Designing Well-Being:
The Impact of Interior Design on Mental Health

Ila Khan

1.0

Abstract

The executive summary

Aims

To explore the impact of interior and spatial design on a user's mental health, with the goal of aiding in effectively designing for mental wellness to help reduce the prevalence and severity of mental health problems.

Methods

Secondary research in the form of a Literature Review, with sources gathered from 1991 to 2023, researching the question 'How Can Interior Design Influence Our Mental Health?'.

Two stages of primary research in the form of interviews and a video probe, designed based on the results of the interviews, with a total of thirteen participants, chosen through convenience sampling. Recurrent themes were identified from both aspects of research, which were subsequently analysed using a mixture of thematic and narrative analysis.

Results

The key themes that emerged included the importance of interacting and engaging with the visual environment, creating a visually stimulating environment, and the inclusion of nature and light in a space. It also highlighted the need to give people choice and control over their immediate environment, as well as allowing and encouraging social interaction as the user desires.

It was found that there was a large overlap in the emotional reactions of the two participant age groups, with the majority finding the same stimuli to have a beneficial effect on their mental wellbeing. There was also some disparity due to the participants' personal preferences or lack of control over their setting.

Discussion

Based on the research results, suggestions of ways to implement these findings are given, with the recommendation of further research to be conducted to give more insight into the second age group as well as repeated studies with different user groups to allow for greater generalisability.

"each [aspect] must be taken into consideration to effectively design a space which is beneficial to the user's mental health."

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2.0

Introduction

A brief foreword, providing context to the research

Our mental health affects – and can be impacted by – almost every aspect of our lives, from our social relationships to our productivity to our physical health. It can be degraded by something as simple as lighting or how much personal space we have, and can be improved by something as small as viewing art or talking to a friend. And just as our mental health can be impacted by those around us, we too have the power to impact the mental wellbeing of those we interact with.

Approximately a quarter of people in the UK experience mental health problems at some point in their lives (Mind, 2017), however there is limited support and funding available to provide people with the level of help that they require. Prevention is better than a cure, and so this research portfolio

Fig. 1 – Image generated by Adobe Firefly
Prompt: "an abstract image in muted colours about mental health and design"

"Approximately 1 in 4 people in the UK will experience a mental health problem each year"

– Mind, 2017

aims to explore how interior design can have a beneficial impact on users' mental health, with the goal of aiding in effectively designing for the support of mental wellness.

This will be achieved through a mixture of secondary and primary research, with a Literature Review exploring how interior design can impact our mental health in various different settings, and primary research to analyse if these findings are applicable across different age groups. Finally suggestions will be made on ways these findings can be incorporated into the interior design process.

These findings and suggestions can then be implemented through the researcher's Major Project, which is the design of a mental health support hub, a place that provides space for users to care for their mental health through a mixture of social support, therapy, and life–applicable workshops.

3.0

Literature Review

How Can Interior Design
Influence Our Mental Health?

3.1 Introduction

Through secondary research of papers spanning from 1991 to 2023, the following key themes have been found concerning interior design and the influence it can have on a user's mental health. The first theme found was a user's immediate visual environment and how they engaged with it. This includes the quality of the finish, the colours and the textures present in a space, how people interact with their environment, and their engagement with visual art. Other themes included the presence of nature and light, how users engage with them, and a user's personal space and how much control they have over their immediate environment. Finally, the last theme found was how spaces allow and encourage social interaction and communication amongst the users.

3.2 Interaction and Engagement with the Visual Environment

Links have been found between the amount of time spent in an urban environment and the levels of stress experienced (Golembiewski, 2015). However, by designing for "genuine respite" the designed environment can act as an "environmental antipsychotic" (Golembiewski, 2015). This can be done through the removal of environmental triggers, such as things that cause stress or the 'fight or flight' response, and implementing effective wayfinding to

remove confusion and uncertainty from the environment. It can also be done by using the space to create a "positive story" (Golembiewski, 2015), creating a space where the user feels safe, secure and comfortable, allowing them to take this feeling of safety with them after leaving. For the full antipsychotic effect to be achieved the user must consciously engage with the space, so including activities for the

"creating a space where the user feels safe, secure and comfortable, allowing them to take this feeling of safety with them after leaving"

users, for example, cooking, gardening and creating art, can help solidify the respite they experience. This has the added benefit of teaching the user practical life skills that they can implement in their day-to-day life, extending this positive story into their personal environments (Golembiewski, 2015). It has also been found that physical activity and exercise can "increase self-esteem, decrease anxiety, provide structure to a person's day or week, contribute to a sense of purpose and meaning in daily life, and provide opportunities for social experience, commitment, and interaction." (Lindgren et al., 2018), all of which are also beneficial to mental health.

These are all ways that actively engaging with a space can benefit one's mental health, but it can also be improved through passive engagement; by existing within it rather than interacting with it. Viewing art is one of these forms of passive engagement. There are already many pre-existing examples of the application of art in mental healthcare, for example in the use of art therapy and in the diagnosing of depression and other similar conditions (Daykin et al., 2008).

Fig. 2 – Aaron Steven's "Paths Crossed" at Eskenazi Hospital

The inclusion of art in hospitals (fig. 2) can result in "therapeutic benefits; enhanced experiences of care; reducing vandalism and aggression; providing greater privacy and dignity for patients; promoting a sense of identity; and enhancing staff morale and motivation" (Daykin et al., 2008). Studies have also found that viewing visual art greatly reduced the need for anti-anxiety medication after participants were exposed to and interacted with visual art (Connellan

et al., 2013), and "depression and anxiety were respectively 34% and 20% lower where [the art] intervention had taken place than with groups not exposed to arts" (Staricoff and Loppert, 2003). While it can be argued that art is beneficial to one's mental health, the content of that art plays a significant role. For example research has shown that art centred around the theme of nature can aid in recovery, whilst abstract images and art that is visually noisy or centres around the themes of institutions or urban environments can contribute to increased stress, negatively impacting one's mental health (Daykin et al., 2008).

Channon (2022) states that there are three key aspects to designing a 'healthy' building – that is, a space that is beneficial to the user's mental health. Woodger (2022) explains these as the following; the design should exceed the expectations of industry standards, for example, building regulations and technical housing standards, the designer should adopt a person-first design approach, and healthy buildings should be synonymous with design quality. For instance, this could be done by designing an environment with a higher-quality finish which could have a beneficial impact on a user's mental health. By creating a space where the user feels safe and comfortable, they can be more relaxed in their environment, leading to lower levels of stress and an increased "sense of self-worth and will to live, prerequisites to feeling better"

(Lindgren et al., 2018), especially in in-patient psychiatric care. This improvement in their mental health can also have a direct result on their physical health; Liu et al. (2014) found that "enhanced visual environment[s] have produced improved faster recovery rates by as much as 10% [in hospitals]", reducing the amount of time needed in hospital.

> "depression and anxiety were respectively 34% and 20% lower where [the art] intervention had taken place"
>
> – Staricoff and Loppert, 2003

During the lockdown, there was an international increase in mental health problems, most commonly loneliness, depression and anxiety. Given that people in full-time work now spend roughly one third of their lives at work (Vetch, 2011) there had been less of a need, pre-pandemic, for home offices, however, the lockdown forced people to remain home for months on end. As people were required to use spaces for functions for which they were not intended, their homes could sometimes not function adequately for them, exacerbating the stress and anxiety caused by the pandemic. It was found that by using calming neutral colours, for example, shades of blue and grey, people could feel safer and more comfortable in

their homes, aiding in recovery from the negative mental impact of lockdown and the pandemic (Martín López and Fernández Díaz, 2022). This positive mental effect can also impact a person physically, and it has been found that when calming colours are employed in hospitals patients have decreased blood pressure, pulse and respiration (Liu et al., 2014). This calming effect can also be produced through the implementation of natural materials (Martín López and Fernández Díaz, 2022), which results in users being "happier and more productive" (Woodger, 2022).

3.3 Nature and Light

In urban and industrialised day-to-day life it is becoming increasingly difficult to engage with nature, with individuals having to make a conscious choice to seek it out. Given how important and impactful this engagement is to a person's health it is the responsibility of the designer to promote and encourage this engagement, and to make access to nature as simple and easy as possible, whether this is through direct engagement or passive observation (Taheri, 2019). In industrialised countries, people, on average, spend 90% of their lives inside, for example at home, in the work place, and at the shops (Channel 4, 2020), but this does not mean that they cannot still benefit from the positive influence that nature can have on their mental health. It has been found that people are so strongly

Fig 3 – People engaging with nature, from WhatWorksWellbeing

influenced by the presence of nature that a person does not need to directly interact with the outdoors for it to reduce their stress levels. While direct interaction with nature (fig. 3), such as by going outside or simply by having a house plant, is more beneficial, indirect access, for example through a window or a picture, can also help to reduce stress levels (Vetch, 2011). Observing nature scenes has also been found to result in positive emotions, the reduction of negative emotions such as fear, sadness and anger, and can hold the viewers' attention enough to distract them from negative thoughts, all of which aid in stress recovery (Ulrich, 1991).

This is a form of positive distraction, which occurs when the surrounding environment can trigger positive feelings, or hold the user's attention. Positive distractions are also effective in the moderation of stress levels and have been seen to have a physiological

as well as a psychological effect, such as by lowering blood pressure. Sensory deprivation caused by a lack of stimulation from the surrounding environment, for example from being in a windowless room, can result in boredom, as well as higher levels of anxiety, depression and even delirium and psychosis (Ulrich, 1991). The most effective forms of positive distractions "have been important to humans throughout millions of years of evolution"; happy and caring faces, animals, and nature (Ulrich, 1991).

> "The most effective forms of positive distractions "have been important to humans throughout millions of years of evolution"; happy and caring faces, animals, and nature"
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> – Ulrich, 1991

This connection between health and nature can be found throughout history, for example in the use of large parks and gardens found in 18th and 19th-century asylums (Hickman, 2005). Connellan et al. (2013) stated that "The presence of the gardens can be one of the most positive aspects of psychiatric treatment". This application of healing gardens can also be found in modern physical health practices, and it has been found that exposure to

natural settings can also help patients, as well as their visitors and hospital staff, to recover from stress more quickly (Daykin et al., 2008).
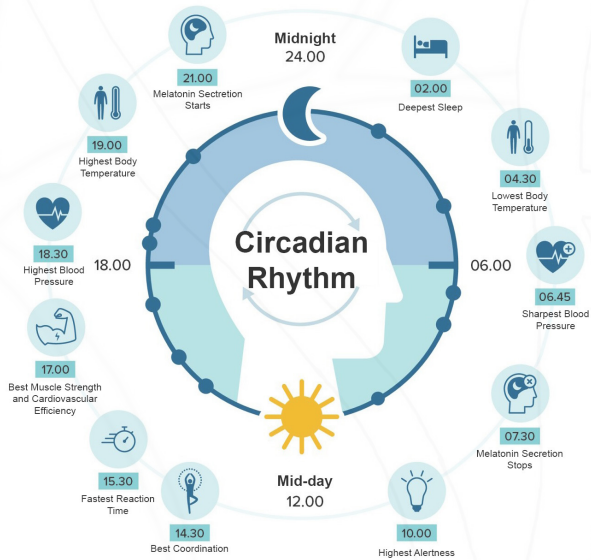

Fig. 4 – Diagram showing the effects of the Circadian Rhythm, from CloudMinded

As well as interacting with nature, light levels have also been shown to have beneficial effects on patients and hospital staff. For example, Lindgren et al. (2018) found that introducing a "system of lighting that automatically follows the circadian rhythm and includes multi-colour elements controlled by the patients can enhance their sleep duration, mood, and general satisfaction". This is because a person's circadian rhythm affects their body's production of melatonin (fig. 4), the production of which results in "reduced depression, decreased length of

stay, improved sleep and circadian rhythm, lessened agitation, [and] eased pain" (Connellan et al., 2013). It has been found that hospital stays are on average, almost three days shorter for patients in well-lit hospital rooms compared to those in darker rooms. As well as reducing generalised agitation, anxiety and stress levels, high light levels can also positively affect those with Seasonal Affective Disorder and those suffering from the depressive phase of bipolar disorder (Joseph, 2006).

Outside of hospitals, these effects can also be seen in workplaces and mental health environments. As previously stated, people on average spend 90% of their day indoors, which can severely impact the amount of light they get. Most European countries legally require that, in a workplace, access to a window is available, though this is not true in North America (Vetch, 2011). Though natural light is more beneficial, just as merely seeing a picture of a landscape can help reduce stress level, artificial light can potentially have the same positive impact that natural light provides, especially if they follow the cycle of the natural circadian rhythm (Vetch, 2011).

3.4 Personal Space and Control of Immediate Environment

The most immediate impact that design can have to a patient is to give them control over their direct surroundings, for example

by giving them control over their lighting, as this gives them a sense of control, safety, and personal space, all of which are beneficial to the mental and physical healing process (Daykin et al., 2008). Ulrich (1991) coined the term "supportive surroundings", where the design of the environment can "facilitate patients' coping with the major stress accompanying illness".

A lack of control is "associated with such negative consequences as depression, passivity, elevated blood pressure, and reduced immune system functioning"

– Ulrich, 1991

Conversely, so-called "hard settings" – ones which value functionality over psychological benefits – add stressors to the environment, which reduces the natural effectiveness of the immune system (Ulrich, 1991). These 'hard settings' are what is commonly found in hospitals, mental health facilities and other commercial spaces, as there are very stringent practical requirements for the health and safety of the patients. A lack of control is "associated with such negative consequences as depression, passivity, elevated blood pressure, and reduced immune system functioning" (Ulrich, 1991). In health centres, this can be exacerbated by noisy environments, confusing wayfinding,

an invasion of, or a lack of, privacy, and a lack of control over lighting and ambient temperature. While it necessary to consider these aspect to effectively design for mental wellness, the functional necessities of the space can mean that "the effect that design solutions may have on patient sensory perceptions may not receive high priority" (Platt, Bosch and Kim, 2017) throughout the design process. Recent research suggests that the implementation of person-first, or person-centred, design in these types of environments can have a positive effect on the patient outcome (Platt, Bosch and Kim, 2017).

The application of this can be seen in the Veteran's Association centre in Florida, which practised person-first design and involved the users at each step throughout the design process. The results included the implementation of ambient lighting that was timed to the circadian rhythm, nature-based artwork, the benefits of which have already been discussed, as well as swivel seating. Due to the mental health difficulties common to veterans the majority of the furniture in the centre needed to be secured down for their safety, but using seating that could still move gives the users the impression of freedom of movement. Doing so transforms this 'hard setting' into a 'supportive setting', giving the users more control over their environment and contributing to the reduction of anxiety (Platt, Bosch and Kim, 2017).

This need for control is also found in other public settings, such as the workplace. Being out of control of environmental stressors for extended periods of time can lead to "reduced frustration tolerance" as well as "learned helplessness".

Fig 5 – Example of workplace privacy, from Grebesa

One of the triggers for this is overcrowding, which is why one of the most common desires in a workplace is for privacy and personal space (fig. 5). This allows the user to have control over who and to what extent they socialise with their colleagues (Vetch, 2011). Overcrowding and density results in a lack of privacy and a lack of control over the user's immediate surroundings – this can be counteracted by clearly zoning spaces and giving them an intended use. This can be done physically or visually – through different uses of colours, materials,

and lighting – making the purpose of the space clear and definite. In mental health facilities, lessening overcrowding has also been found to reduce violence and aggressive episodes in patients, though the reason for this is not identified (Nijman and Rector, 1999).

In public spaces there are often different groups using the same space – in the context of a workplace, it could be people from differing levels of seniority or who work in different fields, whereas in a hospital this could include staff, patients and family. As everyone has different requirements and expectations of the space, what constitutes a positive or a negative distraction can be conflicting. When in a shared ward different patients will have different preferences for the ambient temperature and lighting which they cannot all be in control of. There will be background noises and alarms from various machines and monitors, which patients and family members may find distressing but are vital to the health of another patient.

"everyone has different requirements and expectations of the space, what constitutes a positive or a negative distraction can be conflicting."

Ulrich (1991) gives the example of a waiting room television – a receptionist who works there may wish to be in control of the show as they work in that room all day, but family members who are already stressed about their loved one my find this additional aspect that is out of their control disproportionately distressing.

3.5 Social Interaction

To ensure that the design is optimised to the needs of the users it is vital that they are involved in all steps of the design and decision-making process. This is especially true in the context of mental health as the needs and the requirements of the individuals can vary vastly. Lindgren et al. (2018) found that "patients want more human relationships with staff and interesting things to do, while staff want an environment that inspires hope, creates a calm atmosphere, and offers opportunities for joint activities". In the context of the Veteran's Association centre, user inclusion allowed for the creation of a more "nurturing" setting, which fosters feelings of "dignity, respect, normalcy, and trust" amongst the veterans (Platt, Bosch and Kim, 2017). One of the changes was to give patients the choice to engage or disengage with other patients, visitors and staff. This was done by including 'quiet areas', in addition to large social spaces, and providing more private spaces for the patients, which helped to reduce overcrowding. By giving the users

"Humans are holistic creatures, and individual aspects of their life will affect seemingly unrelated areas"

more control over their personal space and immediate surroundings, and allowing them the choice to remove themselves from situations when they felt it necessary, the patient's risk of seclusion decreased, which benefited their mental health (Platt, Bosch and Kim, 2017). This inclusion of different types of social space also allowed the patients to have multiple choices for different forms of social interaction. This combined with more comfortable and well-appointed furnishings reduced anxiety in both patients and visitors (Platt, Bosch and Kim, 2017).

Including social spaces in workplaces has also been seen to be beneficial to workers' mental health; having readily available communal spaces in the workplace allows for spontaneous social interaction, which fosters support between colleagues, which in turn helps to reduce levels of stress and boost workplace morale (Vetch, 2011). This has the added advantage, from an employer's perspective, as people with better mental health have a higher work capability, reduced error and mistake rate, and fewer absences from work, all of which allows for people to be much more

productive while at work (Vetch, 2011).

Humans are holistic creatures, and individual aspects of their life will affect seemingly unrelated areas – "An aspect of personal life or [their] surroundings will affect the behavior and [their] whole being" (Taheri, 2019). These changes can then subsequently affect those whom they interact with; their friends, their family, their co-workers. As people's moods, feelings, mental health, and physical health can be influenced by their environment, when a space is designed it impacts not only the user but potentially everyone that they engage with (Taheri, 2019). Martín López and Fernández Díaz (2022) researched people's living spaces during the first 2020 COVID-19 lockdown and found that people felt most comfortable in their bedroom, living room or TV room, all of which are places where you commonly can interact and connect with other people. Having social interaction emotional connections and support from people is vital to maintaining of positive mental health, so ensuring that these spaces are effectively designed "undoubtedly, helps people's mental health" (Martín López and Fernández Díaz, 2022).

Taheri (2019) found similar results when conducting research with a group of girls, aged fourteen to fifteen, in Shiraz, Iran. It was found that students who had higher levels of communication with friends

and teachers had higher levels of self-acceptance, happiness and life satisfaction, all of which contribute to positive mental health and well-being. During the study, the classrooms were updated to have improved lighting, ventilation, heating and air conditioning. These improved levels of comfort resulted in the students having reduced levels of anxiety and insomnia, showing that as well as impacting their physical and mental health while at school, the design of the classroom was also impacting their lives outside of school (Taheri, 2019).

"Our lived environment is a holistic experience, with each aspect influencing our mental health."

3.6 Summary

Our lived environment is a holistic experience, with each aspect influencing our mental health. This is reflected in the commonalities found across the literature, which consistently focused on the user's interactions with nature, light, art, and other people within the space. Each aspect of the environment can influence another; the inclusion of art can allow for more images of nature, windows to view the outside allow for more natural light, and spaces for more

social interactions allowing users control over how they engage with the space. From this perspective, the relationship between a user and their environment is transactional, rather than fixed, and each of these aspects must be taken into consideration to effectively design a space which is beneficial to the user's mental health.

While the studies had very consistent results despite the varied settings they were conducted in, based off of the research done for this Literature Review some gaps in the existing research have been identified. Very few of the studies found contained any long-term follow ups (Connellan et al., 2013) to identify the longevity of the effects observed by the environmental changes. There is also a lack of research into the effect these changes can have on different sub-groups of people, for example people of different genders, ages, ethnic backgrounds, or with neurodiversities, instead treating users as one homogenous group. This has helped to inform the research question outlined in the following section, which explores if users from different age groups have the same emotional reaction to environmental de-stressors.

4.0

Methodology

An explanation of the data collection and analysis methods used

4.1 Introduction

Through the research of the Literature Review, it was found that while there is a lot of research available on what makes a built environment relaxing and de-stressful, a holistic approach to the user group was often taken. There is limited research into whether other factors, such as a user's gender, age or ethnicity, has an impact on what they find to be an environmental de-stressor. This research study aims to investigate if different age groups, specifically people in their twenties and fifties to sixties, have correlating emotional reactions to de-stressors in their surrounding environment, through the collection of qualitative data, collected in the forms of interviews and cultural probes.

4.2 Methodology Selection

Given that the research pertains to participants' emotions and needs to be able to be applied in a real-world context, a qualitative research approach was chosen. This research took the form of semi-structured interviews followed by a cultural probe, based on the qualitative data found from the interviews.

Semi-Structured Interviews:
Semi-structured interviews were chosen as a starting point as they are more flexible than other forms of data gathering, and the inclusion of open-ended questions allows for the subject to branch off into relevant, if unexpected, areas and gives more insight into the subject. They are also more reliable as they have a higher response rate compared to distance data gathering (Sociology Group, 2019). One of the disadvantages of semi-structured interviews is that they are more time-consuming than other research methods. This was counteracted by limiting the number of subjects interviewed and the number of questions asked.

Cultural Probe:
To reduce the feelings of observation and scrutiny, it was decided that a probe, rather than a toolkit, should be implemented, which would be designed based on the qualitative data found in the interviews. This would allow the participants to focus more on their feelings regarding the probe rather than being distracted by external factors. The probe took the form of a short video which participants then answered questions on. This form of probe was chosen because they are very quick to conduct and are easily accessible to a larger volume of subjects, so have a high answer rate (Murphy, 2006). One of the drawbacks of a probe is that they are done remotely with written answers, meaning that there is the possibility for a loss of nuance between the participants and the researcher. The written medium also does not encourage the participant to branch off to a tangent as they might in a spoken interview, potentially

losing pertinent or surprising revelations. To counteract this, the questions pertaining to the probe were also quite open-ended, as with the interviews, allowing for participants to elaborate if they wished.

4.3 Participant Selection

For both stages of research, participants were chosen through convenience sampling. This form of sampling was decided upon due to the time constraints of the study and has the benefits of being very efficient and simple to implement (Jager, Putnick and Bornstein, 2017). This form of sampling does suffer from volunteer bias (Shantikumar and Barratt, 2018), but it was attempted to counteract this limitation by selecting people of different genders and backgrounds, while still remaining within the required age groups of people in their twenties and fifties to sixties. It was decided that five interviews would be conducted to create five different probe scenes, as this number of people proportionally maximises results whilst minimising the amount of research required (Nielsen, 2000).

4.4 Ethical Participation

All researchers have the responsibility to ensure that their study is ethical (Connelly, 2014). In the case of this research, before beginning the research process a research integrity checklist was completed to ensure the safety and security of both the participants and the researcher. For each stage of the research, all participants were given a participant information sheet, outlining the purpose of the study, why the research is being conducted, and what is expected of the participant. Participants were also required to complete an informed consent form before participating in the research.

4.5 Data Analysis Techniques

Given that multiple forms of research were implemented, multiple forms of analysis are also need to be used. Thematic analysis can be applied to both the interviews and the probes, to identify themes and patterns within each age group. This allows for insight into the participant's opinions and ideas about their environment and can also highlight any similarities, such as common themes or patterns, within the age groups. One of the disadvantages of thematic analysis is that it is subjective, dependent on the researcher's judgement (Caulfield, 2022), and can result in the researcher influencing the content of the probe rather than having it be a direct representation of the interviewees' description.

Narrative analysis, specifically content analysis, allows for the finding of patterns and connections between different participant's results, and this can be applied to both the interviews and probes conducted. Narrative analysis will be useful in comparing the two age groups and finding consistencies and patterns between them. Narrative analysis has the advantages of being very flexible and allowing for the comparison of the two age groups, despite the different forms of data gathering, and can provide interpretive insights (Hassan, 2023) to each participant's data. As with thematic analysis, narrative analysis can also suffer from subjectiveness. It is also more in-depth and thus more time consuming than other forms of analysis, which limits the amount of data it is possible to analyse, and therefore the generalisability of the results.

4.6 Research Expectations

The limited research found on the emotional impact of the environment on different age groups makes it difficult to extrapolate potential outcomes for the study. However, while not explicitly studied the research did cover a wide variety of settings which have a wide variety of users, and, as previously stated, had very consistent findings. It can be inferred from this consistency that similar emotional reactions will be found between the two age groups. The research conducted in hospitals, which are open to the public and therefore have a diverse age range of users, and that was conducted in workplaces and schools, which cater to adults and children respectively, are especially relevant to this. Given that this is qualitative research and emotional reactions are a very unique and personal thing, this consistency is not guaranteed, and outliers should be expected.

5.0

Research Studies

Do Users from Different Age Groups Have the Same Emotional Reaction to Environmental De-Stressors?

5.1 Methodology Application

As discussed in section 3.6, multiple research gaps were found through the research of the Literature Review, including the limited research into the long-term effects a user's environment can have on their mental health, and the effect it can have on different user groups (Connellan et al., 2013). One of the aims of this research is to aid in effectively designing a mental health support centre. Given that this is a public building with multiple different user groups engaging with the space it was decided that researching the effect an environment can have on different age groups would be most relevant to this aim. This then led to the formation of the research question 'Do users from different age groups have the same emotional reaction to environmental de-stressors?'.

Two separate age groups were then selected, the first in their twenties and the second in their fifties and sixties. The first group would be interviewed and asked to describe their ideal, most relaxing and de-stressful environment, the scenes of which would then be used to create a video. This would be sent to the second participant group with questions about their emotional responses to the setting to see if the two groups' results correlated. Participants for both groups were selected using convenience selection, as described in section 4.3. The ages of the five participants

from the first group ranged from twenty-one to twenty-nine, and they were all selected from different backgrounds to aid in the generalisability of the results. One was a university student, one a mature student, one completing their PhD, one in part-time employment and the last in full-time employment.

The semi-structured interviews were conducted and recorded either in person or through a video call, depending on the participant's availability. The interview questions were then created based on the main themes identified in the Literature Review. Participants were emailed their consent forms and it was explained to each interview participant that they would be creating a fictional setting that they would find relaxing, and then asked the following questions to help guide them in this creation process:

1. What kind of setting is it? For example, public or private, indoors or outdoors?

2. How big is the space? Is it cosy and intimate, or more spacious and open?

3. How busy is it? Are you alone by yourself, alone in a crowd, with a group of friends?

4. What kind of colours are in the space? For example, are they warm or cold, dark or bright, pastel or neon?

5. What can you hear in the space? Is it silent, is there music, nature sounds, other people talking?

6. What activities are you doing (do not need to be relevant to the space)? Talking, reading, exercise, craft, meditation etc.

7. Is there anything else you would add to the space?

The answers from each interview were then transcribed and analysed, the results of which were used to create the scenes (Fig. 7-11). The full transcripts of the interviews and probe results can be read in the appendix, section 8.0.

These were then used to make a short three-minute video, with soundscapes described by the interviewees overlayed on the images. This was then uploaded to YouTube as an unlisted video (fig. 6), allowing the research participants to view it, but keeping it private from members of the general public.

The probe questions were created as a Word document, asking each participant their age, what emotions they felt during each scene, and what aspects of the scene they think contributed to those emotions. The probe was then sent to eleven participants, 8 of which replied, aged fifty-

five to sixty-nine. The participants chosen were from various ethnic and educational backgrounds, with some participants in full-time employment and some in part-time employment, to aid in the generalisability of the results. The probes were conducted remotely, with the questions and consent forms emailed to the participants along with a link to the probe.
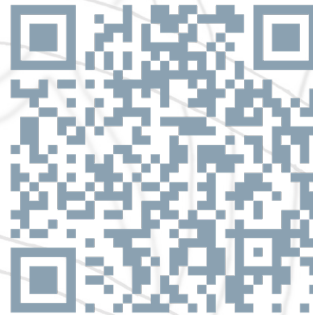

Fig. 6 - Video Probe Link

5.2 Summary of Findings

Participant 1 is a twenty-one year old undergraduate student. When asked to create their ideal de-stressing environment they described a spacious beach, which was a mile or two long with plenty of space to walk along. They described the beach as being very sandy, with green grass on the dunes, a clear sky, and a pink sunset. This would be a "secret spot" that few people knew about, so they could be alone with their best friend and a couple of dogs. Due to the lack of other people the beach would be very quiet, allowing them to hear the sounds of the ocean, seagulls overhead

and the dogs running through the waves. They wanted to be walking up the beach chatting to their friend, and maybe going for a swim in the ocean or possibly body boarding. They also wished to include a camp-fire to sit around, a cup of tea, some custard creams and a tuna sandwich - a favourite from their childhood - as well as a tennis ball for the dogs to play with.

Overall the probe participants had very positive emotions towards this scene, with seven of them describing favourable emotions. This included feeling, calm, relaxed, warm, and peaceful. This was due to the scene being outside and very spacious, and also the nature sounds, and the presence of the dog and the camp-fire. One participant felt irritated by the scene, stating that the background noise - the sounds of waves, birdsong and quiet talking - was "distracting and inconsistent".

Fig. 7 - Probe Scene 1

Participant 2 is a twenty-seven year old mature undergraduate student. They

described a private indoor setting, similar to their own living room, with access to outdoor space of some kind, such as a private garden or balcony. They wanted the space to feel cosy and intimate, approximately 4 or 5m^2, where they could sit with their wife and cat, and would be in warm neutral shades with lots of greenery. They wanted to be sat listening to music, preferably something lo-fi, and maybe reading, watching TV or playing on their phone. As well as the music they wanted to be able to hear birds chirping and the trickle of water – growing up their grandparents had a lodge in the countryside they would visit and they find these sounds reminiscent of then. When asked for any extra details they specified that the furniture should be very soft, that there should be a lot of plants, and that they would like a cup of tea or coffee.

This scene had the most mixed results, with half the participant reacting favourably and the other half negatively. Four of the participants felt "relaxed and chilled" viewing the scene, due to house plants, the quality of the furnishings, and the water sounds and soothing music, though one participant did say that the music was not to their taste. The other four participants found it claustrophobic and confusing, feeling that the room was too cluttered and the background sounds – trickling water, birdsong and lo-fi music – were confusing and conflicting. One participant felt that

the TV was too large, and it made them depressed and intimidated, and that while the music was nice it was not enough to overcome these factors.

Fig. 8 – Probe Scene 2

The third participant is twenty-eight years old and is self-employed. Participant 3 described a setting very similar to Participant 2, also describing a cosy living room, similar to their own or their parent's as they felt this gave them more control over the setting. They described the room as feeling very homey and wished to include a few close friends, and made it very clear that these people would be friends and not guests who would need to be catered to, and also a cat. They also wished for the room to be decorated in warm neutral tones, with a lot of house plants and fairy lights. They wanted background music to be playing music they could be singing along to, possibly something from their Spotify Daylist, but that it be quiet enough for everyone to be chatting. They also added that they would like everyone to have cups of tea, and described a coffee table that could display

their gaming dice.

Six of the probe participants had positive reactions to the third scene, describing their feelings as relaxed, calm, harmonious and uplifted. This was attributed to the muted colour scheme, relaxing music, high quality furnishings, fairy lights, and cups of tea. However one participant was indifferent to the scene, feeling the muted colour scheme in the room to be too bland, and another found the combination of music and talking to be confusing and distracting.

Fig. 9 – Probe Scene 3

Participant 4 is a twenty-eight year old PhD student. As with the previous two participants, Participant 4 also described a living room with a cosy and intimate feel, where they could sit with three or four close friends, and some cats. Participant 4 differed in their choice of colours, describing a bright multi-coloured room, in "primary schoole-esque" shades. Though they wished for some friends to be with them they described a situation more similar to

parallel play than traditional socialising, with everyone doing their own activities together. They described quiet mindfulness activities, such as reading, writing and crafting. As there was no conversation taking place the room would be quite quiet, but you could hear rain tapping on the window, the pages of books being turned, and the sound of quiet video games in the background. They also specified that the room would have a lot of soft furnishings, like throw cushions and blankets and a squishy sofa, and that there would be warm, soft lighting.

Fig. 10 – Probe Scene 4

The majority of the probe participants also viewed scene 4 positively, saying that it felt relaxed, sociable, and welcoming. This was due to the amount of plants and greenery, the large windows, homey feel and bright colours, though one participant felt the colours reminded them of a common room and thought the space may be more fitting in a work environment. One participant was irritated by the background noise – rain on the window, and the turning of book pages

– and another felt melancholy because of the rain sounds and dark colours.

Fig.11 – Probe Scene 5

Participant 5 is twenty–nine years old in full–time employment. They described a large, sandy beach with bright warm yellow sand and a vivid blue sky, surrounded by greenery and nature. They would be on the beach with a small group of friends, building sandcastles, sunbathing and reading. There would be a bar on the beach a short ways away which you could hear muffled music and chatter from, and they would have bought a cold beer from there to drink as they sat in their deck chair with their parasol and listened to the gently crashing waves.

All probe participants had favourable reactions to the final scene, feeling relaxed, happy, and sociable when viewing it. This was attributed to there being lots of space on the beach, the sunny weather, and the presence of nature and friends. Multiple participants enjoyed the idea of eating ice cream on the beach and described it as feeling like a holiday.

5.3 Analysis of Data

Thematic Analysis of Interviews

There is a relatively even split between people preferring to be in an indoors or outdoors setting. However the participants that preferred an outdoor setting both stated that they liked it as a large spacious area, and the participants that favoured an indoor setting all wanted a more cosy and intimate space. Regardless of the setting, all interview participants also wanted to be able to socialise with people and were very specific about who they would be interacting with. The preference for a significant other or small group of close friends was a reoccurring theme, as well as the desire to be alone with them rather than being with them within the setting of a larger crowd shows the desire for control over their environment. This is consistent with the findings of the Literature Review, in section 3.5, which showed the importance of users being able to control who they interact with and how they engage with them.

There were also consistencies in how people chose to engage with their environment. As well as socialising, participants also chose to engage in what is typically referred to as 'mindfulness activities'. This included going for walks, reading, writing, crafting and listening to relaxing music. These are all grounding activities, allowing for the

participant to be present in the moment rather than dwelling on external factors that could exacerbate any anxiety or stress the user is feeling, which links to Ulrich's (1991) research into positive distractions, shown in section 3.3.

Despite some people having a preference for being indoors all of the participants found the presence of nature to have a de-stressing effect. This was seen in the inclusion of house plants, outdoor space, and the presence of nature sounds, for example, the sounds of rain, running water, ocean waves, and birdsong. This also reflects the findings of the Literature Review research in section 3.3, which emphasised the beneficial effect of the presence of nature on a user's mental health.

An unexpected theme shown by the interviews was the inclusion of food and drinks. The majority of interview participants specified the inclusion of some form of food or drink in their setting, though the reasons for this varied. One wanted food that reminded them of their childhood, the nostalgia and security from that time helping them to de-stress. Another wished to have a cool beer to help relax – as alcohol depresses the central nervous system, it can lower anxiety levels, however long-term effects can include a rise in anxiety levels (Ankorm, 2022). Finally, three participants found a hot cup of tea or coffee to be comforting and aid in de-stressing, which

Number of Mentions by Participants

Fig 12: Bar Graph of Most Common Interview Themes

has also been found to lower levels stress and anxiety (Quinlan, Lane and Aspinall, 1997).

Another unexpected result were the participants choices of colours. The findings in section 3.2 of the Literature Review showed that neutral and cool muted colours, for example shades of blue and grey, to be the most calming, however, no participants included this colour scheme when asked about their choice of colour. The participants describing outdoor settings described warm and bright colours with a lot of green from surrounding foliage. The participants who favoured indoor settings were more varied, with one describing a

bold and bright room, while the other two chose a warm and neutral colour palette.

Thematic Analysis of Probes

The most common occurring theme from the probe results was the attribution of various aspects of nature to the relaxing feel of the scene. This was found in the visual and auditory aspects, where participants mentioned the nature sounds, being outside or having large windows to allow visual access to the outside, and the presence of plants and pets. This is consistent with the Literature Findings in section 3.3, which showed the importance of not only being able to engage with nature, but also being able to passively view it.
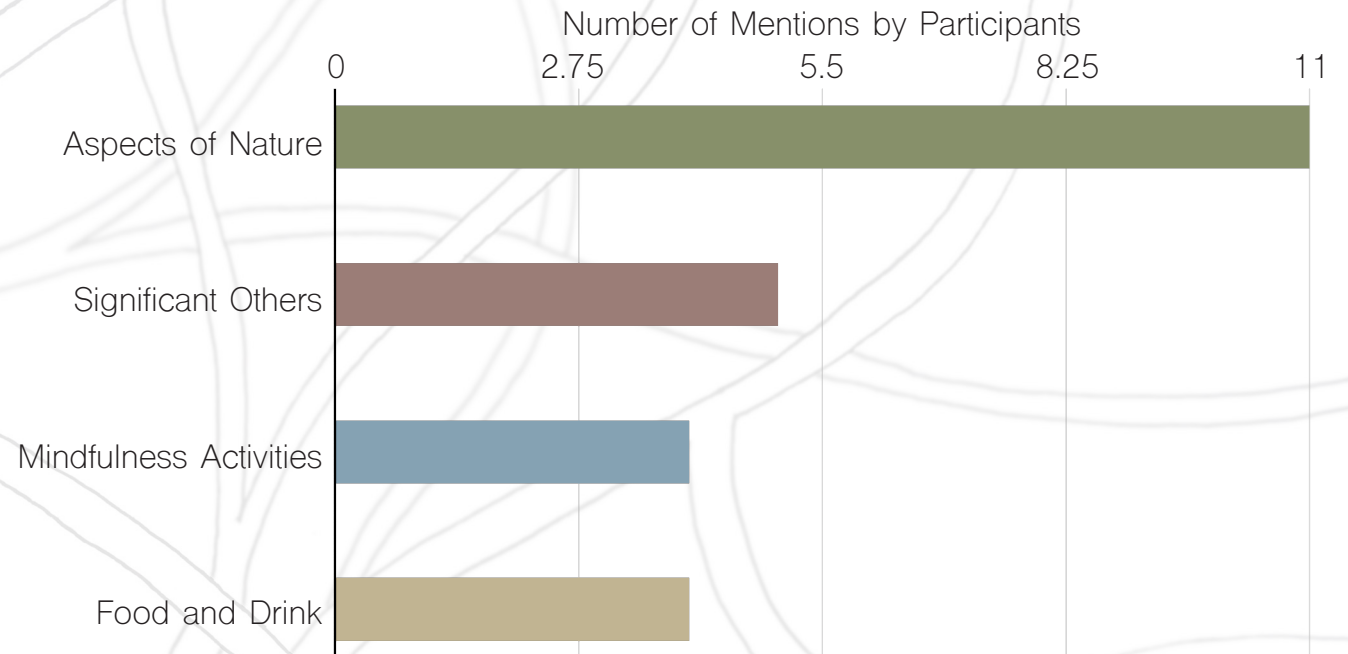
As well as the nature and water sounds, the majority of participants also found the background music to be soothing and relaxing. However, this was not consistent throughout the probe participants, as some participants found the overlapping sounds to be confusing, reducing the de-stressing effects of the scenes. The oldest study participant specifically found the multiple sounds, as well as the background talking present in some scenes, to be irritating and confusing, resulting in them having a negative opinion on the majority of the scenes. The fact that it is a background noise, rather than being something they have actively chosen or a conversation they are partaking in could be the cause of this irritation, as it implies a lack of control over their immediate setting. As this was found in the older probe participant it could also be due to a deterioration in their hearing due to age, meaning they are less capable of picking out individual sounds and resulting in the environment being more confusing and disorientating to them.

As has been previously mentioned, there were very mixed emotional reactions to the second probe, partially due the sounds present in the scene but also because of the visual environment. Multiple participants commented on the high-quality finish of the furniture, stating that the quality of it and how comfortable it appeared made them feel more relaxed. This is consistent with the findings of Woodger (2022) and Lindgren et

Pleasant

Sociable

Happy

Free

Energised Happy

Warm

Fun Playful

Relaxed/Mellow/Peaceful

Optimistic Positive

Comforted

Satisfied
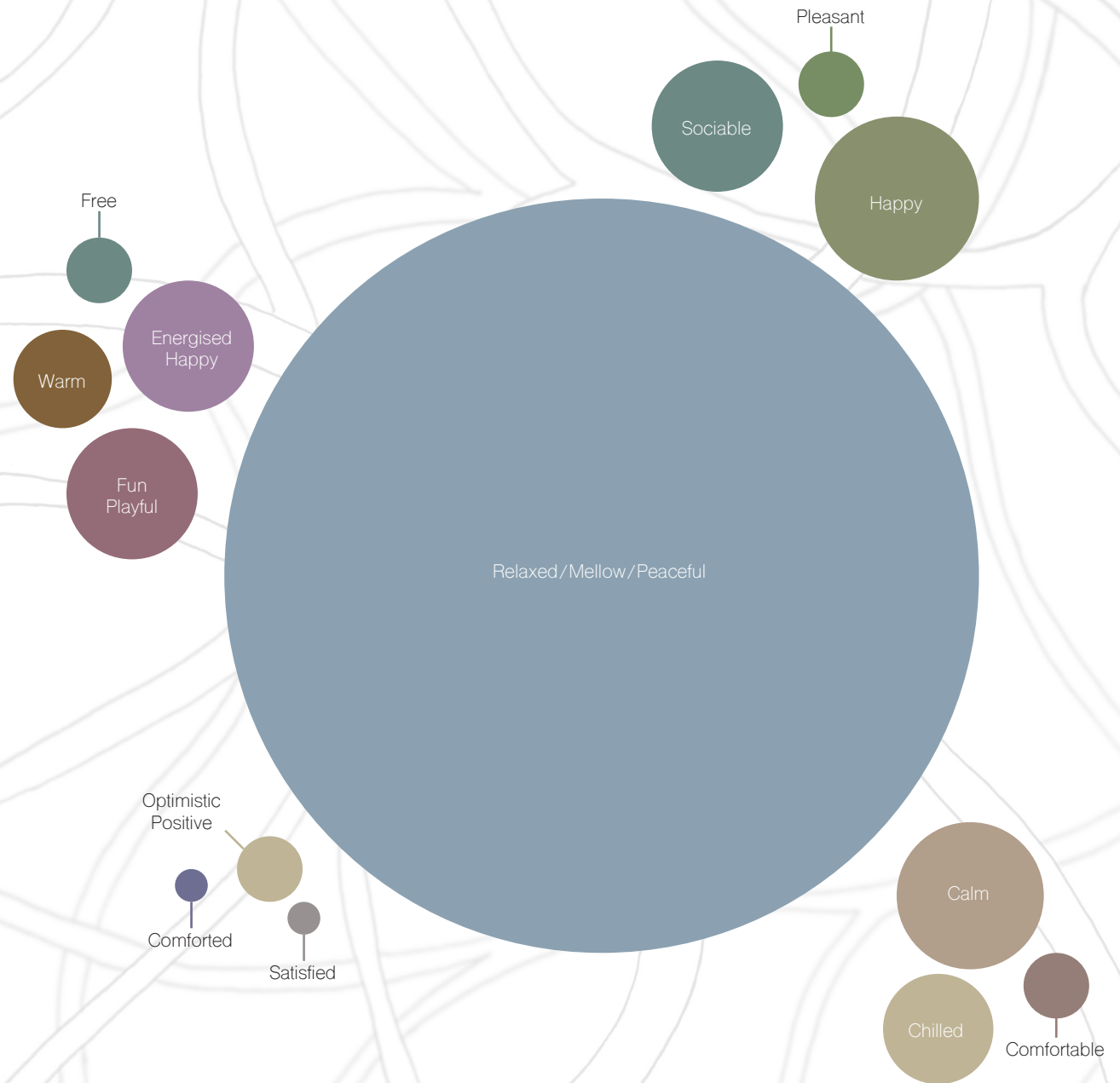
Calm

Chilled

Comfortable

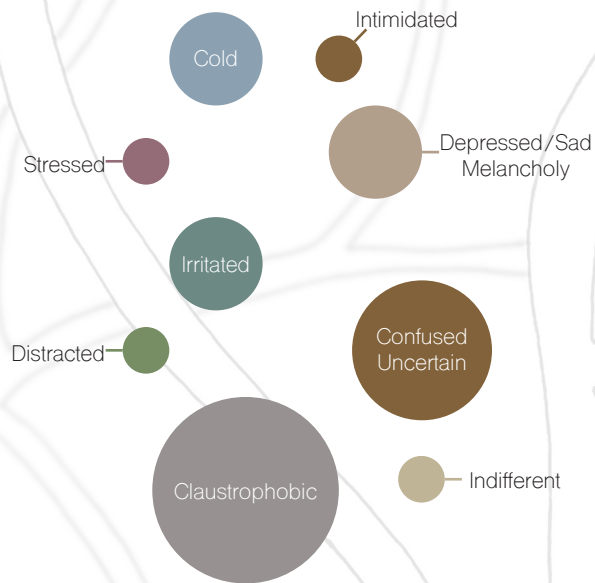Fig 13: Probe Positive Emotional Reactions

Fig 14: Probe Negative Emotional Reactions

al. (2018), who found that comfortable and high quality environments made users feel more at ease. However, some participants thought the room to be too cluttered, which they found overwhelming, and others felt the monochrome colour palette made it feel cold and uninviting. This is despite the inclusion of warm wood tones and plants, contradicting the findings of Martín López and Fernández Díaz (2022), who found that inclusion of these made users feel happier. This could be due to the disproportionate presence of white in the scene, which could overwhelm the warm and natural tones.

The warm muted colours present in the third scene were also a source of friction,

as one participant stated that this aided in the de-stressing effect, while another felt the colours made the room bland, causing them to feel indifferent to the scene. This conflict of opinion is also seen in the fourth scene, where some participants enjoyed the scene due to the vibrant colours, while another participant found it too dark.

Narrative Analysis of Interviews and Probes

Overall there is a high correlation rate between the two age groups; out of the total of forty probe questions answered there were 31 that described the scene in a relaxing or positive light, giving a 77.5% agreement rate between the two groups (fig. 15).

There are many reoccurring themes found between the two age groups that contribute towards the positive correlation. The most dominant factor is the presence of nature (fig. 16). Both age groups reacted favourably to being in an outdoor setting, the presence of plants and nature, and various nature sounds, which, as previously stated, correlates with the Literature Review research.

There are mixed results in the participants opinions on colour (fig. 16). Both age groups disliked cool neutral colour schemes, finding them cold, sterile and uninviting, however there was disagreement between what would constitute a more
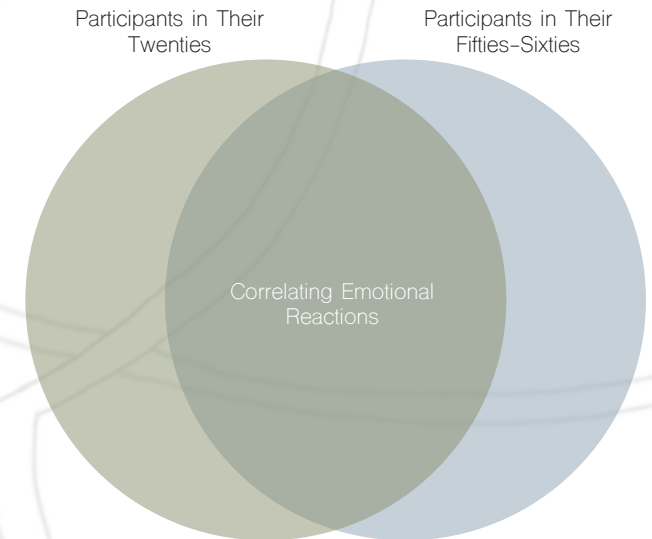

Fig 15: Venn Diagram of Age Group Correlation

inviting colour scheme, even within the age groups. This had the most mixed results with some participants preferring a warm neutral colour scheme while other preferred bright cheerful colours. It could be argued that what constitutes a 'calming colour' is more subjective than other aspects of the design, and is more reliant on the tastes of the users. These multiple colour schemes could all be considered 'calming colours' depending on who is viewing them.

This could also account for the disparity on the opinions of sounds between the two age groups. Multiple scenes had 'calming' music in them, but due to the participants personal preferences there was a large difference in music genres. This was reflected in the older age group, with some

Fig 16: Stacked Bar Chart Comparing Emotional Reactions of Probe Participants to Main Themes
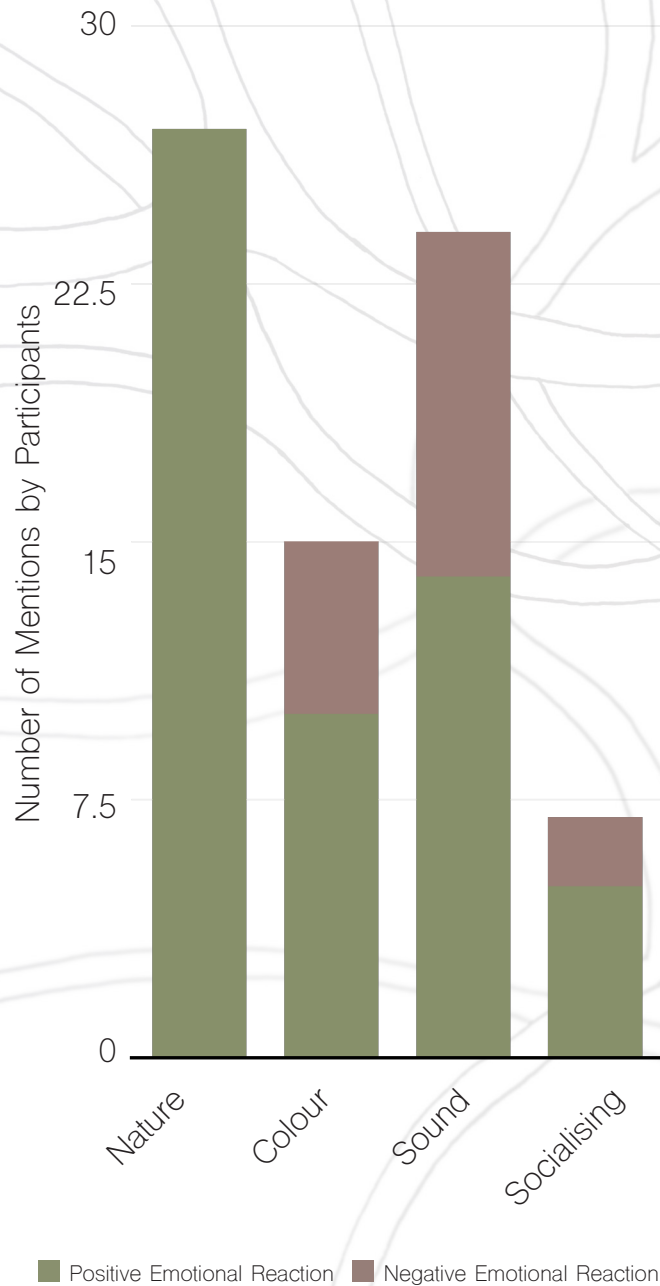
participants finding it to aid in de-stressing, while other said it was not to their taste or found it irritating.

Another potential disparity were the reactions to socialising, though this could be due to how it was presented in the probe. As previously stated, the younger age group all consistently said that they found the presence of close friends and love ones to be relaxing, but multiple participants from the older age group found the chatting present in the scenes to be annoying. This could be because the younger age group was including themselves in the social setting, while the older group considered themselves to be external observers, in which case the presence of background talking can cause the user to feel more stressed (Ulrich, 1991). This theory is supported by the fact that many of the probe participants stated that the presence of people in the final scene contributed to the relaxing feel of the scene. This scene portrayed a group of close friends rather than smaller discrete groups, and had less background talking than the other scenes.

6.0

Discussion

A discussion of the insights and opportunities gathered from the research, with suggestions of design applications, and the limitations of the study

6.1 Discussion and Design Suggestions

Overall, the older research participants had the same emotional reactions to environmental de-stressors as the younger participants, finding the same settings to be calming and relaxing. As predicted in section 4.6, there was an outlying result, together with some disparity between the groups, the most notable of which was their reaction to the various sounds present in the probe. This is to be expected, as qualitative research indicates that personal preference can play a role in participant's answers. Given the nature of the probe there is limited insight into why people answered as they did. However, some reasons for these disparities can be inferred, and further research, such as follow up interviews, would provide greater insight. The majority of findings from this research are in line with those of the Literature Review. In addition to the expected results – the presence of nature, lighting and participants' loved ones, and control over their setting – the research also found a strong preference for mindfulness activities, animals, and comforting food and drinks.

The objectives of this research were to identify aspects of design that are beneficial to mental wellness, and to allow for the effective design of a mental health support hub. Mental health is, in and of itself, important. It has a large impact on people's day-to-day life, as well as their physical health and the mental health of those they interact with. It is the responsibility of a designer to, at the very least, design somewhere that has a neutral effect on mental health, though ideally a beneficial environment should be created. This research highlights ways in which this might be achieved and considers how applicable they could be to different users. The first hurdle in providing mental health support is ensuring that potential users feel safe and welcomed into the space, to encourage them to seek help. Feeling safe and at ease in the space is vital to the healing process, and these additional themes from the primary research give a more in-depth understanding into what people find comforting and inviting, which helps to engage users.

"ensuring that potential users feel safe and welcomed into the space, to encourage them to seek help"

There are multiple ways this information can be implemented in the design of a mental health support hub, as was one of the goals of this study, and also in general interior and spatial design. A hub where people can come together allows them to create a support network, providing opportunities to socialise with others, and reducing the

feeling of isolation that is a common effect of mental health problems (Mind, 2023). Most participants wished to interact with close friends and loved ones, without the imposition of strangers or people they would have to cater for, so providing privacy within social areas is important. To build upon this inclusion of choice and control, retreat spaces should also be included, giving people the choice to exist amongst other people without the social pressure to interact, or providing opportunities for them to remove themselves from a situation if so desired.

> "all of these aspects should be incorporated into the design process, creating a holistic experience for the users"

This availability of choice should also go beyond socialising. The greatest cause of tension in the probe participants was caused by the different sounds present, with the background noise being mentioned negatively eight times. This can be overcome by including ways that users can have a choice over the lighting, sound, and size of space they are in. Many of these can conflict with each other, but by creating separate spaces, such as is done libraries which have group, quiet and silent spaces which give users more control over

the sounds present in their environment. There is also a happy medium to be found in terms of the visual aspects of the space. Participants wanted a place large enough to provide "space to be" (Probe Participant Three) without feeling exposed, but also small enough to be cosy without being claustrophobic. Visually, they also often wanted somewhere where decorations were neither over-stimulating, nor too bland to engage them. This can be done through the inclusion of art, as well as by mixing materials, textures and colour to create a welcoming and stimulating space.

Doing so creates ways for users to visually engage with the environment. This visual engagement can be augmented through the inclusion of opportunities for users to actively engage with their setting. This could be made possible through the addition of spaces that allow for mindfulness activities, such as reading, crafting and listening to music, as discussed in section 5.1, as well as various types of exercise. Physical activity aids in grounding the user in their body, creating a positive distraction (Ulrich, 1991). Giving users access to a variety of food and drinks, especially hot drinks, can also be a form of grounding, encouraging them to be physically present in the moment and momentarily diverted from larger concerns.

Finally, the findings of this project emphasise the importance of prioritising the inclusion

of nature and lighting, in both visual and auditory forms. This could be incorporated in a more literal way, by including more windows and real or artificial plants throughout a design, or more figuratively, by having nature soundscapes present throughout the space. Also, many research participants found the presence of animals to be soothing, so provided they do not make users feel uneasy nor cause auditory disturbances, it could also be beneficial to include areas where pets or other animals are welcome.

To fully design for mental wellness, all of these aspects should be incorporated into the design process, creating a holistic experience for the users. The way these aspects inform and interact with each other should be taken into consideration, for example the inclusion of windows and the need for control over lighting, or the presence of animals and the noise disturbances they could cause. All of these facets of design can come together to create an experience that has a positive effect on a user's mental health, in turn allowing them to have a positive impact on those around them.

6.2 Generalisability and Limitations

This study was limited by the restricted time available to gather data and analyse the findings, which resulted in a small participant pool. To compensate, efforts

were made to select a wide range of participants, helping to ensure that the findings are widely applicable and provide an indicative overview into the applicability of designing for mental wellness across different age groups.

For the conducting of the initial interviews five participants were selected because, as mentioned in section 4.3, this allows for proportionally maximising the amount of qualitative data that can be gathered whilst minimising the number of individual participants (fig. 17). It has been found that, within the context of qualitative design, results begin to repeat with greater than five participants (Nielsen, 2000). The interviewees in this study were a mix of genders, sexualities, employment backgrounds, and come from different income brackets. However, other factors limit the extent to which findings can be generalised. For example, all interviewees were white and cisgender, meaning that caution should be exercised if applying the findings to other ethnic or cultural groups, or to transgender people.

Eight of the eleven participants responded to the probe, and the pool of participants comprised a mix of genders and ethnicities, from varying cultural and employment backgrounds, and from different income brackets growing up. However, all the participants were middle class, there was only one queer probe participant, and,
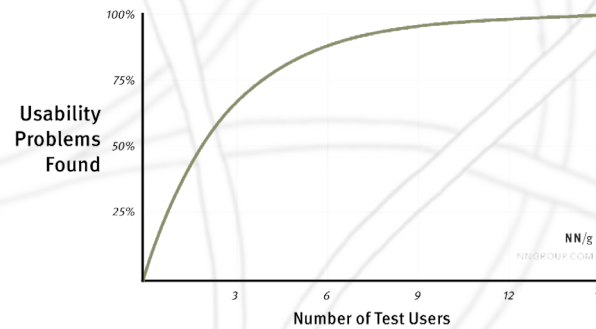

Fig. 17 – Graph of the Optimal Sample Size for Qualitative Usability Studies

as with the interviews, there were no transgender subjects. Though the research probe did include an audio element, it focused heavily on visual aspects of the environment. This was due to the lack of participants with a visual disability, though it does limit the inclusion of visual disabled participants if the study were to be re-run with the same data gathering methods.

This identified research gap highlights the limited research into different user groups. While this study has begun to address research into different age groups, further research is needed into other user groups. For increased generalisability, future studies should include participants with disabilities, of different sexualities and genders, and from a greater range of income brackets.

7.0

References

Literature and image
references

7.1 Literature References

Ankorm, S. (2022). The Risks of Using Alcohol to Relieve Anxiety. [online] Verywell Mind. Available at: https://www.verywellmind.com/using-alcohol-to-relieve-anxiety-2584210#:~:text=Alcohol%20depresses%20the%20central%20nervous [Accessed 23 Nov. 2023].

Caulfield, J. (2022). How to Do Thematic Analysis | Guide & Examples. [online] Scribbr. Available at: https://www.scribbr.co.uk/research-methods/thematic-analysis-explained/#:~:text=Thematic%20analysis%20is%20a%20method [Accessed 17 Nov. 2023].

Channel 4 (2020). How Architecture Impacts Our Mental Health. [online] www.youtube.com. Available at: https://www.youtube.com/watch?v=o8K-M2N_Rxs&list=WL&index=24 [Accessed 23 Sep. 2023].

Channon, B. (2022). The happy design toolkit : architecture for better mental wellbeing. London: RIBA Publications [Accessed 25 Sep. 2023].

Connellan, K., Gaardboe, M., Riggs, D., Due, C., Reinschmidt, A. and Mustillo, L. (2013). Stressed Spaces: Mental Health and Architecture. HERD: Health Environments Research & Design Journal, 6(4), pp.127–168. doi:https://doi.org/10.1177/193758671300600408.

Connelly, L.M. (2014). Ethical considerations in research studies. [online] Gale Academic OneFile Select. Available at: https://go-gale-com.napier.idm.oclc.org/ps/i.do?p=EAIM&u=napier&id=GALE|A360608990&v=2.1&it=r [Accessed 16 Nov. 2023].

Daykin, N., Byrne, E., Soteriou, T. and O'Connor, S. (2008). Review: The impact of art, design and environment in mental healthcare: a systematic review of the literature. Journal of the Royal Society for the Promotion of Health, [online] 128(2), pp.85–94. doi:https://doi.org/10.1177/1466424007087806 [Accessed 25 Sep. 2023].

Golembiewski, J.A. (2015). The Designed Environment and How it Affects Brain Morphology and Mental Health. HERD: Health Environments Research & Design Journal, 9(2), pp.161–171. doi:https://doi.org/10.1177/1937586715609562 [Accessed 27 Sep. 2023].

Hassan, M. (2023). Narrative Analysis – Examples, Methods, Guide. [online] Research Method. Available at: https://researchmethod.net/narrative-analysis/ [Accessed 18 Nov. 2023].

Hickman, C. (2005). The Picturesque at Brislington House, Bristol: The

Role of Landscape in Relation to the Treatment of Mental Illness in the Early Nineteenth-Century Asylum. Garden History, 33(1), p.47. doi:https://doi.org/10.2307/25434156 [Accessed 27 Sep. 2023].

Jager, J., Putnick, D.L. and Bornstein, M.H. (2017). More than Just Convenient: the Scientific Merits of Homogeneous Convenience Samples. Monographs of the Society for Research in Child Development, [online] 82(2), pp.13–30. doi:https://doi.org/10.1111/mono.12296 [Accessed 17 Nov. 2023].

Joseph, A. (2006). The Impact of Light on Outcomes in Healthcare Settings. psnet.ahrq.gov. [online] Available at: https://psnet.ahrq.gov/issue/impact-light-outcomes-healthcare-settings [Accessed 17 Nov. 2023].

Lindgren, B.-M., Molin, J., Lundström, M., Strömbäck, M., Salander Renberg, E. and Ringnér, A. (2018). Does a new spatial design in psychiatric inpatient care influence patients' and staff's perception of their care/working environment? A study protocol of a pilot study using a single-system experimental design. Pilot and Feasibility Studies, 4(1). doi:https://doi.org/10.1186/s40814-018-0383-4 [Accessed 26 Sep. 2023].

Liu, W., Ji, J., Chen, H. and Ye, C. (2014).

Optimal Color Design of Psychological Counseling Room by Design of Experiments and Response Surface Methodology. PLoS ONE, 9(3), p.e90646. doi:https://doi.org/10.1371/journal.pone.0090646 [Accessed 26 Sep. 2023].

Martín López, L. and Fernández Díaz, A.B. (2022). Interior Environment Design Method for Positive Mental Health in Lockdown Times: Color, Textures, Objects, Furniture and Equipment. Designs, 6(2), p.35. doi:https://doi.org/10.3390/designs6020035 [Accessed 28 Sep. 2023].

Mind (2017). Mental health facts and statistics. [online] Mind. Available at: https://www.mind.org.uk/media-a/2958/statistics-facts-2017.pdf [Accessed 8 Dec. 2023].

Mind (2023). Loneliness. [online] Mind. Available at: https://www.mind.org.uk/information-support/tips-for-everyday-living/loneliness/about-loneliness/#:~:text=But%20having%20a%20mental%20health,Have%20low%20self%2Desteem [Accessed 8 Dec. 2023].

Murphy, J. (2006). Cultural Probes: Understanding Users in Context User Experience Magazine. [online] uxpamagazine.org. Available at: https://uxpamagazine.org/cultural_probes/ [Accessed 17 Nov. 2023].

Nielsen, J. (2000). Why You Only Need to Test with 5 Users. [online] Nielsen Norman Group. Available at: https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/ [Accessed 30 Nov. 2023].

Nijman, H.L.I. and Rector, G. (1999). Crowding and Aggression on Inpatient Psychiatric Wards. Psychiatric Services, 50(6), pp.830–831. doi:https://doi.org/10.1176/ps.50.6.830.
Platt, L.S., Bosch, S.J. and Kim, D. (2017). Toward a Framework for Designing Person-Centered Mental Health Interiors for Veterans. Journal of Interior Design, 42(2), pp.27–48. doi:https://doi.org/10.1111/joid.12095 [Accessed 27 Sep. 2023].

Quinlan, P., Lane, J. and Aspinall, L. (1997). Effects of hot tea, coffee and water ingestion on physiological responses and mood: the role of caffeine, water and beverage type. Psychopharmacology, 134(2), pp.164–173. doi:https://doi.org/10.1007/s002130050438 [Accessed 8 Dec. 2023].

Shantikumar, S. and Barratt, H. (2018). Methods of Sampling from a Population. [online] Health Knowledge. Available at: https://www.healthknowledge.org.uk/public-health-textbook/research-methods/1a-epidemiology/methods-of-

sampling-population [Accessed 18 Nov. 2023].

Sociology Group (2019). Advantages and Disadvantages of Interview in Research. [online] Sociology Group. Available at: https://www.sociologygroup.com/advantages-disadvantages-interview-research/ [Accessed 17 Nov. 2023].

Taheri, Z. (2019). Studying the Effect of Classroom Interior Design on the Happiness and Mental Health of the Female Adolescent Students. J Biochem Tech, [online] (2), pp.138–148. Available at: https://jbiochemtech.com/storage/models/article/ccTu5c0e1bXxJe0xVE1O6m5WHAdBur3LFe47OTYdvlot6Wi65RQMVicyc7JX/studying-the-effect-of-classroom-interior-design-on-the-happiness-and-mental-health-of-the-female-.pdf [Accessed 9 Oct. 2023].

Ulrich, R.S. (1991). Effects of interior design on wellness: theory and recent scientific research. Journal of Health Care Interior Design: Proceedings from the ... Symposium on Health Care Interior Design. Symposium on Health Care Interior Design, [online] 3, pp.97–109. Available at: https://www.researchgate.net/publication/13173950_Effects_of_interior_design_on_wellness_Theory_and_recent_scientific_research [Accessed 6 Oct. 2023].

Vetch, J.A. (2011). Workplace Design Contributions to Mental Health and Well-Being. [online] ResearchGate. Available at: https://www.researchgate.net/publication/44091627_Workplace_Design_Contributions_to_Mental_Health_and_Well-Being [Accessed 8 Oct. 2023].

Woodger, M. (2022). Webinar: Architecture for Health and Wellbeing. [online] The RIBA Journal. Available at: https://www.ribaj.com/products/pip-webinar-series-architecture-for-health-and-wellbeing [Accessed 25 Sep. 2023].

7.2 Image References

Eskenazi Health (2014). 'Paths Crossed' by Aaron Stevens. NBC News. Available at: https://www.nbcnews.com/health/health-news/healing-power-art-can-hospital-collections-help-n208966 [Accessed 18 Nov. 2023].

Gebesa (n.d.). Office desks with privacy screens. Gebesa. Available at: https://blog.gebesa.com/configuraciones-de-mobiliario-para-oficina-segura [Accessed 19 Nov. 2023].

Nielsen, J. (2000). Graph of the optimal sample size for qualitative usability study. [Graph] N N Group . Available at: https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/ [Accessed 30 Nov. 2023].

Richardson, M. (2021). How can 'nature connectedness' improve wellbeing for people and nature? What Works Wellbeing. Available at: https://whatworkswellbeing.org/blog/how-can-nature-connectedness-improve-wellbeing-for-people-and-nature/ [Accessed 18 Nov. 2023].

Stuck, N. (2020). Circadian rhythm diagram. CloudMinded. Available at: https://cloud-minded.de/magazin/zirkadianer-rhythmus/ [Accessed 19 Nov. 2023].

8.0

Appendix

Full transcripts of the interviews and probe replies

8.1 Interview Transcripts

Interview One Transcript

Participant Background:
Undergraduate Student, Age 21
Interview Location:
The Jack Kilby Computing Centre

Interviewer: So, the goal of the interview is to find environmental factors that help people relax and de-stress, over different age groups. So we've got six questions, and then it's just a chat.
Participant: Nice
Interviewer: So you're going to imagine a little place and it'll be the best, most relaxing, de-stressful place you can imagine. It doesn't need to be realistic in any way
Participant: Okay
Interviewer: And we're just going to build it in your head. So what kind of place is it? Is it a public building, private, in a living room or bedroom? Outdoors or indoors?
Participant: It's outdoors-y, open space
Interviewer: Like a garden, like a park?
Participant: Like a beach but it's just to myself, there's no one else there
Interviewer: A private beach
Participant: Doesn't necessarily need to be my beach but it's a secret spot on a beach.
Interviewer: Okay, nice. And how big is this beach? Can you see for miles, or is it intimate and enclosed?
Participant: A mile or two long so I can walk along it

Interviewer: So very big and open but it's just you
Participant: Very sandy
Interviewer: And then the next one is 'how busy is it' but you're on your own
Participant: Silent, I want no-one else there. Maybe like-
Interviewer: How about animals
Participant: Yeah, like a dog, couple of dogs
Interviewer: What were you going to say?
Participant: The only person I would want there is my best mate
Interviewer: Nice. Okay, what kind of colours and stuff are there?
Participant: A nice blue. Like a clear sky blue, yellow-y sand, reasonably green grass on the dune. We're talking sun setting slightly so it's a little bit pink. Not fully setting but like 'red sky at night, shepherd's delight' kind of thing.
Interviewer: And what can you hear?
Participant: The ocean, a coupe of seagulls, the dogs running through the ocean. Silence.
Interviewer: Silence but nature.
Participant: Silence but nature. Maybe if my best friend's there some jokes with my best friend.
Interviewer: Nice. And what sort of stuff are you doing on the beach?
Participant: Just walking up and down it, maybe go for a dip, paddle my feet in the water.
Interviewer: It can be anything at all, it doesn't need to be beach things.

Participant: Doesn't need to be beach things.

Interviewer: You could be playing video games in the middle of this beach if you want – it's an imaginary space, it doesn't need to be realistic.

Participant: Yeah, but that's still what I'd do. That's all I'd do

Interviewer: You don't want to change it, okay.

Participant: That's the most relaxing thing for us

Interviewer: Just going swimming and walking on the beach

Participant: Yeah

Interviewer: Chatting with your friends. Going surfing?

Participant: I could go surfing but the thing with surfing is

Interviewer: It's not always relaxing?

Participant: It's not relaxing depending on the weather. Like if it's really small waves it's really relaxing to paddle about and splash about but, y'know, it's not relaxing if you nose-dive on a wave. D'you know what I mean?

Interviewer: So, you want the option but you don't have to?

Participant: Yeah, I want to go body boarding, more than surfing, because the waves will probably be smaller and more controlled.

Interviewer: Nice. Is there any other stuff you would have in the space? Anything you want to elaborate on?

Participant: A tennis ball for the dogs. And maybe I would bring – I would have a little camp-fire. A cup of tea, a sandwich – tuna sandwich specifically, like I had when I was little. Custard cream. Yeah, about that. Nice, chilled, relaxed.

Interviewer: Nice, relaxed, very peaceful.

Fig. 7 – Participant One's Scene

Interview Two Transcript

Participant Background:
Mature Undergraduate Student, Age 27
Interview Location:
B22b Mezzanine

Interviewer: So the aim of the research, the interview and stuff, is to find things that relax/de-stress people and see if the same things are applicable to different age groups

Participant: Okay

Interviewer: You're going to imagine the best most relaxing, de-stressful space. It doesn't need to be realistic, there can be anything in it. And we're just going to build the little place and that's it.

Participant: Okay, that's cool.

Interviewer: So, you start imagining it – where are you? Is it public, private, indoors, outdoors?

Participant: Private

Interviewer: Is it in your home–

Participant: Yeah, probably

Interviewer: A family home, somewhere else? Is it a specific room?

Participant: I think, private, my home, or maybe an outdoor garden space that's private I think.

Interviewer: So like your living room connected to your garden or something?

Participant: Yeah, or a balcony space or something.

Interviewer: Okay. And how big is it? Cosy, intimate, or the size of this [gestures to room interview is taking place in].

Participant: Definitely just four or five square metres. Pretty small, cosy.

Interviewer: How busy is it? Is it just you, do you have friends over?

Participant: For relaxation I'd probably say–

Interviewer: For being relaxed and de-stressed

Participant: I'd say that's different from fun for me, so for trying to de-stress, by myself, if not maybe with Jade [wife]. But yeah, probably mostly myself, and coffee or tea and music, and soft furniture.

Interviewer: Soft things.

Participant: Yes.

Interviewer: And what kind of colours are you– are you? Are there?

Participant: Neutral tones, lots of neutral

tones, and greens. And a lot of plants.

Interviewer: Warm neutrals, cold neutrals?

Participant: Warm neutrals definitely, yeah, like this. For the record I am pointing to a cream bit of mount board.

Interviewer: Thanks, I was about to do that. And what can you hear? You said there's music, so what kind of music?

Participant: Lo-fi is kind of chill for me, I like some lo-fi stuff, not necessarily with lyrics. Depends on the mood I'm in.

Interviewer: Anything else?

Participant: Like music-wise?

Interviewer: Just anything else you can hear.

Participant: If I could be in an ideal chilled out paradise kind of situation, definitely birds chirping, trickle of water, waterfall.

Interviewer: Yeah, it doesn't need to be realistic, it's not your actual home.

Participant: My gran has a lodge up in Dunfermline and it's on the river, it's just the most chill place in the world, that looks out to trees and forest, and you can hear the river going past. Yeah, that for me is peak- peak chill.

Interviewer: Peak chill, nice. And what are you doing in the space?

Participant: Like I say, probably a cup of tea, listening to music, maybe would be reading if I'm trying to chill out. If I'm perfectly honest I'm probably on my phone or something like that. Watching something, but mostly just- if I'm trying to chill out I like to listen to music and not much else.

Interviewer: Nice, anything else you would

want in the space? Anything at all.

Participant: A cat. Specifically my cat. But I would also take a dog, because I love dogs. But if I could have my cat chilling with me that would be great, he's a good cat.

Fig. 8 – Participant Two's Scene

Interview Three Transcript

Participant Background:
Self-Employed, Age 28
Interview Location:
Virtual – Their parent's living room and a library study room

Interviewer: So, basically how it is is a semi-structured interview. So I have six or seven questions, and then it's just a chat. So the point of the interview and the research is to find ways that people can relax and de-stress in their environment. So we're going to do a little imagining, and you're going to imagine the most relaxing, de-stressful place ever.

Participant: Oh god.

Interviewer: Doesn't need to be realistic or even in the real world. It can be literally anything, and the questions are going to walk you through imagining the place.

Participant: Okay, right.

Interviewer: I've done two of these already, and it's very relaxing to do.

Participant: Okay, love it.

Interviewer: First, what kind of setting is it? Is it indoors, outdoors, public, private, that kind of stuff.

Participant: Ooh. I was thinking private, yeah. And I was also thinking indoors, though outdoors is also nice. So I was thinking private indoors.

Interviewer: Okay, so private indoors, like is it your home, your parent's home, a friend's house?

Participant: Yeah, it was a home, homey kind of environment certainly. And I like things that are mine because that means you can have a little bit more control over what it's like and what everything inside is. Although I suppose since it's imaginary I have ultimate control over that already.

Interviewer: Yeah, you could be like 'this is my private restaurant' if you wanted to

Participant: 'This is my parents house but I have modelled it specifically after my taste'.

Interviewer: Yes, so it's like your home, private, indoors. How big is it? Is it a room, is it the whole space? Is it really big, is it cosy and intimate?

Participant: Oh yeah, not big, I just was thinking of 'a room', so I suppose it has the connotations of other spaces but it's just a

living room. Just chilling.

Interviewer: Nice, and how busy is it? Are you on your own? Do you have friends, family, pets?

Participant: Ooh, um

Interviewer: Random strangers?

Participant: In this present imaginarium I was thinking on my own, but I like the idea.

Interviewer: What do you think would be more relaxing? More de-stressful? On your own? Or other people?

Participant: This is tough. It depends on the people.

Interviewer: Well you get to choose the people.

Participant: Shoot, you're right, I've got too many options. So many delightful people. I think yeah, it's nice to have other folk around certainly. As long as they're close enough individuals that they don't need to be catered to. They need a drink, they go to the imaginary kitchen and get it themselves.

Interviewer: People that are there as friends, not as guests.

Participant: Precisely.

Interviewer: So they're not your responsibility. What kind of colours are in the space? Like warm tones, cool tones, neon, pastel?

Participant: Certainly not neon. What were the other options?

Interviewer: They could be warm tones, cool tones, pastel, neutral...

Participant: Warm tones and probably a neutral. I like a wood-y kind of-

Interviewer: Like a natural material?

Participant: Yeah, certainly.

Interviewer: And what sounds can you hear?

Participant: Oh, I was- if folks are over then I can hear just chatter. Just chatter. And music on in the background, that would be lovely.

Interviewer: What kind of music?

Participant: [Noise of indecisiveness] I've been listening to my Daylist a lot so it's hard because it just decides for me. For example, this morning it was Broadway musicals, which as great. Oh! I tell you – I really like music that I can sing along to. Songs that have a really good tune that sticks in your head. Or a high voice, love a high voice.

Interviewer: Okay

Participant: And according to Baptie I really love songs where the singer has good diction. I like good pronunciation in my music – I did not know that until he pointed it out, but he's not wrong!

Interviewer: What are you doing? Are there activities? Are you talking, playing games, are you reading?

Participant: Weirdly, you'd think I'd be imagining us playing games, but truly wasn't.

Interviewer: What?!

Participant: Just chit-chatting. Chatter sounds nice.

Interviewer: Is there anything else you would like in the space? Anything else you've been imagining?

Participant: Oh, in case it wasn't clear there's a bunch of plants. Just so many plants, love me some plants. I keep on propagating more, it's a problem.

Interviewer: A few people have mentioned food or drink. Food or drink?

Participant: Oh, I love my teas. If I could get all my friends in one room and ply you guys with teas that would be an excellent day. I got a new tea pot recently and it's cute as heck, but I've not been able to utilise it with guests yet. And maybe Parker [friend's cat] would be there. I just had Parker for a month, so maybe Parker or anther feline of some capacity.

Interviewer: Okay, cool, anything else at all?

Participant: I don't know, I'm trying to think. I like some pictures on the wall, some art, some nerdy shit. Some fairy lights, so probably some of those too. So probably that and then twelve times as many.

Fig. 9 – Participant Three's Scene

Interview Four Transcript

Participant Background:
PhD Student, Age 28

Interview Location:
Virtual – Their living room and B22b Mezzanine

Interviewer: Basically, what the research is looking is what things people find in their environment to be relaxing and de-stressful. So I've got six, seven, and we're going to build an imaginary environment, that doesn't need to be realistic in anyway, and make the prefect relaxing, de-stressing situation. Does that make sense?

Participant: Yes

Interviewer: Okay, cool. SO first. What kind of setting are we in? Is it public, private, indoors, outdoors?

Participant: Private.

Interviewer: Okay. Indoors, outdoors?

Participant: When I'm answering these questions am I meant to be answering them in terms of what– I'm creating a setting that I find relaxing?

Interviewer: Yeah, for you personally.

Participant: Indoors. I wouldn't have said massive, so not a big school gym, but more a cosy living room scenario.

Interviewer: Okay. Um, that's the second question, it was 'how big is the space?'–

Participant: Oh, sorry.

Interviewer: And you have said that it is cosy.

Participant: Yeah, not small enough to touch all the walls and feel enclosed, but not so big that–

Interviewer: So kind of like your actual living room?

Participant: Yeah, I like my living room a lot.

Interviewer: So how busy is it. Is it just you, are there a lot of people with you? Friends, family, pets?

Participant: I would say if we went above three or four people I would start to get uncomfortable.

Interviewer: So what would you find the most relaxing? Do you want to be on your own, do you want there to be people there?

Participant: Oh no, I like a couple of people there.

Interviewer: Okay, couple people. Any pets or animals or anything there?

Participant: I find cats relaxing, so some small fuzzy animals would be good.

Interviewer: This is the fourth interview and your the fourth person to be like 'I want there to be animals'.

Participant: They are very relaxing.

Interviewer: So you, couple people, some animals. What sort of colours are there? Are they warm or cold, very bright, pastel, neon? What's the colour palette here?

Participant: What would you call the colour palette that's you traditional primary school colours? Like your bright blue, red, green and stuff.

Interviewer: So like bright, bold colours?

Participant: Yes.

Interviewer: Yes.

Participant: That kind of colours.

Interviewer: So specifically primary colours, or that tone?

Participant: Primary-school tone, and I like a mix of colours, warm and cold, so long as they're not terribly placed next to each other.

Interviewer: You're not having your bright red and your bright green on top of each other.

Participant: Yeah, to have a permanent Christmas living room or something. But a mix of bright bold colours, that make you smile when you look at it.

Interviewer: So like cheerful. Okay, and what can you hear?

Participant: I love the sound of rain. Drumming against windows, the tops of cars. The steady tippity-tap on rain is very relaxing.

Interviewer: And if there's people are they talking, or is it just the rain that you can hear?

Participant: I think they would be doing quiet activities. So minimal or no sounds, like reading a book. I find when Will [fiancé] plays video games the sounds are quite relaxing, something like that so it's not a big conversation, because conversations are distracting, but it's quiet and peaceful, and doing your own thing together.

Interviewer: Nice, okay. And then the next question is 'what activities are you doing?'. What's happening in the space?

Participant: Reading, I like reading a lot in the living room. I do a lot of writing in the living room, I do most of my D&D prep through there. I love crafting when

I'm relaxed and chilled out, so painting, sewing, something that keeps my hands busy. While there's maybe something on the TV or Will's playing video games or something.

Interviewer: Nice, and is there anything else at all that you would like to have in the space. Other people have mentioned food or drink, plants, music, anything like that? Anything else you would want to have?

Participant: Many many soft things.

Interviewer: Okay.

Participant: Like cushions, there should be a soft squishy sofa. Not only because it's really peaceful, and you can sit and snuggle into them with a book and things like that, but also because they absorb heat and sound and things, and drown out your neighbours and keep the heat in.

Interviewer: Anything else at all to add?

Participant: The lighting shouldn't be too bright. So I don't like white lighting.

Interviewer: So warm white instead of cool white?

Participant: So like the university is almost always cool light and it gives me headaches, and it makes me anxious a lot. I hate supermarket lights for the same reason. So when I buy bulbs I always buy warm light because it gives a 'and now we relax' kind of feeling in your home.

Fig. 10 – Participant Four's Scene

Interview Five Transcript

Participant Background:
Full-time Employment, Age 29
Interview Location:
Virtual – Their room at their work home and the interviewer's room

Interviewer: So, the aim of the research and interviews and stuff is to look at relaxing and de-stressing, and look at if different environments – different de-stressing factors in different environments have the same emotional reaction in different age groups. So we're going to imagine what your perfect relaxing, de-stressing environment would be. So there's seven questions and we're just going to imagine the place. And it doesn't need to be realistic or anything, so you could have a totally private restaurant just for you, or be on the beach playing video games without electricity somehow. It doesn't need to be realistic, just an ideal scenario. So first, what kind of setting is it in? Public or private, indoors or outdoors, that kind of thing.

Participant: Ooh, two things jump out to me. Be at home in my living room playing video games is definitely there, but also I really do like being laid out on a beach.

Interviewer: So what do you think would be more relaxing – being in your living room or being at a beach?

Participant: Uhm, are you trying to get to–

Interviewer: We're trying to build one little scene

Participant: Right. What would be most relaxing? Let's go for the beach.

Interviewer: Okay, so you're on a beach, so you're outside. How big is this beach? Is it a little cove area, is a really big, miles long, you could walk for ages kind of thing? What sort of beach?

Participant: Big beach. A very big beach.

Interviewer: Sandy, pebble-y?

Participant: Sandy. Oh, definitely sandy.

Interviewer: Okay, biiiig sandy beach. How busy is it?

Participant: Uhh..

Interviewer: Just you? Lots of people? A couple of friends? Some animals?

Participant: Ooh, a couple of friends, yeah, a small amount of people, maybe some animals, yeah.

Interviewer: Like random animals or like pet animals?

Participant: Non-hostile animals.

Interviewer: Pardon?

Participant: Ones that aren't going to try an eat me.

Interviewer: Non-hostile animals. Any non-hostile animals.

Participant: Yeah, sure like there could be a giraffe or an elephant.

Interviewer: You find giraffes and elephants relaxing?

Participant: Fair point. No, no animals then.

Interviewer: No animals. Not even pets?

Participant: I've never had a pet.

Interviewer: Fair enough then.

Participant: I had a goldfish as a pet, that was about it.

Interviewer: D'you want your goldfish?

Participant: No.

Interviewer: Okay. What sort of colours are there that you can see? And it doesn't need to be realistic, it can be any colours, just what would be relaxing.

Participant: A nice kind of bright, warm yellow. Not a kind of dark volcanic sand, like a white sandy beach. Really vivid blue sky, and lots of green as well, like if there was a lot of nature around.

Interviewer: Nice. And what can you hear?

Participant: Gently crashing waves.

Interviewer: Nice. Anything else? Like if there are people can you hear the people talking? Are there nature sounds from all the greenery and trees that you said?

Participant: There's a nearby beach bar playing music, but it's slightly muffled with the chatter and laughter of patrons. But it's a little ways away, it's right there.

Interviewer: Nice. What are you doing on the beach?

Participant: Sunbathing, or reading a book, or building a sandcastle.

Interviewer: Nice.

Participant: If I had to pick one, probably the sandcastle.

Interviewer: Okay, and is there anything else you would want to be there? Anything at all?

Participant: Anything else, ooh.

Interviewer: Like any activities, or some people have talked about food or drink. Specific kinds of furniture, or plants, or textures?

Participant: Ehh, yeah, I think a nice cold drink from the little beach bar nearby. And a nice kind of beach camp. Like a deck chair, your bucket and spade, a big parasol for sun shade, plenty of towels out on the sand.

Interviewer: Anything else at all you'd want to add?

Participant: No, that's pretty perfect I'd say.

Fig. 11 – Participant Five's Scene

8.6 Probe Results

Probe Participant One

Participant Age: 62

Scene 1

What emotions did you feel from viewing this scene?
Warm, pleasant, satisfied, happy

What aspects of the scene contributed to these emotions?
The outdoor scenery, the dog, the fire, the mugs, the relaxed people, natural sound, potential for chatting round the fire.

Scene 2

What emotions did you feel from viewing this scene?
Not as relaxed as the previous one but fairly relaxed, at ease.

What aspects of the scene contributed to these emotions?
White walls a bit cold, esp the tiled wall. Fire not glowing. If we're to comment on the music – not too intrusive but not my taste. Comfy seats, plants, cuppas, coffee table, rug.

Scene 3

What emotions did you feel from viewing

this scene?
Comforted, relaxed, happy, at ease.

What aspects of the scene contributed to these emotions?
Pleasant décor, very neutral, but warmer tones than previous, so more relaxing. The décor is well-maintained as well, so no shabbiness that would jar you. The people are sitting side by side. The tea pot, plants, the view from the window, ornaments.
If we're to comment on the music – too intrusive.

Scene 4
What emotions did you feel from viewing this scene?
Fairly comfortable, fairly relaxed, but a little more stimulated.

What aspects of the scene contributed to these emotions?
Much greater view of pleasant outdoor scenery with outside access on a nice day. Books, soft 'coffee table', flowers and plants nice but the seating seems slightly less plush than the previous ones and the style of decor less coherent, brighter colours. Not sure what the incongruous background noise was – sounded like fire but there wasn't one.

Scene 5
What emotions did you feel from viewing this scene?

I'm in holiday mode! Anticipating going off to do some sight-seeing or the beach bar.

What aspects of the scene contributed to these emotions?
The beach, bright sunshine, friends chatting with ice creams, palm trees.

Probe Participant Two

Participant Age: 55

Scene 1
What emotions did you feel from viewing this scene?
Sense of relaxation, being warm and enjoying a relaxed evening, also sense of being healthy

What aspects of the scene contributed to these emotions?
The space of the beach, sunset, the dog nearby to play with and walk, and the fire, warm drinks and sound of the sea

Scene 2
What emotions did you feel from viewing this scene?
Sense of claustrophobia, busyness

What aspects of the scene contributed to these emotions?
A lot going on in a small space, lots to do and pay attention to – cat, plants, coffee

cups. White walls feel quite cold

Scene 3
What emotions did you feel from viewing this scene?
Relaxed, warm, welcoming

What aspects of the scene contributed to these emotions?
Fairy lights, cream and muted colours, big plush sofa

Scene 4
What emotions did you feel from viewing this scene?
Relaxed, friendly, welcoming

What aspects of the scene contributed to these emotions?
Big windows with lots of greenery, warm colours and comfy furniture, fairy lights, knitting

Scene 5
What emotions did you feel from viewing this scene?
Sense of fun, relaxed, warm, enjoyment

What aspects of the scene contributed to these emotions?
On a beach, sunny day, chatting with people, ice cream, sandcastle, blue sea and sky

Probe Participant Three

Participant Age: 62

Scene 1

What emotions did you feel from viewing this scene?
Relaxed, chilled. Fun time. Cosy by the fire

What aspects of the scene contributed to these emotions?
Dog, beach, sunset, fire, drinks, ball, birdsong

Scene 2

What emotions did you feel from viewing this scene?
Uncertain. Is man angry? Claustrophobic. Cold. Confusing sounds

What aspects of the scene contributed to these emotions?
Cluttered, monochrome

Scene 3

What emotions did you feel from viewing this scene?
Harmonious. Comfortable. Soothing

What aspects of the scene contributed to these emotions?
Fairy lights. plumptious cushions, music

Scene 4

What emotions did you feel from viewing this scene?
Relaxed, because there is space to be

What aspects of the scene contributed to these emotions?
Greenery. Big windows

Scene 5

What emotions did you feel from viewing this scene?
Relaxed, happy

What aspects of the scene contributed to these emotions?
Space sea, greenery

Probe Participant Four

Participant Age: 63

Scene 1

What emotions did you feel from viewing this scene?
Calm & Relaxed. But also feel like I am intruding on someones private time.

What aspects of the scene contributed to these emotions?
Being by the sea, a quiet environment with few people

Scene 2

What emotions did you feel from viewing this scene?
Chilled and relaxed

What aspects of the scene contributed to these emotions?
Everyone seems calm, including the cat. The plants add to that aspect.

Scene 3

What emotions did you feel from viewing this scene?
Calm and relaxed

What aspects of the scene contributed to these emotions?
What's more calming than listening to music while having a cup of tea in a pleasant environment with greenery.

Scene 4

What emotions did you feel from viewing this scene?
I'm getting a common room vibe. Pleasant, though may be conducive to more work-related conversations.

What aspects of the scene contributed to these emotions?
Small private groups. Pages being turned, bright well-lit environment.

Scene 5

What emotions did you feel from viewing this scene?
Relaxed party vibe; just out with friends on the beach

What aspects of the scene contributed to these emotions?
The location and the group of friends.

Probe Participant Five

Participant Age: 58

Scene 1

What emotions did you feel from viewing this scene?
calming, less anxious & letting go of anxiety and tension

What aspects of the scene contributed to these emotions?
going for a walk with on the beach with the dog, weather, being outdoors, sound of the waves, fire gives comfort

Scene 2

What emotions did you feel from viewing this scene?
relaxed

What aspects of the scene contributed to these emotions?

greenery/plants, comfy sofa, sound of water makes you feel more relaxed

Scene 3

What emotions did you feel from viewing this scene?
indifferent/bland

What aspects of the scene contributed to these emotions?
bland

Scene 4

What emotions did you feel from viewing this scene?
chilled

What aspects of the scene contributed to these emotions?
felt connected to nature, open to the outside, comfortable seating, homely

Scene 5

What emotions did you feel from viewing this scene?
relaxed

What aspects of the scene contributed to these emotions?
sandy beach, sunshine, sound of the waves coming up the beach, having ice cream, socialising with friends

Probe Participant Six

Participant Age: 68

Scene 1

What emotions did you feel from viewing this scene?
Irritated

What aspects of the scene contributed to these emotions?
Distracting and inconsistent background noise

Scene 2

What emotions did you feel from viewing this scene?
Relaxed

What aspects of the scene contributed to these emotions?
Soothing music

Scene 3

What emotions did you feel from viewing this scene?
Confusing

What aspects of the scene contributed to these emotions?
Distracting and confusing background talking

Scene 4

What emotions did you feel from viewing this scene?
Irritated

What aspects of the scene contributed to these emotions?
Noise in background

Scene 5

What emotions did you feel from viewing this scene?
Happy and friendly

What aspects of the scene contributed to these emotions?
Scene and music are in sync with each other

Probe Participant Seven

Participant Age: 59

Scene 1

What emotions did you feel from viewing this scene?
I feel happy and free; energised ; mellow.

What aspects of the scene contributed to these emotions?
Sense of space and nature sounds, energetic dog having fun, serene evening scene

Scene 2

What emotions did you feel from viewing this scene?
Confused, cold, claustrophobic

What aspects of the scene contributed to these emotions?
Emotional ambiguity of the personal interaction, no outside view, stark and monochromatic colours. Conflict between soothing sounds of water/birdsong and intrusive/annoying music

Scene 3

What emotions did you feel from viewing this scene?
Relaxed, uplifted, optimistic

What aspects of the scene contributed to these emotions?

Bright and light comfortable room, body language/postures, fun lighting, chilled out music

Scene 4

What emotions did you feel from viewing this scene?
Hemmed in, a bit sad/melancholy, nostalgic

What aspects of the scene contributed to these emotions?
Mix of styles, rainfall, closed horizon albeit

elevated to treetop level, darker furnishing and clothing

Scene 5

What emotions did you feel from viewing this scene?
Relaxed, sleepy, carefree

What aspects of the scene contributed to these emotions?
Sound of waves, beautiful scenery, holiday vibe

Probe Participant Eight

Participant Age: 57

Scene 1

What emotions did you feel from viewing this scene?
Happy, peaceful, slightly distracted

What aspects of the scene contributed to these emotions?
Outside, playing with a dog, fresh air but chat in the background

Scene 2

What emotions did you feel from viewing this scene?
Bit stressed, intimidated, depressed (by large TV), confined

What aspects of the scene contributed to these emotions?
Too much in the room, too cluttered, nice music not enough to overcome this

Scene 3

What emotions did you feel from viewing this scene?
Calm, relaxed, slightly threatened by lamp!

What aspects of the scene contributed to these emotions?
Muted colours, music + low level chat, plants

Scene 4

What emotions did you feel from viewing this scene?
Energised, positive, sociable

What aspects of the scene contributed to these emotions?
Light + space, vibrant colours, plant inside + out, noise only slightly strange

Scene 5

What emotions did you feel from viewing this scene?
Sociable, relaxed, playful

What aspects of the scene contributed to these emotions?
Outside, lots of people, nature, sunshine