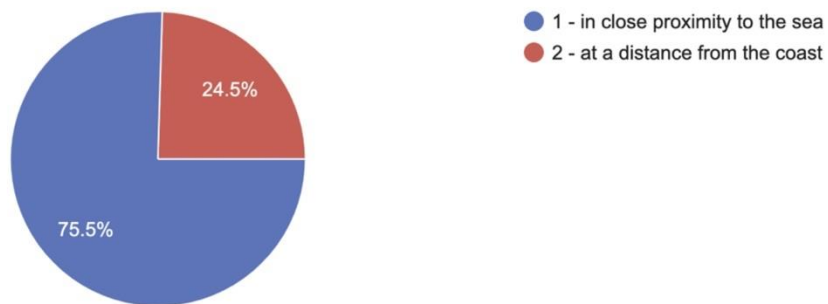
Question 16b: Give a reason for your choice:

The results for the qualitative research question 16b, will be discussed in section 4.4

4.3.17 Question 17a: Pick the setting you would prefer to spend time in for each location:

The beach

1: a crowded beach   2: an isolated beach

94.3%

● 1 - a crowded beach
● 2 - an isolated beach
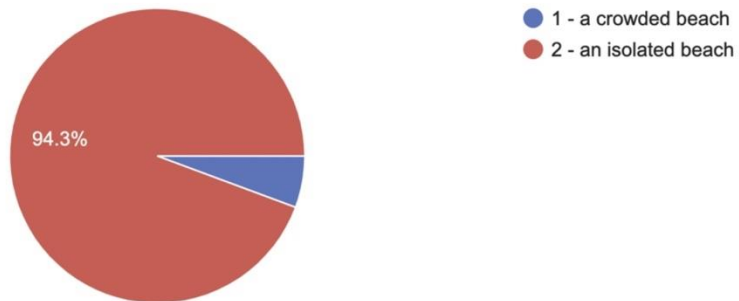
Question 17b: Give a reason for your choice:

The results for the qualitative research question 17b, will be discussed in section 4.4

4.3.18 Question 18a: Pick the setting you would prefer to spend time in for each location:
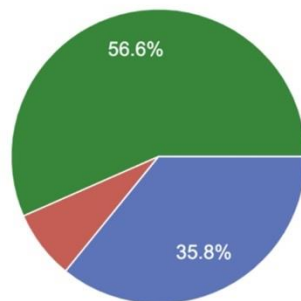
The Shopping Mall

1: indoor shopping mall (The Point, Sliema) | 2: indoor shopping mall (Pama, Mosta) | 3: semi-outdoor shopping mall (Bay Street Shopping Complex, St. Julians)

Question 18b: Give a reason for your choice:

The results for the qualitative research question 18b, will be discussed in section 4.4

4.3.19 Question 19a: Pick the setting you would prefer to spend time in for each location:

The Shopping Mall

1: indoor shopping mall

2: outdoor street market

- 1 - indoor shopping mall
- 2 - outdoor street market

43.4%

56.6%
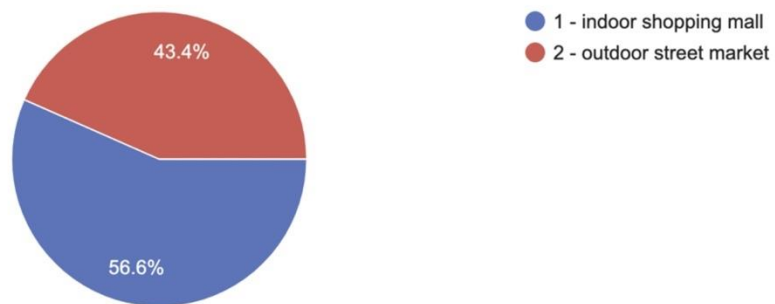
Question 19b: Give a reason for your choice:

The results for the qualitative research question 19b, will be discussed in section 4.4

4.4 The local Scenario: A comparative analysis

The level of fascination, guidance, preference, and social interaction offered by various settings was used as a measure of restorative potential in the study. Participants' responses, particularly those obtained from the qualitative research questions presented in Appendix II, were analysed in relation to the five outlined themes so as to determine how such data validates or contradicts the theoretical framework associated with each theme, discussed in chapter 2. The relevant response that correlate with each of the extracted research themes and theories are presented throughout this sub-chapter to support the discussion.

4.4.1 Restoration

Two primary components that are commonly used as a measure of restoration based on ART are 'being away' and 'compatibility' (Hartig et al., 1997). In the conversations conducted with participants, the 'being away' factor emerged as a determinant of what constitutes a restorative environment. For instance, when deciding on the ideal bedroom setting, a terrace was preferred over solely a window as "it gives you the possibility to go outside and take a break from indoors and the tasks you need to do" (participant response to Question 14b). Moreover, all participants preferred an individual room over a shared room as "an individual room gives you privacy. It allows you to take a break from the world around you and be in your own personal bubble" (participant response to Question 15b), enabling a sense of detachment from the outside world and its demands. Such preference for solitude over social interaction corresponds to Staats et al. (2003) which
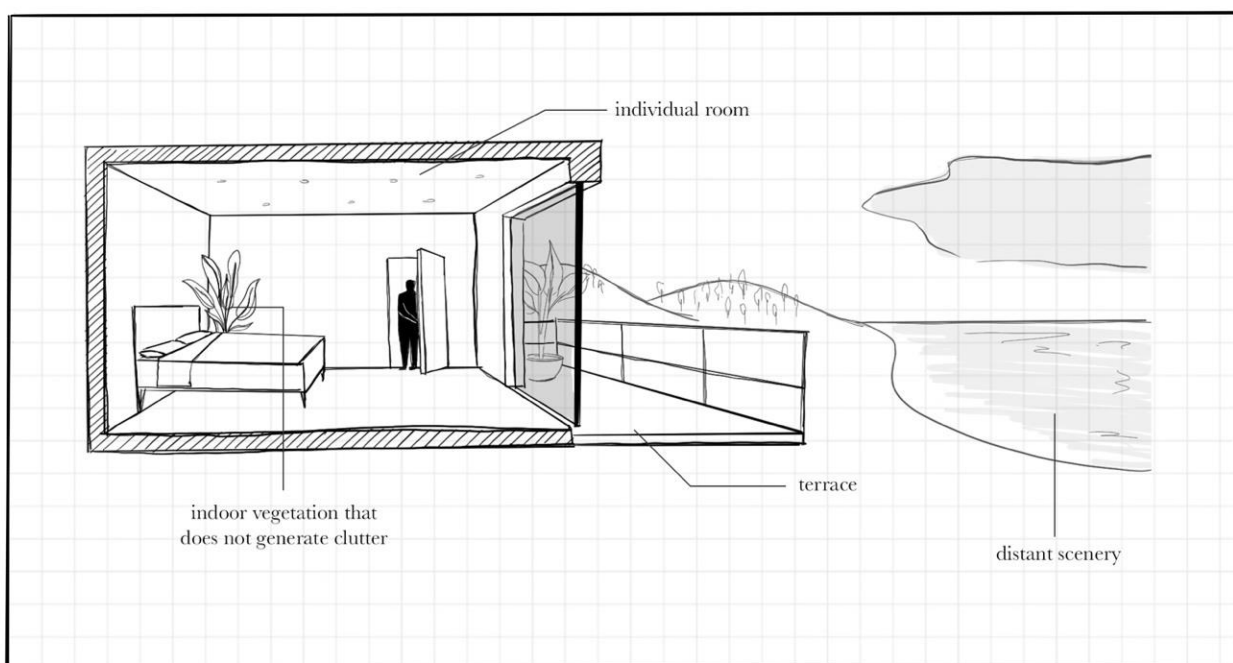
Figure 26: Illustration: 'A restorative bedroom'
Source: Author, 2023

illustrated that people who are experiencing attentional fatigue tend to prefer being alone when walking though urban or natural environments compared to individuals who are not fatigued.

The significance of the 'being away' factor was also apparent in question 16. The majority of participants opted to be in close proximity to the sea rather than at a distance from it as "being close to the sea heightens all the senses, which could help people to relax and cut-off from their busy life." (participant response to Question 16b). This illustrated that despite an environment's significant restorative potential, other factors such as a change in perspective, may alter the degree of restoration that the same setting will provide. The same beach was also preferred when being unpopulated as "crowded beaches give a sense of urgency." (participant response to Question 17b) and "feels very restricting considering the beach is a place I go to escape and relax" (participant response to Question 17b). Similarly, this corresponds to Staats & Hartig (2004) and Korpela et al. (2008) which illustrate that when it comes to experiencing the restorative effects of nature, being alone is more beneficial unless the space feels unsafe. In such cases, social interaction plays a role in enhancing the restorative nature of the environment by influencing the perception of safety.

Compatibility emerged as another determinant of what constitutes a restorative environment as certain settings seemed to be more in line with individuals' needs and interests compared to others, increasing the person's productivity, comfort and sense of belonging (Hartig et al., 1997). For instance, distant landscaping was preferred by 66% of respondents when choosing their preferred bedroom setting as it was said to "improve one's mood and productivity" (participant response to Question 13b). Moreover, unpopulated beaches were preferred as "crowded beaches may be distracting" (participant response to Question 17b). Conventional shopping malls like 'The Point' were preferred as the "modern, familiar setting gives a sense of belonging" (participant response to Question 18b) whilst indoor shopping malls were preferred by 56.6% of participants as they "offer more choice and are more practical than outdoor street markets", (participant response to Question 19b). All these factors strengthen the role of compatibility in shaping restorative environments, confirming that an individual's preference for an environment is highly dependent on personal intentions and the convenience of performing tasks within the space (Hartig et al., 1997).

4.4.2 Fascination

Hartig et al. (1997) made use of a Perceived Restorativeness Scale to measure the degree of fascination that certain experiences provide. Experiences which were highly fascinating were described to encourage discovery, interest and comfort. A rating for relaxation and comfort for each of the three chosen settings, was given in question 3. The results illustrated that the setting providing the highest degree of relaxation and comfort is 'the home', followed by 'the beach' and ultimately 'the shopping mall'. Although participants generally did not view shopping malls as comfortable or relaxing spaces, incorporating specific design characteristics can enhance their

restorative potential. For instance, combining outdoor street markets with indoor shopping malls could increase the fascinating quality of the experience as "outdoor street markets are more traditional and can offer interesting observations including local produce and craftsmanship" (participant response to Question 19b). Similarly, although 'the home' was associated with relaxation and comfort by the majority of respondents, certain aspects may trigger feelings of insecurity, limiting its fascinating quality and restorative potential;

"I don't feel as safe when there is distant landscaping, as I would feel like the windows are too big and I feel stalked. Especially when the bedroom is at ground level."

(participant response to Question 13b)

This correlates with the conclusions provided by Staats & Hartig (2004) claiming that spaces surrounded by natural environments are highly restorative unless they are perceived as unsafe. That being said, 66% of participants preferred a bedroom having views of distant landscaping over indoor vegetation or no views, as "distant vegetation" was said to create "depth within the space, instilling a feeling of wonder" (participant response to Question 13b) therefore presenting soft fascination.

Kaplan & Kaplan (1989) comparably illustrated that a view of natural elements through a window significantly impacts one's satisfaction with their neighbourhood. Merely knowing that such natural resources are available nearby, without directly using them, enhances one's perceptions and feelings about their residential area. Kaplan (2001) also highlighted the various benefits on well-being reported by residents who have views of natural elements or settings, including a sense of peace, concentration, and productivity. Unfortunately, despite these benefits, when asked to describe the view through their bedroom windows, 50.9% of respondents selected a view of neighbouring buildings, 5.7% of respondents selected a view of their shaft and only 28.3% of respondents selected a view of natural environments.

4.4.3 Guidance

Coherence (Extent), emerged throughout the study as certain settings were perceived as chaotic whilst others were described to be highly legible. In question 4, participants attributed the highest degree of legibility to 'the home', followed by 'the beach' and ultimately 'the shopping mall'. Despite this, when illustrating different scenarios such legibility was hampered.

"a crowded beach is too chaotic and confusing. I prefer to spend time in calm environments that promote a sense of openness"

(participant response to Question 17b)

A setting characterised by limited visual access and complex layouts is likely to obstruct one's spatial awareness (Li & Klippel, 2016). A quick observation of a scene can convey whether there is ample space to move around or if there are obstacles restricting one's path (Kaplan & Kaplan, 1989). Spaces that display a sense of openness as a perception-based variable and a high potential for varying activities to occur are generally superior.
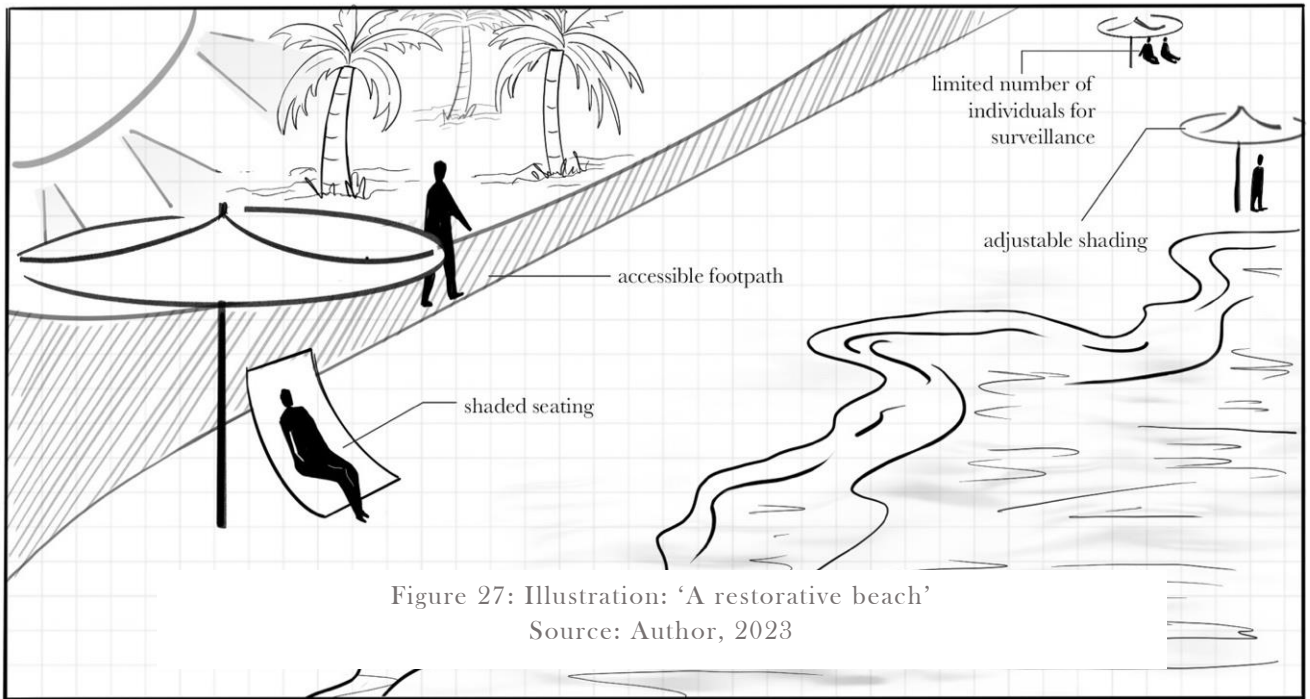
Figure 27: Illustration: 'A restorative beach'
Source: Author, 2023

These remarks show that despite the shopping mall being perceived as illegible compared to the home and the beach, certain components can be considered to make such spaces easier to use and more attractive for youths to spend time in. An interplay between indoor-outdoor settings, outdoor street markets and conventional shopping malls, artificial and natural energy systems amongst other similar variations can be considered as shown in Figure 28.

4.4.4 Preference

Figure 28: Illustration: 'A restorative shopping mall'
Source: Author, 2023
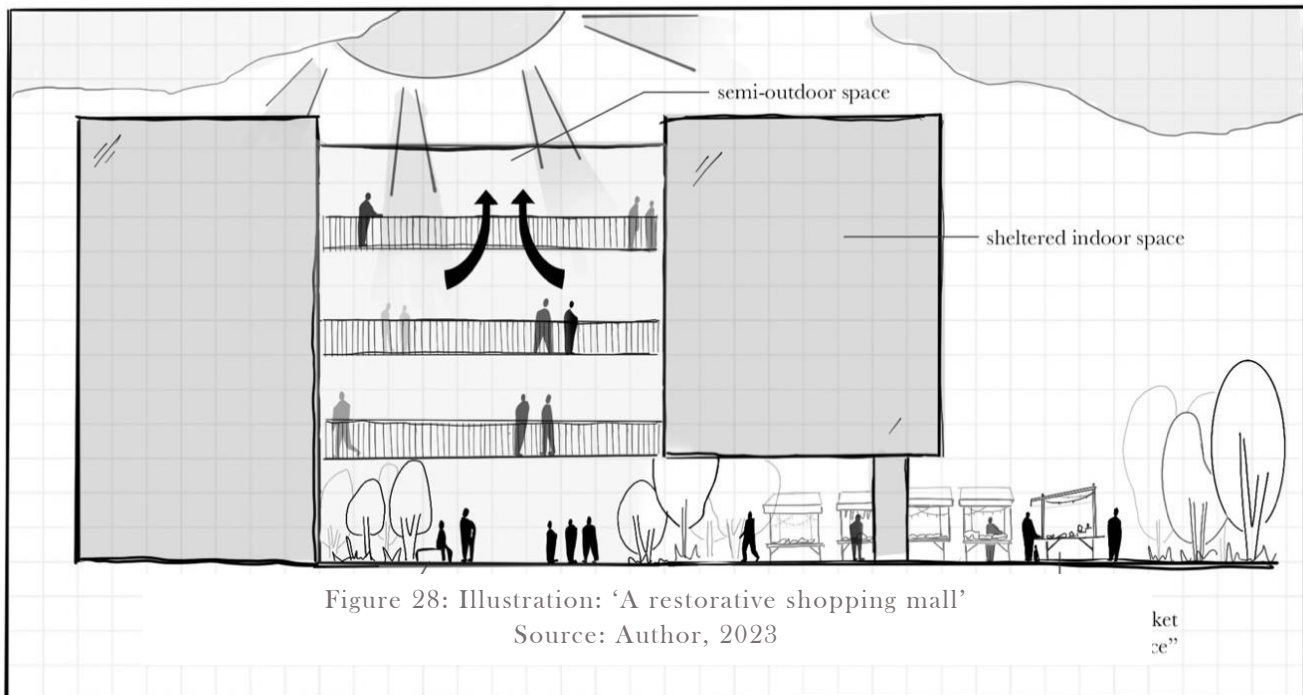
Another factor that was assessed through the survey was the relation between environmental preference and psychological restoration. The perceived restorative capacity of an environment to relief anxiety-based stress and mental fatigue is said to shape a person's environmental preference (Van den Berg et al., 2003). Environmental research conducted has continuously proposed that environmental preference is highly dependent on a person's ability to rapidly and automatically assess an environment and determine if it should be approached or evaded (Kaplan, 1987 as cited in Van den Berg et al., 2003). By this philosophy, it can be concluded that environmental preference is dependent on specific environmental qualities that retain functional value for the user. For instance, a walkable terrain can evoke a favourable reaction by the viewer because it offers an accessible escape route, decreasing any risks of encountering harmful predators (Van den Berg et al., 2003). The presence of pathways in some of the discussed visual narratives highlights this philosophy which was further strengthened by 94.3% of respondents choosing isolated beaches over crowded beaches in Question 17, due to the latter being chaotic and difficult to navigate. This illustrates that with reference to Kaplan et al. (1987) informational variables, a preference for legible, coherent spaces was shown.

Despite this, an isolated beach triggered negative perception-based variables in some participants who stated that they "prefer being in a place where there are people for safety purposes" (participant response to Question 17b). Therefore, a balance between clear-cut access routes for undemanding navigation and adequate surveillance, should be considered in such public environments to ensure they are deemed safe yet unrestrictive for youths.

Another environmental component that seemed to hold significant value to participants when deciding upon their preferred environment is the presence of natural energy sources over artificial sources as illustrated in the following survey responses.

> *"outdoor street markets are more relaxing as I prefer natural light"*
> *(participant response to Question 19b)*

> *"I prefer Baystreet as it isn't a totally enclosed space where you don't have access to natural light"*
> *(participant response to Question 18b)*

> *"Given that natural ventilation is present" I prefer outdoor street markets "than being locked in a huge building with the noise of all the equipment surrounding me."*
> *(participant response to Question 19b)*

Additionally, 75.5% of participants stated that they rely on natural lighting within their bedroom, and 64.2% rely on passive ventilation systems, reflecting the essential need for natural energy sources. Kapoor et al. (2021) highlighted that insufficient lighting can negatively impact mental and physical health, thereby diminishing the quality of a building. Lighting levels and spectral distribution can eventually influence the mood and performance of occupants. Tancredi et al. (2022) concluded that adolescents who are constantly exposed to artificial lighting at night are more likely to experience depressive-like symptoms. Furthermore, Liu et al. (2023) found a clear increase in psychological disorders, particularly schizophrenia, when an inadequate sunshine duration of less than 5.3 hours daily, was provided. Such studies, associating artificial energy sources with diminished mental health, suggest the need for designers and policymakers to mitigate the onset of such effects by prioritising the incorporation of adequate natural energy systems during the early stages of design.

4.4.5 Sociality

The above-mentioned issue of safety and privacy in limiting the degree of fascination a space could offer, repeatedly emerged during the study. This was the major reason why only 5.7% of respondents opted for crowded beaches. Despite this, the importance of privacy and legibility

seemed to be more valuable to participants, resulting in all participants opting for individual bedrooms over shared rooms and the majority opting for isolated settings over crowded ones like outdoor street markets, which were described to be "too overwhelming" (participant response to Question 19b). Kenely (2022) discusses how this opposes our customary expectations that youths gravitate towards busy spaces and noise. Instead, it reveals their inclinations towards quiet, tranquil environments in which they can avoid feeling overwhelmed by other people, excessive noise and activity. However, through their research, Staats & Hartig (2004) present empirical evidence on the influence that social context has on environmental preference for both natural as well as urban environments. In light of this, social interaction was shown to increase restoration in urban environments. This was affirmed by 43.4% of participants who opted for outdoor street markets particularly because "the informality of" such spaces "makes it easier to socialise with others" (participant response to Question 19b).

4.4.6 Conclusion

Ultimately, the results obtained affirmed previous findings on the relationship between restorative environments and mental health. Scopelliti & Giuliani (2004) outlined the increased impact of being-away and compatibility for young adults, both of which were visibly reflected in participants' responses. Alternatively, Herzog et al. (2003) stated that the four qualities making up restorative environments retain varying relative effectiveness, however, such variation was not particularly apparent as all qualities were shown to be imperative to participants. That being said, the 'being away' and compatibility component were brought up more often than fascination and coherence during the informal discussions. The results illustrated that youths are drawn to settings that show a reference to natural environments, tranquillity, openness and privacy opposing the conception that "for the majority of teenagers, their favourite spots for hanging out are commercial streets or centres, shopping malls and multi-complex cinemas." (Travlou, 2007, p.74). Such preference for tranquillity and solitude may be relative to our congested local context that offers youths limited spaces for being alone. This notion was considered in several studies which indicated that environmental quality ratings given by individuals are highly dependent on the person's "current living environment and...the lifelong experiences of the affordances of settings where the person has lived or with which they have been acquainted" (Kyttä et al., 2013, p.33). Staats et al. (2016) tested this hypothesis by recruiting Dutch, Swedish and American youths and asking them to envision themselves in a given scenario either alone or with a close friend within a given setting. They were then asked to give a preference rating illustrating their preference for being alone and for being accompanied by others. A preference for being in the company of others rather than being alone was more apparent among the Dutch group compared to the other two groups whilst the American group expressed a higher probability of restoration when being alone in a park compared to the other two groups (Staats et al., 2016). This concluded that the influence of

company and setting on preference was dependent on the country of the participants (Staats et al., 2016).

Chapter 5: Common Grounds (reshuffling development priorities)

"Findings obtained from research focused on environmental attributes can be directly translated into policy recommendations and design guidelines."
Sugiyama & Thompson, 2007, p.155

This chapter sums up the research project, presenting a concise overview of the findings, suggesting future research possibilities, and concludes with the researcher's personal perspective on the study.

5.1 Overview

This dissertation stems from the need to shift priorities in research and design so as to ensure that youths' psychological well-being is given precedence considering the diminished mental health scenario we are facing locally, highlighted by Richmond Foundation (2021).

Overall, this study has demonstrated the diverse range of factors that must be considered when examining the restorative potential of environments and experiences. Evidently, restorative potential extends beyond an environment's typology alone as it results from the interplay between physical and social elements and can be characterised by various affective dimensions. In light of this, the study highlights a need to rethink the way we perceive local urban settings so as to determine how such settings can contribute to improved mental health. Worpole (2007) discusses this necessity for a shift in priorities by referring to 2001 Britain as an example of such dysfunctional systems. In this example, Worpole reveals that around £600 million was allocated for public spending on parks in the given year, resulting in an impressive 2.5 billion visits to such green open spaces. In the same year, indoor leisure facilities received a substantial expenditure of £400 million but only acquired 100 million visits within the same time period. From a conventional "value for money" standpoint, investing in outdoor recreational areas could potentially generate greater benefits for public health compared to an excessive emphasis on indoor leisure activities (Worpole, 2007). That being said, this study suggests alternative opportunities for indoor spaces such as residences and shopping malls to incorporate environmental components that make such environments more attractive, relaxing and preferable by youths. Such environmental components included elements of the natural environment, footpaths, passive ventilation, natural lighting and other components derived from the discussed theoretical conditions that constitute restorative environments.

The emergent themes of fascination, guidance, preference and sociality were used in the research to assess youths' interests and priorities when it comes to choosing favourite places. Although the results resonated with Kaplan et al.'s predictor variables as well as the notions outlined by ART, other factors that surfaced highlighted the influence that one's past experience, age and mindset have on the individual's perspective, corresponding to the hypotheses outline in the theory of place by Canter (1977). Figure 29 displays an interplay between the discussed theoretical themes and framework, and the emergent environmental components that participants highlighted. For instance, the significance of 'soft fascination' outlined in the literature review was reinforced by the value attributed to sunsets, distant views and other fascinating components or processes.
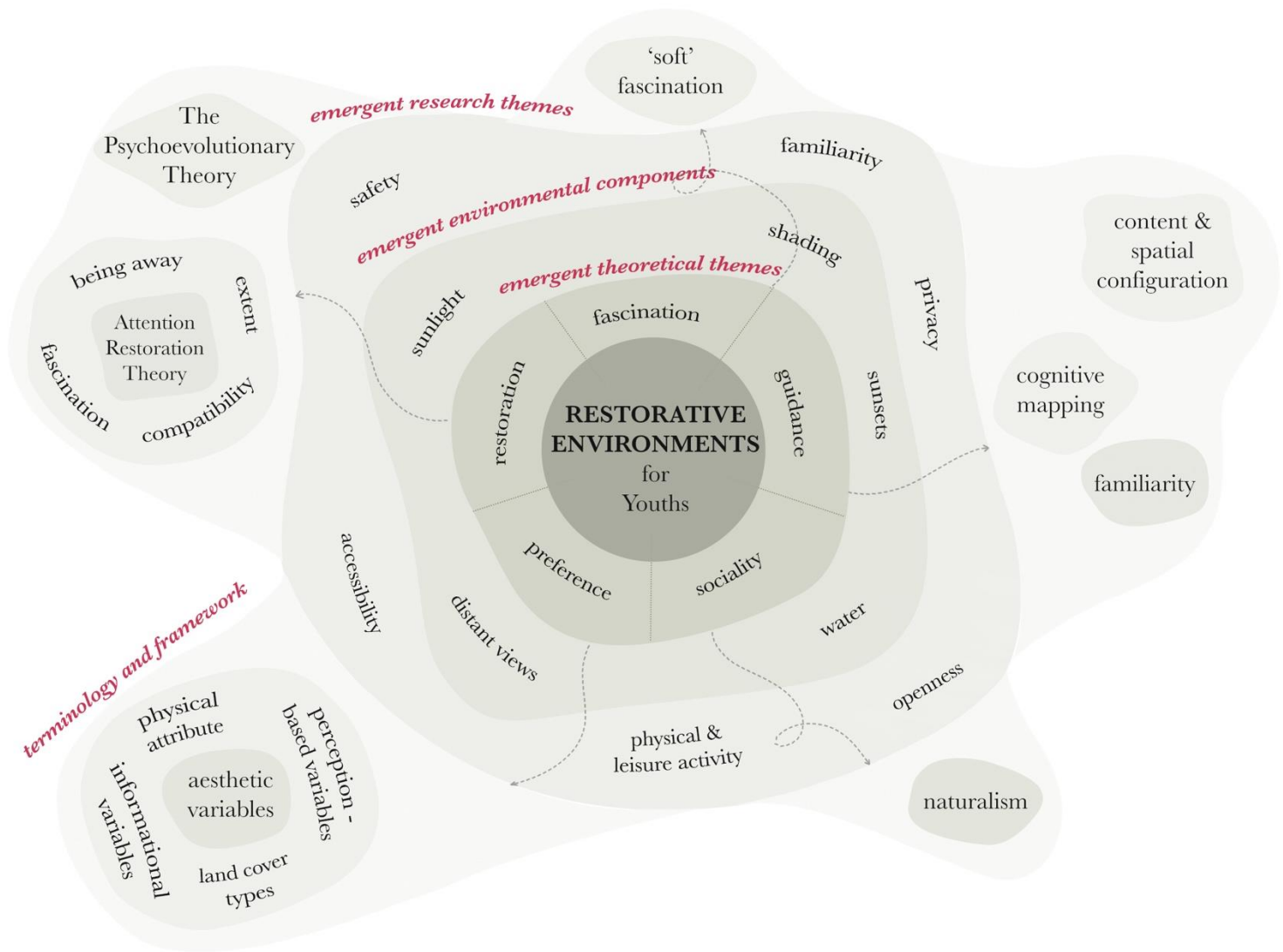
Figure 29: Diagrammatic representation of emergent themes & components
Source: Author, 2023

5.2 Future studies: Opportunities for change

Keeping in mind its limitations outlined in section 3.8, the study has sought to explore the current gap in research concerning the benefits of restorative environments for youths and the potential for different environments to offer restoration within the local context. Given the extensive nature of architecture and mental health disciplines, the conducted research is by no means exhaustive. Each theme addressed in this dissertation holds the potential for deeper exploration and further development.

Further research could explore the restorative potential of other environments, going beyond the three chosen settings (the home, the beach and the shopping mall), to offer a wider range of indoor and outdoor environments for broader comparisons. Such environments could include local heritage sites in relation to the study conducted by Cho et al. (2016), museums in relation to the study conducted by Kaplan et al. (1993), libraries, workspaces amongst others. This may stimulate other environmental components that promote restoration to emerge.

Further research could focus on putting specific factors to test, to determine their influence on the restoration process. Such factors could include the duration of the restorative experience, cultural impacts and gender differences amongst others.

The research exercises performed could also be carried out by different age groups so as to better understand how one's perspective of restorative environments changes throughout a person's lifespan. Such research could also target individuals with varying mental abilities and state of mind to obtain more specific results and a better understanding of their viewpoint on surrounding environments. In doing so, design decisions could be more specific to a target audience and their interests, preferences and needs. As decision-making becomes more centralised and communication becomes quicker, the growing global trend towards architectural and urban uniformity has become more apparent (Canter, 1977). Such environmental research provides a platform to explore possibilities for a broader range of environmental experiences that are particularly suited to their inhabitants.

5.3 Afterword: A Transformative-Emancipatory paradigm

Conducting this research project helped me acknowledge the value of engaging youths in decision-making to ensure that their perspectives, experiences and needs are considered. This fosters a sense of inclusivity, empowerment and ownership within an age group that is "seemingly invisible from public space" (Travlou et al., 2008). The study allowed me to stress the need to construct a foundation of knowledge via environmental design research, that can be used as a guide for policy makers, designers, educators and other involved parties that in some way have an influence on the development of our local context.

As Thompson & Travlou (2007) similarly emphasised, the phrase 'form follows function' developed into a mantra, however, many professionals and policymakers often evade a full appreciation of 'function'. This study outlines that one of the many 'functions' that the natural environment can have, which could promote its conservation and sustainability, is its ability to contribute to improved mental health. Regardless of our extensive knowledge on the history of human development and ecological science, every design project should be considered as a unique exploration, a real-time experiment specific to a given period and particular group of individuals. Expanding our knowledge through such research, allows us to make informed evaluations of how people of a specific age group feel within a space and what components within that space could affect their overall experience, and in turn their behaviour.

I look forward to seeing future exploration, understanding, and in-depth research stemming from 'Beyond Functionality'. I hope that the addressed issues involving young people are given the attention they deserve and the value of our remaining natural environment is recognised.

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Appendices

- Appendix I: Survey questions
- Appendix II: Survey qualitative data
- Appendix III: Description stated prior to conducting workshops
- Appendix IV: Information letter - Focus Group Participants
- Appendix V: Questionnaire Consent - Anonymous Data Collection
- Appendix VI: Collected visual narratives
- Appendix VII: Documented data sheets

Appendix I: Survey questions

Part 1: Profile

Question 1: Gender

- o Female
- o Male
- o Prefer not to say
- o Other

Question 2: Age

- o 19-24
- o 24+

Part 2: Questionnaire

Question 3: Rate the following environmental qualities for each space based on your experience, from 1 (poor) to 5 (very good):

Sense of relaxation & comfort

	1	2	3	4	5
The home	◯	◯	◯	◯	◯
The beach	◯	◯	◯	◯	◯
The shopping mall	◯	◯	◯	◯	◯

Question 4: Rate the following environmental qualities for each space based on your experience, from 1 (poor) to 5 (very good):

Legibility - how easy it is to navigate through the space

	1	2	3	4	5
The home	◯	◯	◯	◯	◯
The beach	◯	◯	◯	◯	◯
The shopping mall	◯	◯	◯	◯	◯

Question 5: Rate the following environmental qualities for each space based on your experience, from 1 (poor) to 5 (very good):

Potential for social interaction - how ideal the space is to socialise with others

	1	2	3	4	5
The home	○	○	○	○	○
The beach	○	○	○	○	○
The shopping mall	○	○	○	○	○

Part 3: Environmental Analysis

Question 5: Do you share your room with other individuals?

- o Yes
- o No

Question 6: Do you have any plants inside your bedroom?

- o Yes
- o No

Question 7: How many openings do you have in your bedroom overlooking the external environment?

- o 1
- o 2
- o 3
- o 4+

Question 8: What view do you observe through your bedroom openings?

- o A view of the sea
- o A view of green landscape
- o A view of neighbouring buildings
- o Other

Question 9: Would you describe your room as a cluttered or uncluttered space?

- o Yes
- o No

Question 10: What energy sources do you primarily rely on within your bedroom?

- o   Natural lighting
- o   Artificial Lighting
- o   Passive Ventilation
- o   Forced Ventilation

Question 11: Have you personalised or designed your bedroom yourself?

- o   Yes
- o   No

Part 4: Environmental Preference

Question 12a: Pick the setting you would prefer to spend time in for each location:
The bedroom

◯   1 - no vegetation

◯   2 - surrounding vegetation

◯   3 - distant landscaping

Question 12b: Give a reason for your choice:
Open answer

Question 13a: Pick the setting you would prefer to spend time in for each location:
The bedroom

○ 1 - no openings

○ 2 - outdoor terrace

○ 3 - windows but no terrace

Question 13b: Give a reason for your choice:
Open answer

Question 14a: Pick the setting you would prefer to spend time in for each location:
The bedroom

   ◯ 1 - individual room

   ◯ 2 - shared room

Question 14b: Give a reason for your choice:
Open answer

Question 15b: Pick the setting you would prefer to spend time in for each location:

The beach

⚪ 1 - in close proximity to the sea

⚪ 2 - at a distance from the coast

Question 15b: Give a reason for your choice:
Open answer

Question 16a: Pick the setting you would prefer to spend time in for each location:

The beach

◯ 1 - a crowded beach

◯ 2 - an isolated beach

Question 16b: Give a reason for your choice:
Open answer

Question 17a: Pick the setting you would prefer to spend time in for each location:

The shopping mall

○ 1 - indoor shopping mall (The Point, Sliema)

○ 2 - indoor shopping mall (Pama, Mosta)

○ 3 - semi-outdoor shopping mall (Bay Street Shopping Complex, St. Julians)

Question 17b: Give a reason for your choice:
Open answer

Question 18a: Pick the setting you would prefer to spend time in for each location:

The shopping mall

○ 1 - indoor shopping mall

○ 2 - outdoor street market

Question 18b: Give a reason for your choice:
Open answer

Appendix II: Survey qualitative data

Question 13b: Give a reason for your choice:

- Feels more open and lighter
- A sense of calmness.
- Being able to step out into the surrounding landscape which is easily in reach.
- The surrounding vegetation would make a person feel closer to the natural environment and improves one's senses.
- I prefer a space dedicated to vegetation rather than a space connected to vegetation
- Interacting with the outside while resting
- Instils the feeling of a spacious space filled with light
- The surrounding vegetation makes the space feel more comfortable
- I prefer open and natural spaces
- I don't feel as safe when there is distant landscaping as i would feel like the windows are too big and I feel stalked. Especially when the bedroom is ground level.
- Makes the place more calm
- I don't live having a lot of plants in my room since they can clutter, however, it would be nice to have a nice view
- Having plants around you, makes it more cluttered but beautiful
- Natural and serene environment
- I like uniqueness
- Distant landscaping is good as it is a good balance to have vegetation whilst maintaining distance
- Soothing and relaxing feeling
- Considering I study in my room, I would prefer to have an open set up rather than feeling claustrophobic
- Distant landscaping gives me the chance to enjoy the space with the natural environment beside me, but still being able to have both natural and built space for my personal use
- It is like the room is one with nature and it incorporates the outside to the inside
- The second space feels more comfortable and private than the third space. It is also a much nicer environment to spend time in than the first since it is not too minimalistic and feels "alive" with indoor plants.
- It makes the room feel more comforting
- It is relaxing way of waking up or going to bed
- *Improves my mood and productivity*
- I feel that nature has a relaxing effect
- Private but still provides a view of greenery
- I find being surrounded by landscape to be relaxing and less confining
- More comforting and soothing
- Since would still have the feeling of outdoors without the need of upkeep or extra clutter
- The natural lighting and more motivation to go outdoors.
- Having nature within my room may cause a problem with cleaning. For having a distant natural outside environment which is easily accessible is better.
- Option 2 if the perfect middle ground to provide a space for productivity while not getting too distracted but also not be too mundane of a space

- A more open area allows a freer environment
- Makes the room look larger
- I prefer my room to be kept clean and tidy therefore I would prefer for vegetation to be outside in order to give a different sensation from in doors to outdoors.
- There is a balance between the greenery on the outside and the inside space.
- It allows you to feel comfortable in your space, and not feel confined since you have distant landscaping which makes the room feel larger and more breathable
- The natural landscape is calming and quiet
- Relaxing to look at and ample light space
- I believe that vegetation would be better placed outdoors
- Not used to much nature around a house
- Having vegetation surrounding makes me feel better and peaceful and even the fact that I have to take care of them gives a sense of life and responsibility.
- Calming, Enclosed presence
- plants surrounding the room make the space feel more welcoming, relaxing and attractive
- Plants provide a sense of positive energy with a space and help me feel more calm
- I prefer the segregation of spaces
- Distant vegetation creates depth within the space, feeling of wonder. (By distant I'm assuming a few meters away just like the third image)
- I'd rather be surrounded by trees
- Prefer being able to step out into the green expansive environment rather than just plants or none at all.
- Calmer environment

Question 14b: Give a reason for your choice:

- Would be nice to step outside and sit in the sun once in a while.
- Direct connection to the outside.
- The fact that you're able to step outside and physically feel the elements.
- The outdoor terrace doesn't make you feel as trapped in a box like the other options. A person can physically move outside.
- Gives me the possibility to be outside without having to go outside
- The best choice of ventilation
- Outdoor space is not used as much especially in the summer due to the hot climate
- I personally do not think I would use the terrace but I would love the view
- I prefer the ability to go outside and get some fresh air.
- I feel that if there is some nice day and warm breeze I will go out on my chair and read or study there.
- Easy access to the outdoor environment
- *It's nice that sometimes you can just go outside and take a break from indoors*
- The outdoor terrace gives you the opportunity to easily go outside for some fresh air
- Connecting to the outside world is nice
- Fresh air and a space to relax
- I prefer to have the option to walk out and not be enclosed by walls
- Having the ability to physically go outside on a terrace feels better than just looking outside a window
- *Sense of openness*

- I always prefer being in par with nature when possible
- The terrace gives you the ability to have natural light like option 2, yet it also allows you to interact with the nature provided by the surrounding environment.
- I like outdoor space
- Staying on the terrace can feel like you're outdoors while still having your own private space
- A luxurious view and ample of natural light. I do not particularly like terraces/balconies in my bedroom.
- to be able to connect to the outside
- I feel that its beneficial to change the space of your room and a terrace allows that
- Elevates my mood
- A terrace creates an outdoor space whilst at home
- More sunlight
- Larger space, but there is still privacy since there is a divide between the terrace and room
- allows for a lot of natural light and ventilation as well as views
- Windows give more privacy but at the same time offer ventilation
- The terrace could a nice change of scenery and one could go outside to continue with their work there
- A lot of fresh air and an opportunity to spend more time outdoors
- Can still access the outside.
- The idea of blurring the border between an indoor and outdoor space
- An opportunity to be outdoors
- Makes the room feel larger and better ventilation
- A space which I can go out into would be very ideal, it presents a different sense of relaxation.
- It is dependent on whether the terrace is facing a landscape or the neighbouring houses since it affects the experience on the outside.
- Allows a lot of light in with great views. I don't see myself going outside to a terrace, but rather outside for a walk
- I would like the option to go outdoors within my space
- Ventilation and natural light
- A nice way to have a combination between the Indore and out door
- Prefer to go out of my room to access a terrace
- Coming out of bed and going directly outside to take some fresh air as soon as you wake up seems as a good way to start the morning.
- Orientation to horizon and sensory stimulation. Terrace cause of fresh air when reading a book in the sun.
- the possibility of going out into the terrace makes me feel less confined
- Flexibility to enjoy both the indoors and outdoors
- a terrace makes the space feel bigger
- In and out movement
- Open space
- Being able to step out physically into the open environment is always a plus.
- Access to fresh air

Question 15b: Give a reason for your choice:

- Privacy

- I like my privacy
- Personal space provides clarity of mind.
- A sense of solitude.
- Privacy reasons, mostly because it is a bedroom. A more private space.
- *One can take a break from the world around you and be in your own little bubble.*
- I like to have my own space
- *Easier to focus on work*
- For privacy
- I would like my room to be my personal space where I could stay in and reflect
- I always prefer to have a personal space to which I can go to and spend some time alone.
- A bedroom is a place where it is personal and a space just for you. It is a private place where you can totally be yourself and have some time for yourself. Some people do not like being alone however this is what builds our characters especially at a young age. People with a shared bedroom have the stress of always doing what the others say or telling the others what to do and where to keep stuff and so it is not as personal as having an individual bedroom
- More privacy and freedom
- Having alone time is important
- I prefer to not mix stuff with my siblings
- I prefer to have a dedicated physical space for myself
- Preference of solitude
- I like my privacy
- Individual rooms give me a better sense of privacy, solitude and give me a chance to recharge my social battery.
- More private space
- I like to keep my room sorted as I like
- I value my privacy in such a private space - especially when i need to rest.
- able to freely control the space
- It offers privacy
- Less clutter and easier to keep a tidy room
- An individual room allows the chance of having some time alone
- I like my personal space
- More personal space, less cluttered
- I find being alone much more calming then constantly sharing a small place with someone which might make me feel claustrophobic
- More privacy
- So that I would have my own space and so that opinions of lifestyle would not clash
- I prefer more privacy.
- Less cluttered more natural light
- I prioritise alone time to feel comfortable
- Being in charge of my own design
- Although I enjoy peoples' presence when it comes to relaxing, I'd rather be on my own where its quieter and i can 'shut myself off'
- I like my privacy and quietness when working on school work or even personal projects.
- An individual room provides more privacy
- I prefer staying in my own space alone
- I would need a bit of privacy and quiet to relax and work

- Personal space
- Noises
- I like privacy in a bedroom
- Alone
- I prefer having more privacy when trying to relax
- Sharing a bedroom can feel cluttered and claustrophobic
- Privacy and my own space
- *Personal safe space.*
- Private
- Privacy and comfortability when it comes to such private and personal space.
- Privacy

Question 16b: Give a reason for your choice:

- Senses are heightened; sound of waves is more prominent, texture of sand etc.
- Sense of touch can be heightened easily.
- Being able to enjoy the views from the distance.
- *Heightens the all the senses (touch, sight, smell, sound) which could help people to relax and cut-off from their busy life.*
- I have lived close to the beach as well as at a distant and it's unbelievable the impact that waking up to a view of the beach has on a person
- Only if the main reason I am there is to go for a swim
- Feeling of the sand
- Walks along the coast
- I enjoy swimming so when I'm in a beach environment I always enjoy going for a swim.
- I love the sound of the sea. It brings peace and serenity.
- Close to the sea
- I love swimming so if I'm going to the beach I'm mostly going to be in the sea
- You can easily go have a swim if you feel like it
- Pretty views, and useful in summer, if its walking distance from the beach
- Nice view but away from the sand
- Usually next to the beach is noisy
- Being close to the beach is better as you are closer to its natural environment and there are more things to do close to the shore
- I'd like to go for a swim when I feel like it
- Open views, away from noise
- Makes me feel more comfortable
- I like swimming
- Hearing the waves can be more relaxing
- I enjoy being close to the sea since the sound of waves relaxes me.
- being on the shore makes me feel most relaxed
- Avoid crowds
- I prefer being next to the sea
- Being close to the sea is relaxing
- I love being at the beach
- More relaxing environment

- I love being able to swim or be on the sea however even at a distance i find to to be quite calming
- The sound of the ocean is relaxing
- You would have the sounds of the waves as well as the ability to go for a swim
- More fresh air and breeze. Overall, more relaxing.
- Prefer the beach
- A sense of security from the elements
- Admiring the view
- So long as it's not packed, I'd rather be closer to the sea, more peaceful.
- Makes me feel closer to nature while also being able to view my personal belongings from afar.
- There will be less people, thus a more serene area.
- I think there are less distractions
- I would like to enjoy the view but maybe be a bit distanced from a lot of people who are on the beach
- Less walking
- Preferences no specific reason
- Better view
- To hear the waves and sounds of nature which help me relax and feel connected to the surroundings.
- Noise
- Increased sound of water and the ability to feel the water is more soothing than seeing it from a distance
- I love the sea
- You can enjoy both the sea and land at the same time.
- Can actually swim
- Swim
- Feelings of texture and physical elements (sand, sea)

Access to the sea

Question 17b: Give a reason for your choice:

- A crowded beach is over stimulating.
- *Crowds give me a sense of urgency.*
- A crowded beach gives it a summer feeling/atmosphere which I enjoy.
- More serene and peaceful
- Serenity
- *Easier to take a break from stress and relax*
- To think more clearly
- Too much people
- A crowded beach would give me more stress rather than relaxing.
- I personally hate people. They are loud, messy, and annoying in general. I don't mind a few people however the fact that you are at a beach and all you hear are people yelling and not the sea itself or the beautiful silence is very annoying.
- A more peaceful setting
- I don't like crowds

- Less noise pollution from others
- Less pollution and more calming
- Too many people are overwhelming
- No distractions
- A crowded beach is usually stressful whilst an isolated beach is more tranquil
- More comfortable to spend time in
- Away from noise
- *Crowded beaches may be distracting.*
- More quiet
- It is more calming than the first picture. The first picture is more chaotic
- I do not like crowds at all, especially due to hygiene.
- there is too much commotion and noise in the other option
- More space to play with friends
- Ideally somewhere in between. When I'm outside I prefer being in a place where there are people
- The crowded environment is too distracting
- More peaceful environment
- More space, probably less noisy
- *A crowded beach feels very restricting as the beach is a place I go to escape and relax*
- Better for relaxation
- A crowded beach wouldn't be comfortable to relax and enjoy your time
- More privacy
- Favour privacy
- Less people really let you take full advantage of the relaxing benefits of the beach
- Less chaos
- Much less noise and visual clutter
- A lot of people present a hectic environment rather than a relaxing one.
- Personally, I don't like crowded spaces
- Less interruptions
- I would enjoy my time better if it wasn't crowded
- More relaxing
- Prefer a quiet place to spend my time
- Can play group games without complaints
- Too many people at a short distance from each other is not so comfortable and reduces the benefit of enjoying the beach
- For obvious reasons
- a crowded beach is too chaotic and confusing, I prefer to spend time in calm environments that promote a sense of openness
- Nature is more enjoyable without clusters of people
- Prefer to enjoy nature in solitude
- No pollution (any kind of pollution - colour, noise, etc)
- Peace
- The atmosphere of a hectic beach is exciting.
- Crowded beaches are overwhelming

Question 18b: Give a reason for your choice:

- Better surrounding amenities
- Multiple levels, Can still shop in bad weather.
- The outdoor-indoor feeling renders an exciting experience.
- Not in a totally enclosed space where you don't have access to natural light.
- More natural light and does not make you feel isolated from other activities
- It's a more dedicated space for shopping
- Natural ventilation is key
- Reduces the claustrophobic feeling i side a mall
- The fact there is an outdoor space is always beneficial.
- It feels like an actual shopping mall. I love the feeling the middle bit has with a big open area and look all the way to the bottom. Pama is very not shopping mall vibes. It is just a bunch of shops next to each other and i like Baystreet however it is a bit small to my liking.
- *A one stop shop*
- Even though it's indoors, there's still space where people can go around and window shop and there are also recreational areas.
- Feels more comfortable
- Everything close to each other, while still staying indoors- feeling cold or hot depending on the weather
- I think it's nice to be moving from space to space through the outdoors
- Inside yet not enclosed
- Having a mix of indoor/outdoor is the best balance to have whilst shopping
- *Modern feeling to architecture gives me sense of belonging*
- *Indoor spaces for shopping mall as a mix of artificial light and natural light don't let me concentrate. Better just one type of lighting.*
- I like that it incorporates some outdoor elements
- Does not produce too many echoes and is a very clean indoor environment.
- it is the closest to where i live and convenient
- Aesthetically it more pleasurable
- It allows you to go out for some fresh air instead of spending so much time indoors
- A semi outdoor space gives time for fresh air between the time spent indoors
- More daylight
- Lighter and ventilation
- I find this to be less claustrophobic
- More ventilation
- Due to weather conditions
- Spending time both indoors and outdoors
- Combination of both
- Becomes a viable option even in the rain
- A more familiar setting
- Less stuffy
- Outdoor feels less suffocated than indoor malls, and rely more on natural ventilation.
- It can be used all day
- I feel it is smaller and more comfortable
- I like the mix of an indoor-outdoor environment which isn't fully isolated from the landscape

- More shops and more area
- There is a right amount of space to move and I prefer indoors than outdoors
- Lighting and open space
- The natural light makes the experience feel much better.
- Modern, no exhaust. Well equipped
- the fact that it is partially outdoors makes it more attractive and less confined
- Pama has more outdoor spaces than point and when compared to Bay Street is easier to navigate
- *Hate the idea of a shopping mall in general - but i prefer to wonder within an open space)*
- Outdoor/Indoor elements creates a better experience. Not the best option when the weather does not permit though!

Question 19b: Give a reason for your choice:

- More organised
- More active shop fronts.
- Local produce much easier to come by.
- More character, more relaxing atmosphere. Less distracting elements.
- Not the standard experience of a regular shopping mall
- Outdoor street markets are too crowded
- No direct sunlight
- Natural ventilation remains key
- Natural sunlight
- An outdoor market would be more hectic rather than an indoor shopping mall.
- To be fair its according to my mood. According to what I would like to buy. I like my high-end shops in a shopping mall however out of the blue I would just like to do an "ghala southijja" and go to an outdoor street market as sometimes don't mind the feeling of a lot of people and hassle and stuff.
- Protected from rain and the outdoor environment
- People are closer and it's more hectic when it's an outdoor market
- Not subjected to weather
- Indoors is sheltered from the elements
- Outdoor markets are too overwhelming
- *It is more practical*
- *Shopping malls offer more choice*
- Preference for modern areas
- A more organized scenario
- The reason is much similar to the previous questions it is one consistent setting.
- I feel it is more relaxing and prefer natural light over artificial one
- Usually there is a better selection of clothes, etc. to choose from.
- it is more easily accessible
- It's easier to walk around an indoor shopping mall
- Some type of indoor space and a mix of indoor and outdoor shaded areas is needed
- An indoor street market allows for more open space
- Sunlight
- More open space, feels more free

- i would find it easier to navigate through the space and interact with the people i chose
- More adequate space for socializing and good sheltering from harsh weather conditions
- Heat in the summer and indoors looks more professional
- More shops directed to what I would particularly need
- During summer months when I usually visit shopping malls, the climate is more bearable indoors
- The space is more structured and comfortable to access
- More ventilation
- Given the fact that natural ventilation is present, for me it feels more natural rather than being locked in a huge building with the noise of all the equipment surrounding me.
- More natural light
- In the open
- It is more comfortable to shop in
- Better choices
- Better place to socialise with a few people
- The atmosphere is much nicer
- In this case feels better to have indoors
- Commercial Authenticity
- the informality of outdoor street markets makes it easier to socialise with others
- If I am shopping usually, I find what I need in an indoor shopping Mall
- more traditional and interesting observations
- a raw environment
- Outdoor space
- Although very contemporary it is much more comfortable in terms of choices, familiarity, utilities (bathrooms, AC, range of shops)
- Local and more enjoyable as it is outdoors

Appendix III: Description stated prior to conducting workshops

"Hi, my name is Martina Chetcuti and I am a second-year master's student in Architectural Design. I currently working on my dissertation and carrying out a fieldwork study targeting 19-24 year olds, to obtain data that will be discussed throughout the study. The aim of my dissertation is to better understand youth's perception of different environments which surround them daily, to examine the impact that certain environments have on youth's mental well-being and the potential that different environments have to alleviate or worsen critical mental health issues. Unfortunately, as architects we often overlook the fact that people spend more than 90% of their lives indoors which means that what we build has a big impact on people's quality of life (Kapoor et al., 2021). Therefore, architecture has to go beyond creating simply functional spaces.

For the purpose of this workshop, I will be carrying out 2 activities simultaneously by dividing the group into two. The first half will start by accessing and responding to an online survey whilst the other half of the group carries out the activity 2. This will require you to read a short text, after which we will have a short discussion and some time to produce personal sketches of the discussed setting. The two groups will alternate activities after approximately 20 minutes so that the entire group would have carried out both activities."

Appendix IV: Declaration form - Focus Group Participants

Dear Sir/Madam,

My name is Martina Chetcuti and I am a student at the University of Malta, presently reading for a Master of Architecture in Architectural Design. I am presently conducting a research study for my dissertation titled "Beyond functionality: Exploring the benefits of Restorative Environments for youths in Malta". This is being supervised by Perit Alexia Mercieca. This letter is an invitation to participate in this study. Below you will find information about the study and about what your involvement would entail, should you decide to take part.

This study aims to better understand youth's perception of different environments which surround them on a daily basis, based on the experiences they had within them. Your contribution to the study will help me analyse the impact that certain attributes of such environments have on youth's mental well-being and examining the potential one's environment may have on alleviating mental fatigue.

Any data collected from this research will be used solely for purposes of this study.

Should you choose to participate, you will be asked to take part in a focus group and interview taking up approximately 15 minutes. During the discussion you will be asked to share your views on different environments for a given scenario.

Data collected will be strictly confidential and anonymous. Only I will have access to the raw data.

Participation in this study is entirely voluntary; in other words, you are free to accept or refuse to participate, without needing to give a reason. You are also free to withdraw from the study at any time, without needing to provide any explanation and without any negative repercussions for you. Should you choose to withdraw, any data collected from your interview will be deleted.

If you choose to participate, please note that there are no direct benefits to you. Your participation does not entail any known or anticipated risks.

Please note also that, as a participant, you have the right under the General Data Protection Regulation (GDPR) and national legislation to access, rectify and where applicable ask for the data concerning you to be erased. All data collected will be stored in an anonymised form and subsequently destroyed once the study is complete.

A copy of this information sheet is being provided for you to keep and for future reference.

Thank you for your time and consideration. Should you have any questions or concerns, please do not hesitate to contact me or my supervisor;

Yours Sincerely,

Martina Chetcuti

martina.chetcuti.17@um.edu.mt

Perit Alexia Mercieca

alexia.mercieca@um.edu.mt

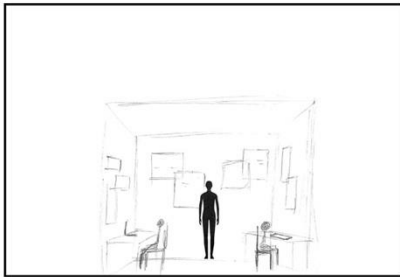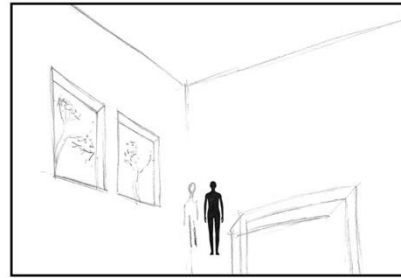## Declaration by Respondent

I hereby confirm that I am willing to participate in this study voluntarily with full informed consent on the conditions listed in the information sheet provided.

_____
participant signature

Appendix V: Questionnaire Consent - Anonymous Data Collection

My name is Martina Chetcuti and I am currently reading for a Master of Architecture (Architectural Design) at the University of Malta.

I am conducting research as part of my dissertation that aims to better understand youth's perception of different environments which surround them on a daily basis, based on the experiences they had within them. The results obtained will help me analyse the impact that certain attributes of such environments have on youth's mental well-being. The following questions will take approximately 10 minutes to respond.

Any data collected will be used solely for the purpose of this research study. At no point will you be asked to provide personal information. Therefore, no data that may lead to your identification will be required. Should you have any questions or concerns, you may contact myself or my supervisor on the details provided below.

Yours Sincerely,

Martina Chetcuti
martina.chetcuti.17@um.edu.mt
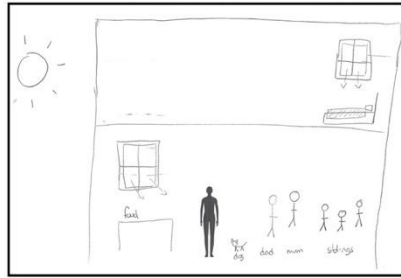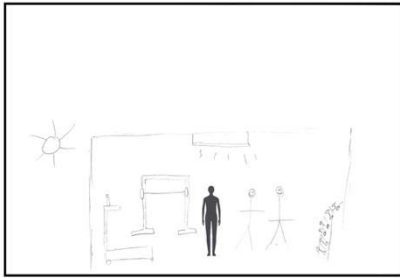Perit Alexia Mercieca
alexia.mercieca@um.edu.mt

Declaration by Respondent: I hereby confirm that I am willing to participate in this questionnaire voluntarily with full informed consent on the conditions listed above.
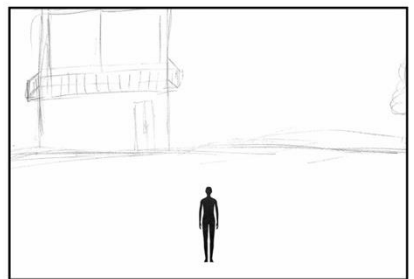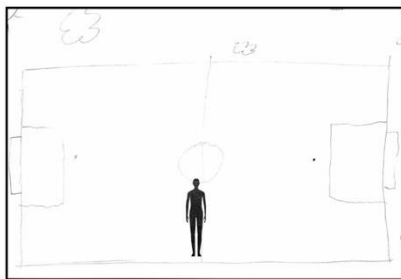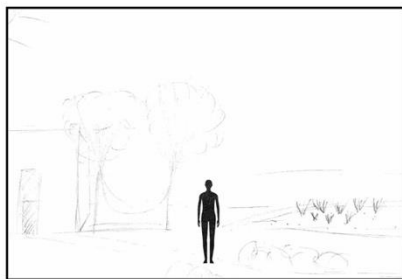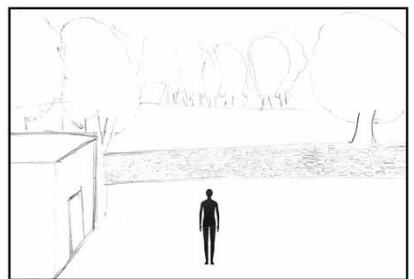
- o I agree to participate (begin the survey)
- o I do not wish to participate (exit the survey)

Appendix VI: Collected visual narratives
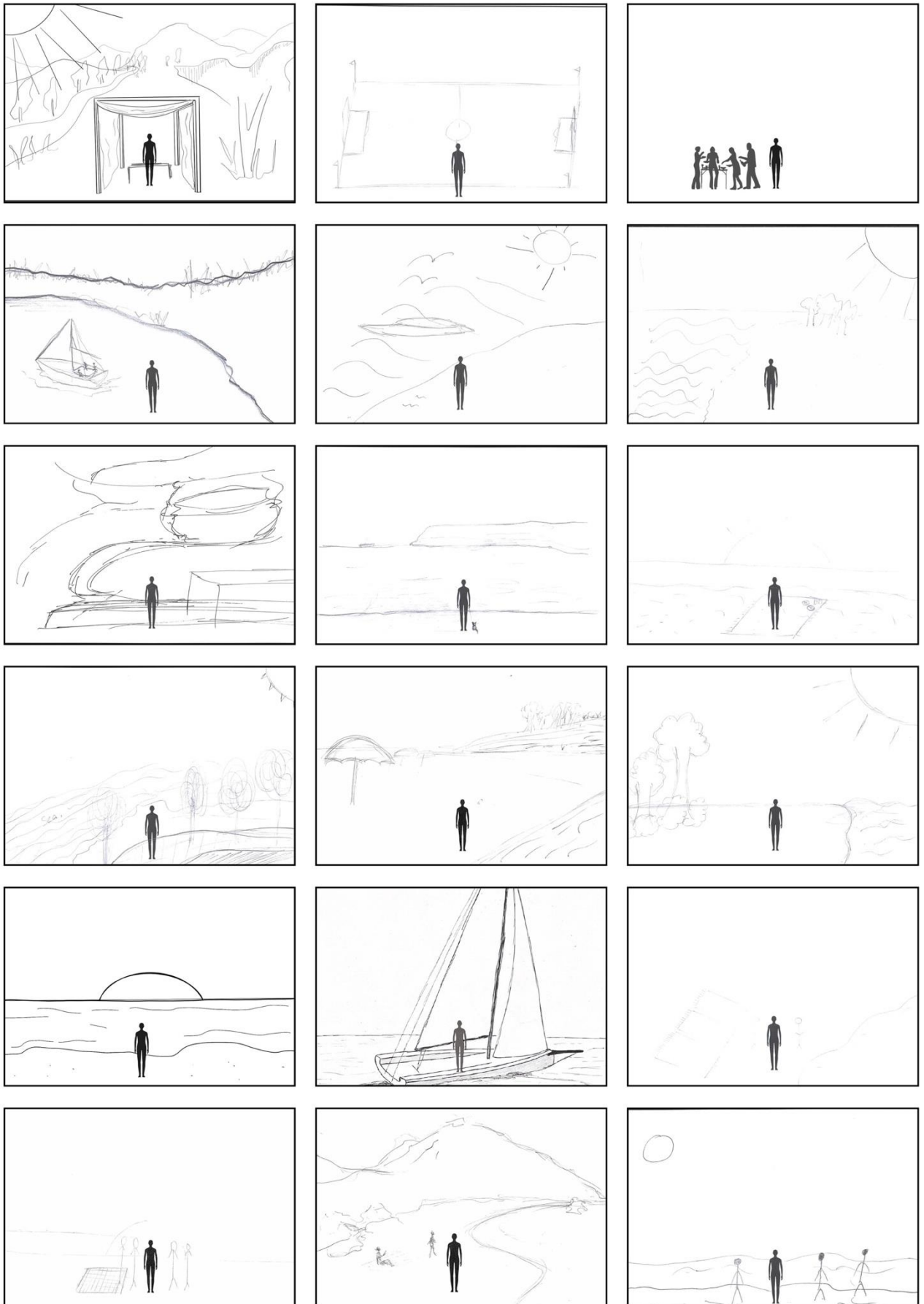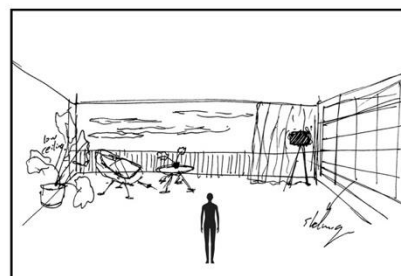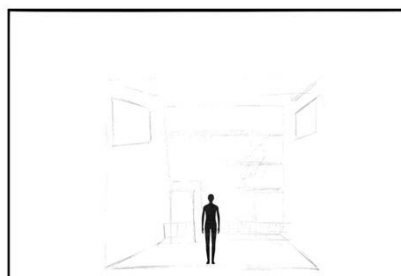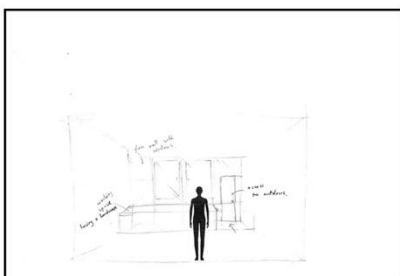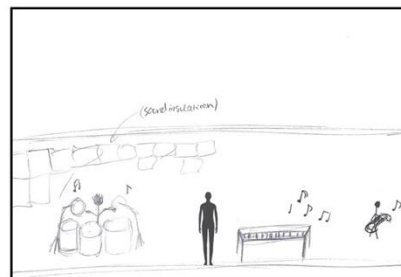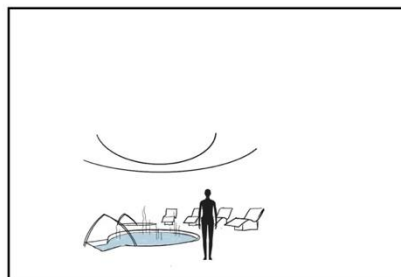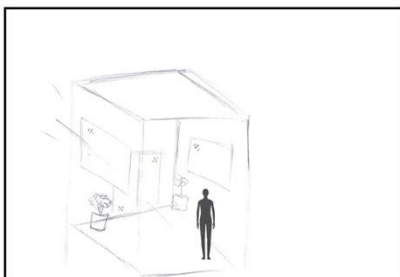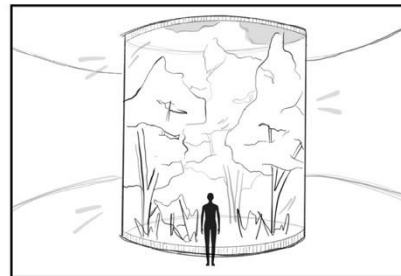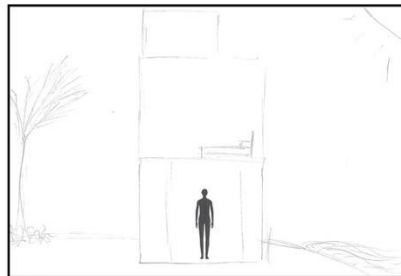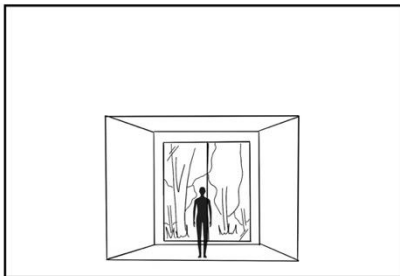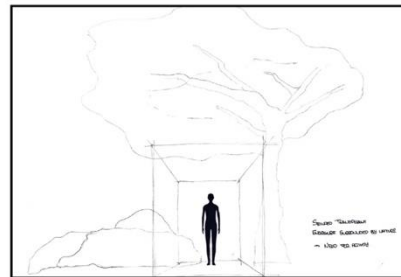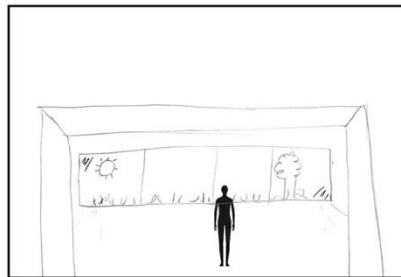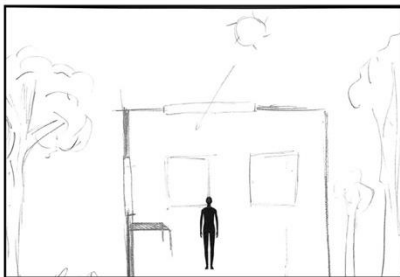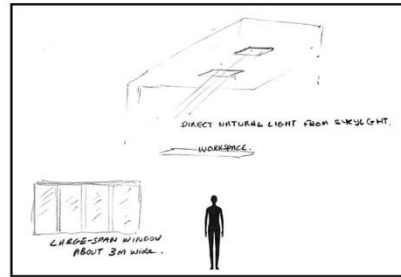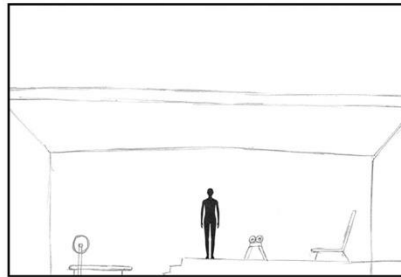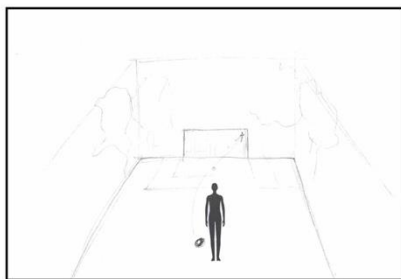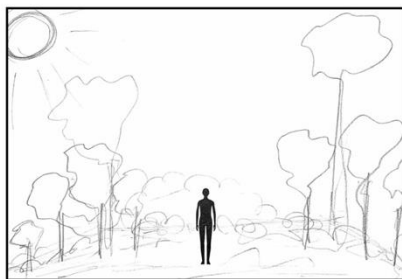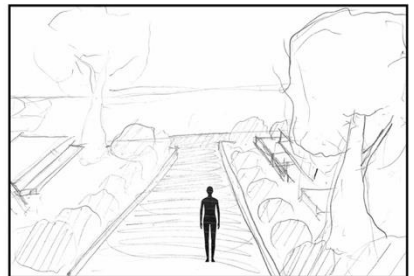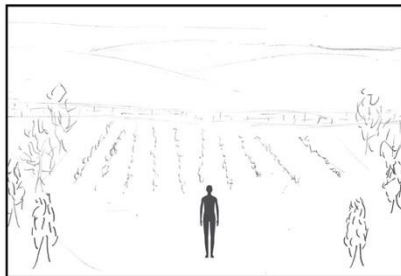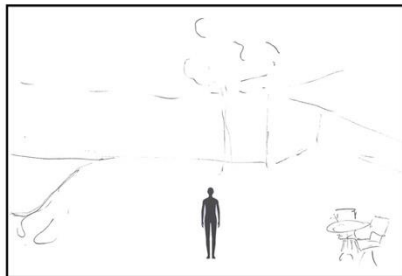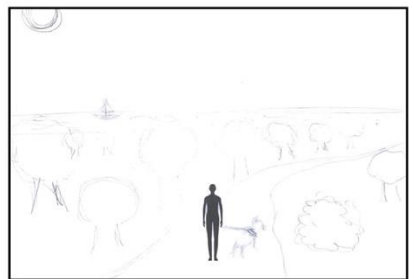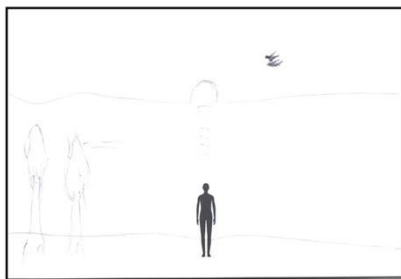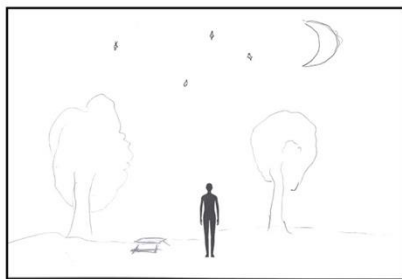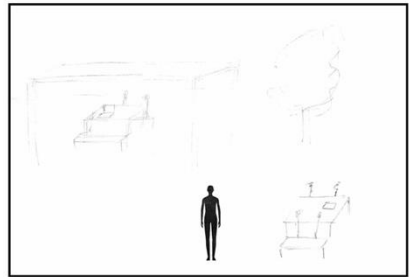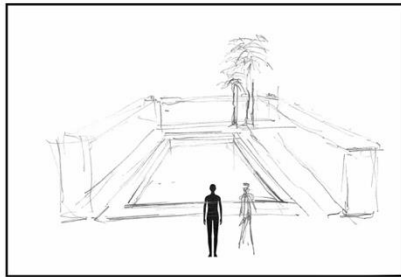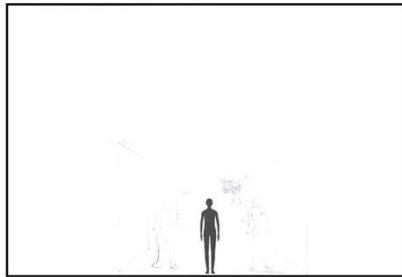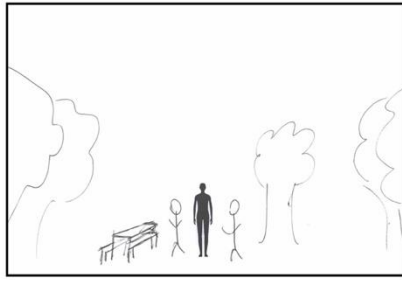
Appendix VII: Documented data sheets supporting the visual narratives

Group: 1 (pilot study)	Date: 11/04/2023
	Participants: 6

Environment: Coastal area

Indoor/ Outdoor: Outdoor environment

Components: Sound is the most important factor. It helps promote clarity of mind.

Environment: A field or green space surrounded by vegetation

Indoor/ Outdoor: Outdoor environment

Components: Preferably carrying out an activity alone or with a few other close friends. The most important component is that it is not crowded and there are no distractions.

Environment: Swimming in the sea or in an indoor pool

Indoor/ Outdoor: Indoor or Outdoor environment

Components: Performing an activity and not seated. Preferably with friends.

Environment: At the beach	Environment: In a green space with distant landscape views	Environment: Spa
Indoor/ Outdoor: Outdoor environment	Indoor/ Outdoor: Outdoor environment	Indoor/ Outdoor: Indoor Environment
Components: Ideally alone with my dog. I would go and watch sunset and listen to the sound of water in the vicinity. I would prefer being around a few other people as it would make me feel safer than being completely isolated but not in a crowded space.	Components: Shaded seating will be present. I will visit the space alone and look at the distant landscaping that soothes my eyes and in turn, calms me down	Components: Indoor space with natural light entry, overlooking an open courtyard containing vegetation, ideally experienced in isolation

	Date: 20/04/2023
Group: 2	Participants: 6

Environment: Countryside

Indoor/ Outdoor: Outdoor environment

Components: I will listen to music and accompanied by my dog. A 30-minute break is enough.

Environment: In my field with my farm animals

Indoor/ Outdoor: Outdoor environment

Components: Preferably no other people

Environment: Coastal area

Indoor/ Outdoor: Outdoor environment

Components: Having natural light and staying in direct sunlight is ideal for me.

Environment: The beach Indoor / Outdoor: Outdoor environment Components: Preferably accompanied by friends or family. We will set up a seating space with some food.	Environment: A natural environment even if visible from a distance Indoor / Outdoor: Indoor or outdoor as long as it is not claustrophobic Components: Preferably alone but if I feel socially deprived, I would prefer having my friends with me to talk about our life issues and stresses.	Environment: A football pitch Indoor / Outdoor: Outdoor environment Components: I do it daily in the evening. I like to go alone shooting as it helps me release stress.

	Date: 24/04/2023
Group: 3	Participants: 13
Environment: The beach Indoor/ Outdoor: Outdoor environment Components: Preferably with a group of friends. We will put away our phones to minimise distractions.	
Environment: The beach Indoor/ Outdoor: Outdoor environment Components: In a group of 6/7 people, ideally there is no noise to minimise distractions, We will meet up for a couple of hours to talk and discuss topics that interest us.	
Environment: A mixture of natural and built environment Indoor/ Outdoor: It doesn't matter Components: Alone preferably, listening to music which helps me forget about work for a short period of time.	

Environment: My home Indoor / Outdoor: Indoor environment Components: Preferably with my family and dog in the living room, which is the space we spend most time in together.	Environment: A green space Indoor / Outdoor: Outdoor environment Components: I enjoy going for walks by myself in a space that is densely vegetated.	Environment: A green space Indoor / Outdoor: Outdoor environment Components: I would go for a long walk with my dog.

Environment: A natural, green space Indoor/ Outdoor: It doesn't matter Components: Preferably alone and ideally no noise.	Environment: At the beach or in my garden at home Indoor/ Outdoor: Outdoor environment Components: Preferably alone, away from other people.	Environment: A natural, green space Indoor/ Outdoor: Outdoor environment Components: Alone

Environment: At Riviera beach or at my stables

Indoor/ Outdoor: Outdoor environment

Components: If I go to Riviera, I would rather be alone watching the sunset. If I go to my stables, I would prefer going horseback riding with my sister.

Environment: A sports/ fitness facility

Indoor/ Outdoor: Indoor or outdoor environment

Components: I will carry out some physical activity alone.

Environment: A football pitch

Indoor/ Outdoor: Outdoor environment

Components: I will go alone and carry out some physical exercises.

Environment: The beach

Indoor/ Outdoor: Outdoor environment

Components: Preferably accompanied by a friend. I will go sailing or swimming to release stress through physical activity.

	Date: 27/04/2023
Group: 4	Participants: 9
Environment: The place doesn't make a difference as long as there are elements of nature Indoor/ Outdoor: Outdoor environment Components: Preferably alone	
Environment: No specific environment as long as there is sunlight and it is outdoors Indoor/ Outdoor: Outdoor environment Components: With other friends	
Environment: The environment is irrelevant Indoor/ Outdoor: It doesn't matter Components: The most important factor is that I am with others who I can converse with.	

Environment: At the gym	Environment: It doesn't matter	Environment: At the gym or in my room
Indoor/ Outdoor: Indoor environment	Indoor/ Outdoor: Indoor environment	Indoor/ Outdoor: It doesn't matter as long as it's a familiar space which is comfortable to spend time in.
Components: Preferably alone listening to music and carrying out physical exercises to help me release stress.	Components: Preferably playing the piano or carrying out fun activities with others.	Components: Preferably with friends.

Environment: At home	Environment: A sports/ fitness facility	Environment: At the beach
Indoor/ Outdoor: Indoor environment	Indoor/ Outdoor: Indoor or outdoor environment	Indoor/ Outdoor: Outdoor environment
Components: Ideally alone. The most important factor is that the space is flooded with natural lighting.	Components: I will carry out some physical activity alone.	Components: I will go for a walk along the coast with others.

Group: 5	Date: 27/04/2023
	Participants: 10

Environment: Gozo as to me, it is the only space where you could cut off from people and noise.

Indoor/ Outdoor: Outdoor environment

Components: Preferably with a small group of friends

Environment: No specific environment as long as there is sunlight and it is outdoors

Indoor/ Outdoor: Outdoor environment

Components: With other friends

Environment: In my room which I have turned into an office space, surrounded by natural environment components

Indoor/ Outdoor: Indoor environment

Components: Preferably not alone. The most important factor is natural light and plants

Environment: At home in my living room Indoor/ Outdoor: Indoor environment Components: We have 2 (2x2m) skylights and a large window which allow for a lot of natural light to flood the space. To me, staying in a will-lit room is the most important factor. Unfortunately, we don't know if there will be construction work happening next door, this will produce a lot of noise so I will have to opt for another space	Environment: Buskett or Ta' Qali Indoor/ Outdoor: Outdoor environment Components: Preferably with others, surrounded by nature	Environment: My home, specifically my bedroom, but transported to a green area so that we would be able to see greenery from inside not neighbouring buildings. Indoor/ Outdoor: Indoor environment Components: Preferably alone

Environment: At the library Indoor / Outdoor: Indoor environment Components: I like to sit close to the windows overlooking the outdoor environment. I prefer going there with someone else.	Environment: In a green space surrounded by nature Indoor/ Outdoor: Outdoor environment Components: Preferably alone	Environment: At the campus hub library (not the silent room) Indoor/ Outdoor: Indoor environment Components: Preferably with friends to discuss our issues and work. As long as it is not the silent area which is a bit to tense, I enjoy staying indoors speaking to others to make my feel more at ease about my situation.

Environment: At the beach

Indoor / Outdoor: Outdoor environment

Components: Preferably in a group of friends watching the sunset.

	Date: 04/05/2023
Group: 6	Participants: 4

Environment: In a natural environment at home (such as a courtyard)

Indoor/ Outdoor: Indoor/Outdoor environment

Components: Preferably alone, in a quiet space with a lot of natural light.

Environment: No specific environment

Indoor/ Outdoor: It doesn't make a difference

Components: I would like to spend time in a setting that is full of neutral colours and inspirational material that could help me get my thinking process going. I prefer a studio environment, alone but not completely quiet. Distant background noise such as birds chirping or people speaking outside would be more comforting

Environment: In a natural environment

Indoor/ Outdoor: Outdoor environment

Components: Preferably alone. The most important factor is that the space is private and quiet

Environment: In an indoor space with views of a green space

Indoor/ Outdoor: Indoor environment

Components: Preferably alone, playing music that does not disturb others whilst not having any distractions or outdoor noise disturb me.

	Date: 04/05/2023
Group: 7	Participants: 5

Environment: In the countryside (such as a field)

Indoor/ Outdoor: Outdoor environment

Components: Preferably alone

Environment: In a field

Indoor/ Outdoor: Outdoor environment

Components: Ideally with another person. Preferably in a shaded spot.

Environment: At a football pitch

Indoor/ Outdoor: Outdoor environment

Components: Preferably playing a sport with friends.

Environment: At our flat in Gozo Indoor/ Outdoor: Indoor/Outdoor environment Components: It is a very quiet place with a view of the sea which are the two most important factors I look for when looking for a space to relax. I would prefer going there alone with my dog.	Environment: In tan outdoor space surrounded by natural environment components Indoor/ Outdoor: Outdoor environment Components: Preferably with a few friends or family members.	Environment: Indoor space with a distant sea view Indoor/ Outdoor: Indoor environment Components: A framed view, showing the horizon bound by a low ceiling and horizontal room layout, controllable lighting, large curtain, comfortable, lounge style seating