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Master Thesis
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**Urban Green Space Interaction and Wellbeing – Investigating
the Experience of International Students in Berlin During the
COVID-19 Pandemic**

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Hiermit erkläre ich, dass ich die vorliegende Arbeit selbstständig und eigenhändig sowie ohne unerlaubte fremde Hilfe und ausschließlich unter Verwendung der aufgeführten Quellen und Hilfsmittel angefertigt habe.

Berlin, den 23. März 2021



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Abstract

This thesis explores the topic of mental health/wellbeing with reference to exposure to urban green space, with a specific focus on the experiences of international students and expats (i.e. those who recently completed their studies) in Berlin during the COVID-19 pandemic. It builds on existing research and theoretical foundations, to investigate whether the unique situation brought about by the lockdown, and its associated uncertainties and pressures, led the participants in this thesis to interact with green space in a different way. Semi-structured interviews allowed for stories, experiences and emotions to unfold, which revealed that the participants' perceptions of green space changed during this time, as they gained an appreciation for its potential to improve their wellbeing. The thesis also explores some of the new use patterns of green spaces that have emerged, and discusses how the unique pandemic situation intensified the view of urban green spaces as a valuable resource for public health.

Zusammenfassung der Masterarbeit

Diese Masterarbeit untersucht das Thema ‚Psychische Gesundheit/Wohlbefinden in Bezug auf Kontakt mit urbane Grünflächen‘. Der Fokus richtet sich speziell auf die Erfahrungen von internationalen Studenten und ‚Expats‘ in Berlin während der COVID-19-Pandemie. Die Arbeit baut auf bestehenden Studien und theoretischen Grundlagen auf, um zu untersuchen, ob die einzigartige Situation, die durch den Lockdown hervorgerufen wurde, und die damit verbundenen Unsicherheiten und Belastungen die Teilnehmer dieser Arbeit dazu veranlasste, anders mit Grünflächen umzugehen. Semistrukturierte Interviews ermöglichten die Erzählung von Geschichten, Erfahrungen und Emotionen, die zeigten, dass sich die Wahrnehmung der Teilnehmer von Grünflächen während dieser Zeit veränderte, da sie eine Wertschätzung für deren Potenzial zur Verbesserung ihres Wohlbefindens gewannen. Die Arbeit untersucht auch einige der neuen Nutzungsformen von Grünflächen, die während dieser Zeit entstanden sind, und erläutert, wie die einzigartige Pandemie-Situation die Sicht auf urbane Grünflächen als wertvolle Ressource für die menschliche Gesundheit intensivierte.

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List of Abbreviations

ART	Attention restoration theory
SRT	Stress reduction theory
UGS	Urban green space

1. Introduction

The past few decades have seen an increase in academic and public interest in the ways in which people live and thrive in cities. In the face of accelerating urbanisation and densification, it is important also to interrogate both how to live and how to live well – ensuring both physical and mental wellbeing for all. This intersection between urban design and public health has led to interdisciplinary research into how we can shape healthy and happy cities. A main focus has highlighted the importance of urban green spaces, defined as “all urban land covered by vegetation of any kind” (WHO, 2017; 2), such as parks and gardens. These have a profound impact on people’s wellbeing and are particularly effective in reducing feelings of loneliness and social isolation (Maas, J. et al, 2009). Whilst the majority of studies thus far have focussed on population groups traditionally seen as marginalised, such as the elderly or young children (Barbosa et al. 2007; Lee and Lee, 2019), this thesis aims to bring attention to the experience of young adults with an international background who are expats and are studying/have studied in the city of Berlin, Germany.

The year 2020 has posed a host of challenges across all aspects of life due to the COVID-19 pandemic. The largest secondary impacts have been “social isolation, increased stress and negative socioeconomic effects” (Peters et al. 2020; 861) as well as the spatial recalibration of daily life. Many young adults found themselves working or studying from home, whilst those far away from family and friends living in another country arguably suffered a double burden of social isolation. As the lockdown coincided with the spring semester break, many international students who planned to travel home were not able to. This population sub-group therefore became particularly vulnerable during the lockdown period because they were faced with a high level of uncertainty, which is “a powerful stressor [...] and contributes to ill health by arousing stress” (Yang et al. 2019; 2). In combination with pre-existing stressors amongst young adults living abroad such as, language barriers, financial concerns, or a lack of support network (Sherry et al. 2009), the added uncertainty and anxiety caused by the COVID-19 pandemic means that they are likely to have a higher need for psychological restoration and stress relief.

This thesis thus extends an existing body of research in this field to include the voices and experiences of a group of people who suddenly found themselves physically isolated, using face-to-face interviews to gather these stories. Based on my own experiences and the stories from people around me, I came to learn that urban green spaces may be of vital importance for remedying feelings of stress,

unhappiness, and anxiety fuelled by the pandemic-related restrictions. Through this research I therefore hope to add an additional layer of experience and emotion to the discussion surrounding green spaces and mental health, and to understand the ways in which perceptions, attitudes, and use-patterns towards these spaces changed over the course of this period.

The thesis is structured as follows: first, a comprehensive literature review will outline previous research conducted in the field of urban green space and mental health/wellbeing, present some of the theoretical foundations, and assess the current state of the research with a focus on research relating to the COVID-19 pandemic. A presentation of research gaps and opportunities then helps to frame the research questions of the thesis. Following on from that, the methodology chapter will discuss the methods used to collect and interpret the data for this thesis. The results will then be presented using direct quotes from the interview transcripts to let the data speak for itself. The following discussion chapter will then interpret this data further and relate back to the theories discussed in the literature review to see if they are evident in the data and relevant to the research context. This section will also present answers and reflections on the research questions – the main points of the research are then summarised in the conclusion. A copy of the interview template can be found in the appendix – the interview audio recordings as well as the transcripts are provided in a separate file alongside the thesis.

2. Literature Review

Broader reading of the existing literature helped inspire this research project and provided a theoretical framework in which to situate it. By reviewing and presenting the literature here, this chapter aims to provide an insight into the current state of the research. This will introduce the academic origins of this field, both in terms of publishing date and subject area, and assess the trajectory of current and future research. In turn, some of the fundamental theories that have emerged in the interdisciplinary field of mental health/wellbeing and urban green space (UGS) research will be covered to assess whether these are still relevant and practical for use. In reflection of the literature review the research questions/aims of this thesis will be introduced to illustrate how it fits into current research and why it is a relevant addition to the field.

2.1 Definition of Terms

2.1.1 Urban Green Space (UGS)

Before presenting relevant literature on the relationship between green space and mental health/wellbeing, it is important to concretely define these terms to reduce ambiguity and also to correlate with the definitions used by other studies in this field. The term 'green space' takes several written forms in the existing literature and is sometimes written as a single word, 'greenspace'. This thesis will use the former construction and will use an abbreviation for the term 'urban green space' (UGS), as is frequently used in the literature. The term, concept, and entity of green space is taken here to mean "publicly accessible environments which usually include grass, trees and/or shrubs, including parks, cemeteries and playing fields" (Dinnie et al., 2013; 104). Specifically in an urban context this encompasses a broad spectrum of: vegetation barriers along streets, playgrounds, green roofs, parks, urban gardening facilities, and urban woodland (WHO, 2017; 6).

2.1.2 Mental Health/Wellbeing

The World Health Organisation defines mental health "as a state of well-being in which an individual realises his or her own abilities, can cope with the normal stresses of life, can work productively, and is able to make a contribution to his or her community" (De Vries and Snep, 2019; 162). It also encompasses broader dimensions linked to thoughts, feelings, and emotions related to "the state of their life" (ibid). Wellbeing is thus the state of "feeling good and functioning well" (Dinnie et al., 2013; 104) resulting from a good state of mental health.

2.2 Linking UGS and Wellbeing

Research in this field has established that there is a link between physical and mental health outcomes as a result of exposure to green space. Contact with nature has also been shown to have positive effects on the body's physiological response to green space exposure e.g. in terms of reduced blood pressure, heart rate, and muscle tension (Roe et al., 2013). There is a general consensus that improvements to mental and physical health are derived through three main mechanisms (ibid; 4087):

- Increased physical activity
- Increased social contact and sense of community
- Psychological restoration + reduction of stress and fatigue

2.2.1 Physical Activity

Coon et al. (2011) investigated the effects of participating in physical activity outdoors in natural environments. Respondents noted a greater feeling of subjective vitality and “feelings of energy, pleasure, and delight, and there were decreases in feelings of frustration, worry, confusion, depression, tension, and tiredness” (ibid; 1736). Outdoor physical exercise is also recognised as vital for combating chronic diseases such as “diabetes, cardiovascular and mental disorders, obesity and cancer” (Kabisch and van der Bosch, 2017; 211). Therefore, preventing negative states of health, which are often caused by physical inactivity, will undoubtedly improve a person’s wellbeing and positive perception of their general state of being.

2.2.2 Social Contact

Meanwhile, Maas et al. (2009) also cite social contact as being a possible mechanism behind the relationship between green space and health. Green spaces provide a location that facilitates social contact – a place to have a conversation or engage in joint group activities and “can also promote a general sense of community” (ibid; 587). Social contact does not necessarily have to be personal or direct, it can also take place “at a modest level” (Kazmierczak and James, 2007; 357) – being amongst others in open spaces fulfils an element of social contact in an undemanding way. This is also relevant in the context of the COVID-19 lockdown as this was probably a significant factor for why people went to parks and other UGS, to hear and see people whilst still maintaining social distancing. It is recognised that UGS are vital in facilitating “social cohesion and be a place in which social ties are created and maintained” (Roberts et al. 2018; 2), so not only is social contact beneficial on an individual level, but it is also essential for the wellbeing of communities and neighbourhoods.

However, attention has also been paid to the fact that social cohesion is not always equal or harmonious, but can also be exclusionary. Roberts et al. (2018) conducted a case study of 60 green spaces in Birmingham, UK to investigate spatial and temporal variations of individual’s emotional experiences whilst using green spaces. Whilst some participants responded with feelings of “love, calmness and surprise”, others responded with “fear and anger [...] sadness and disgust” (ibid; 11). Contributing factors may include the presence of individuals or groups perceived as threatening, in combination with physical factors such as poorly lit spaces, or the presence of certain animals/wildlife (Bertram and Rehdanz, 2015). The causes for such responses need to be understood and appreciated “if the barriers to use and

enjoyment of urban green spaces are to be fully understood and addressed” (Roberts et al., 2018; 12). If there are barriers that are blocking the pathway to individual and social wellbeing, these have to be listened to and acted on productively to improve the restorative potential of UGS.

Social exclusion can also be more prevalent in certain population groups “because they differ from the dominant population by, for example, nationality, ethnicity...” (Kazmierczak and James, 2007; 354), as well as employment and financial status. Stress levels are particularly high for people suffering from social exclusion, leading to mental health issues such as depression. Research suggests that “people may benefit from just visual encounters with nature when they are uncomfortably stressed or anxious” (ibid; 358) and provide an opportunity for escapism. However, there are concerns as to whether disparities in green space access exist as they “are often unequally distributed between white and racial/ethnic minority communities, causing the concern of environmental injustice and its negative impact” (Dai, 2011; 234).

Whilst it is recognised that spending time in UGS is beneficial to all, barriers to access such as a lack of spaces nearby or feelings of social exclusion affect population groups that are often already vulnerable. For example, Kabisch and Haase (2014; 131) find that while most areas in Berlin are supplied with more than the recommended 6m² provision of UGS¹, there are significant inequalities when it comes to immigrant status and age; although “public green spaces and forest areas [currently] represent more than 30% of the city area” including more than 100 parks, in areas where the population is dense the distributional provision of green spaces is low. Furthermore, increasing urbanisation and densification mean that cities in the future are likely to have fewer green resources – leading to environmental injustice for those who cannot afford to move to greener areas outside of the city (Maas et al. 2006; 587). Therefore, it is imperative that issues of environmental (in)justice are placed at the centre of urban planning policy.

2.2.3 Restoration and Stress Reduction

The pressures of inner-city living, such as excessive noise, pollution, and a fast pace of life often exacerbate feelings of tension and stress. Kabisch and van der Bosch (2017; 211) state “The higher prevalence of mental disorders in urban as compared to rural areas has, among other factors, been attributed to the relatively hectic and

¹ Recommended by the Berlin Senate Department for Urban Development and Environment, 2013.

stressful life in cities”. UGS have been positioned as spaces in which this tension can be relieved and allow individuals to “wind down” and “escape” (Dinnie et al., 2013; 107).

When interrogating why UGS allows for a kind of mental ‘switching-off’, maybe it is not a question of what they provide i.e. facilities, but rather a matter of what they do not contain. Parks, for example, are areas in which nature flourishes and urban features such as buildings do not exist – so resting and spending time in environments with minimal demands on cognitive attention can have a highly restorative potential (Kaplan and Kaplan, 1989; 182). Dzhambov (2018; 340) found that “green space and blue space are psychologically restorative features in urban environments” particularly for university students aged between 18-35, as “young adulthood is associated with a high burden of mental disorders”, including high “anxiety and stress levels” (Yang et al., 2019; 2). However, the restorative potential of UGS is not a given, and does rely on certain factors to maximise its ability for relaxation, such as “retreats and secluded areas” (Heiland et al., 2019; 439) and “peacefulness” (de Vries et al., 2012; 10), which is linked to the crowdedness of the space.

Seclusion and peacefulness are also essential for enabling a related pathway to restoration, namely place attachment. Repeated visits to a green space may allow for an individual to form a meaningful bond with it and identify it as being a highly important place, contributing to “feelings of familiarity, rootedness and self-esteem” (Subiza-Pérez et al. 2020; 2), which are vital in time of stress, loneliness and uncertainty. However, people experience environments in heterogeneous ways; they derive value and meaning from more aspects than solely the quality, state, or appearance of the landscape (Dinnie et al. 2013). Therefore, we need to expand our thinking to encompass the ways in which personal experience, social interaction, and cultural narratives determine how someone will derive improved wellbeing from time spent in green spaces.

2.3 State of the Research

The state of the research is explored here to present a broader picture of the trajectory of urban green space and mental health research. It also aims to set out the key theories that have driven, and continue to drive, research in this field. Exploring previous research helps to better understand the relationship between mental health and UGS and to understand the pathways through which improved

wellbeing is achieved. This sub-chapter will also assess studies that have emerged recently in response to COVID-19 and subsequent green space use in order to show the framework into which this thesis fits and assess where there may still be research gaps e.g. exploring how UGS took on new meanings and roles during the pandemic.

In order to collect relevant literature to assess the state of the research, the online access platforms Web of Science and Google Scholar were used for gathering eBooks and electronic journal articles, whilst other books in hard copy were retrieved from the TU Berlin university library. In order to find the literature, search terms were employed in various combinations, focusing on the term 'urban green space' and adding additional terms such as '+ wellbeing', '+ mental health', '+ public health'. A total of 42 relevant pieces of literature were gathered and analysed to establish the prevailing discourse in this field. The literature fell into four broad research areas (distinguished by their publication source e.g. academic journal) including: health, urban planning, environment/ecology, and social science. However, this is not to say that the subject areas or sources of the literature are completely separate from one another. Many (if not all) of the texts are highly interdisciplinary and present a synthesis between inquiries into the built environment and urban planning, paired with investigations rooted in psychology and public health. In doing so they often analyse causality and pathways e.g. measuring psycho-/physiological responses to exposure to natural environments.

According to Brereton et al. (2008; 387), this interdisciplinary link can be traced back to the 1990s when psychology research began examining the spatial aspects of wellbeing. Several papers found that "characteristics of people's immediate surroundings (their locality) influenced their well-being, but also that the wider environment had an important role to play in explaining what makes us happy" (ibid). This can then explain why the two disciplines of health/psychology and urban studies/urban planning have started to interlink and overlap. Although this literature review is by no means exhaustive, the amount of literature found did highlight two main temporal trends for research in this field i.e. two main upsurges in academic interest and attention. The earliest published paper is from 1988, with two other texts following soon thereafter in 1989 and 1991. Burgess et al.'s 1988 paper focuses on landscape quality and the study of values/opinions of UGS. They discuss how open green spaces in cities embody social and cultural meaning, which enhances a sense of community. Furthermore, they discuss certain methodological considerations for approaching fieldwork in this research area, suggesting that "methodological

approaches are required which can reveal the depth of feelings that individuals have for the environment, and which explore more fully people's experiences of open spaces" (ibid; 456). This assertion greatly inspired the methodology of this thesis, as it sets out a justification and framework for understanding meaning, emotion, and cultural/societal values within the field of UGS research.

Meanwhile, the two following pieces of literature (Kaplan and Kaplan, 1989 and Ulrich et al., 1991) set out two important theoretical foundations which have continued to inform academic research to the present, as they both provide a suggestion for why/how natural environments (and the features within them) can help to remedy poor psychological wellbeing. Kaplan and Kaplan's Attention Restoration Theory (ART) (1989) is concerned with 'directed attention', a cognitive function vital for fulfilling tasks, planning, and managing behaviour. This ability to concentrate or focus can soon become fatigued and depleted leading to negative behaviours and altered cognitive functioning, such as irritability and impaired perception (Marselle, 2019; 145). To restore directed attention capabilities, the mind needs to engage in 'effortless attention'. They argue that natural environments with interesting stimuli such as animals, moving things, or general attention-grabbing sights and events can trigger the experience of fascination, which is "a key mechanism in restoration from 'mental fatigue'" (Ulrich et al. 1991; 206). More simply, they argue, "being near to vegetation provides an important form of psychological respite" (Hitchings, 2013; 99). This respite or restoration takes place on four levels (Kaplan and Kaplan, 1989; 197):

- Clearing the head
- Recharging directed attention capacity
- Reducing internal noise
- Reflection on one's life, priorities, and goals

Being away from everyday environments such as the home or workplace facilitates a kind of 'switching off', with green spaces providing a change of scene and an environment for escape. They argue that "a deeply restorative experience is likely to include reflections on one's life, on one's priorities and possibilities, on one's actions and one's goals" (ibid; 197). Particularly during the time of the COVID-19 pandemic, there have been even more psychological stressors in daily life and situations that have triggered personal reflection, which is why ART provides an interesting and productive theoretical model for this thesis and can be tested and interpreted later during the data analysis/discussion stage.

Perhaps in contrast to other theories in this field, ART does not necessarily seek to explain the mechanisms through which nature plays such an important role for restoration, but instead makes it “clear that there is a meaningful phenomenon to examine and that there are important implications in terms of basic human needs” (ibid; 2). This assertion could suggest why other researchers were inspired to investigate this phenomenon further. More recent studies have continued to use ART as a theoretical basis but have begun to apply it to new or under-researched contexts or social situations. For example, Hitchings (2013) states that whilst the public health benefits of UGS are obvious, the issue is whether people actually submit to the process of restoration. They interrogated the practices of city office workers in London who have low engagement with outdoor green space during the working week due to time constraints, for example. They observed, “many of us now under-appreciate the restorative effects of going into green space and prefer other preoccupations instead” (ibid; 100). So although the benefits and restorative potential of UGS are clear, preoccupations and personal reasons such as lack of time or interest could hinder people from actually visiting such spaces. Hitchings (2013) also suggests that further work is needed to explore groups that find themselves socialising inside e.g. young people playing video games inside, or adults socialising inside shopping malls rather than in a park. The COVID-19-related lockdown also presents an opportunity to interrogate the ways in which people dealt with an increasingly spatially isolated lifestyle, and how this influenced their green space interaction and the corresponding opportunity for cognitive restoration.

The theory outlined above shares commonalities with Ulrich’s Stress Reductions Theory (SRT) (1991). However, where ART deals with restoration from cognitive fatigue, SRT “emphasises immediate recovery from stressful experiences” (Hartig and Evans, 1993; 450). The theories fundamentally differ in the psychological processes that they determine to be the agents of beneficial change (ibid; 437). Despite this, they both provide valid and productive suggestions for why positive emotional and cognitive responses to nature interaction are observed in studies. SRT specifically supposes, “visual perception of the natural environment will initiate an immediate, general affective reaction” (Marselle, 2019; 143). So, by encountering or even seeing nature, an immediate emotional reaction will ensue and bring about a positive shift in mood and recovery from stress. This notion also inspired the theoretical approach of this thesis, in the sense that I am interested in highlighting and documenting the emotional experience of UGS during the pandemic, and

exploring whether time spent in parks etc. helped individuals to have an improved mood and better self-perceived wellbeing.

Ulrich (1991) suggests that the pathway for nature-based restoration is: positive cognitive reaction to nature which then turns into an emotional response and thereafter translates into a physiological response in the form of relaxation. This is particularly salient for an individual who is experiencing acute stress, as exposure to nature can then “block negative thoughts and feelings” (Collins, 2020; 2). As the COVID-19 pandemic brought on heightened stress, anxiety, and uncertainty for many people (Pouso et al. 2021), it also provides an opportunity to apply SRT to a novel and unique context to understand the extent to which UGS provide(d) a vital resource for stress reduction and improved wellbeing for urban citizens. Besides, Ulrich’s initial study, which SRT (1991) is based on, was carried out with 120 people who were exposed to images and sounds of nature after having been exposed to unpleasant and stressful film footage – to measure their rate of recovery. The participants’ experience was nature-related but they were not situated directly within a natural setting e.g. a park, so by investigating the lived experience of students in Berlin during the pandemic time, I hope to add an authentic layer of stories and reflections that are rooted in tangible physical contact with natural settings.

After this cluster of papers in the late 1980s/early 1990s, another wave of interest ensued slightly later with “the number of published articles assessing the association between greenspace and mental health [increasing] exponentially between 1995 and 2017” (Collins, 2020; 3). This is likely due to the increased recognition of the benefits of UGS and its “environmental, social and economic value to society” (Swanwick et al., 2003; 95). This upsurge in research and professional activity also shows a geographical trend, with countries that have long recognised the “importance of green space in towns and cities” (ibid; 94) also being the main sources of new literature and research. For example, the UK has an arguably longer-established trend of health promotion through outdoor public spaces, such as the development of parks in urban areas in the Nineteenth Century to protect the health of industrial workers (Heiland et al., 2019; 432). This explains why the UK is “overall the biggest contributor to this field accounting for 24% of all studies” (Collins, 2020; 6), with the rest of Europe and North America following. This public health-related interest in Europe was also catalysed by increased EU investment in research programmes on the relationship between urban nature and social wellbeing. Within the EU, “approximately 84 million people had a mental health problem in 2016” (ibid; 1) – the

associated cost of this is thought to be around 4% of GDP, which explains why research into strategies for mitigation and resilience have received more investment and support. However, Kabisch et al. (2015; 27) note, “There is little literature from Africa, Latin America, or Russia. Thus, large geographical knowledge gaps still exist, despite the growing number of papers”. Therefore it remains to be seen whether this upsurge in research in the UK and Europe, for example, will be mirrored in other regions across the world.

Regarding the type of research conducted and the methods involved, Collins (2020; 4) suggests that there are two main branches: experimental and observational studies. Experimental studies include those which set up physical experiments i.e. by asking participants to engage in a range of activities. On the other hand, observational studies analyse external factors without asking for the involvement of participants in a certain activity, instead investigating the perceived quality/quantity of green spaces, proximity to UGS, and visit/activities studies, for example. The methodology of the studies is generally split equally between qualitative and quantitative, employing data collection methods such as questionnaire surveys, GIS analysis, interviews, and focus groups (Kabisch et al. 2015). Whilst quantitative data driven studies can create an evidence base for arguing a particular standpoint, Brown and Cummins (2013; 60) argue that a post-positivist perspective “draws on theoretical constructs and methodological approaches that prioritise the experience of human subjects”, thus allowing for interrogation of the meaning that they attach to these places and how they interact with them. This can be inherently useful for understanding how people use UGS and can inform current and future planning to ensure that parks, for example, can be more attractive, inclusive, and used to their full potential. Although quantitative methods are still equally valid, solely prioritising this approach “fails to account for important cultural factors which might influence how different groups of people view green space” (ibid.). More nuanced and experiential methods can illuminate equally valuable phenomena relating to emotion and feeling – whether positive or negative. Moreover, they allow for relational aspects to be taken into account: for example, how park users are influenced or affected by other park users and the community surrounding them. Other users, whether human or non-human e.g. wild animals or dogs, can greatly influence the emotions of UGS users and also affect their use patterns, behaviours and perception of the space. More positive emotions and perceptions of other park users can be an attractive pull factor, whilst negative relations such as conflict or affective qualities that incite anxiety, fear, or unease may act as a barrier to using that space.

Therefore, several more recent studies (Dinnie et al, 2013., Kabisch and Haase, 2014., Tinsley et al., 2014) have used participatory methods to supplement a layer of lived experience and emotion to better understand why and how people interact with UGS.

The method used also influences the size of the survey, from small-scale to much larger – for example, de Vries et al. (2021; 1) carried out a survey in the Netherlands with 4000 participants to explore “whether happiness differs by the type of natural environment experiences”. They attained the large sample size by employing a technology-driven approach in the form of a smartphone application to gather self-reported data. Meanwhile, Tinsley et al. (2014) used semi-structured interviews to gather data from 463 individuals to investigate whether park users of various ethnic groups used green spaces differently and how they rate the psychosocial benefits. On a much smaller scale, Dinnie et al. (2013; 103) conducted in-depth ethnographies and participatory methods (face-to-face interview, walking interview, video filming of the green space by participant, video review with participant) with ten park-users to investigate “everyday experiences and engagements with local greenspaces”. This exemplifies the multiplicity of studies that have already been carried out at a variety of scales, highlighting that it is equally important to conduct large-scale and wide-ranging studies for example on a country-wide basis, as it is to conduct detailed local-scale participatory studies with a more in-depth focus on a particular population group or area e.g. a neighbourhood green space.

It is also important to interrogate who makes up these sample groups. Is a specific sample decided upon beforehand, in terms of factors such as age, ethnicity, or occupation, or are the samples completely random? Again, the literature reviewed here presents a mixture of large sample groups with varied demographics, whilst some smaller scale studies use a targeted and more specific approach to analyse themes of UGS and wellbeing through a specific lens, often uncovering the experiences of marginalised groups and using this as a framework for understanding deeper phenomena related to social/cultural issues such as equal access to UGS. For example, several studies focus on ethnic minority groups’ interaction with UGS (Dai, 2011., Kazmierczak and James, 2007), whilst others sample the experiences of elderly people (Tinsley et al., 2014). However, one population group that appears to be sampled often is young adults, particularly university students (Holt et al. 2019., Yang et al. 2019., Coon et al. 2011., Dzhambov, 2018). Other researchers in the discipline recognise that there is a “dominance of experimental studies using

university students” (Collins, 2020; 10). Therefore, generalising the results and making statements for a whole population based on a small sample group should be done with caution as the experiences may be biased and specific to these sub populations (ibid).

However, the COVID-19 pandemic created a unique set of challenges and circumstances, which added additional pressures, anxieties, and spatial restrictions, and completely changed the everyday practices and routines of university students. As campus life was rolled back through mechanisms such as online teaching and the closure of university buildings, much of the social element of university students’ daily life was heavily reduced. Therefore, I believe that it is even more important now to pick up on similar studies that have taken place in this field with the same sample group and add a new layer of experience and interpretation in response to such an unprecedented global event.

2.4 Similar Studies to this Thesis

The pandemic presented a novel opportunity for several researchers to investigate UGS use, particularly in ways that focus on the importance of sustained and equal access to these spaces as a way to relieve stress or feelings of isolation. Forms of lockdown or restrictions to movement varied greatly across the world, but many people were faced with government advice to shelter at home and only go outside for essential activities such as grocery shopping or dog walking. This also meant “limited access to parks and green spaces for many people” (Slater et al., 2020; 1), either because it was not permitted to visit UGS or because factors such as distance or unwillingness to use public transport prevented them from accessing green spaces. However, the closure of facilities such as fitness studios, schools, and sports centres has seen green spaces becoming “the only places available for physical activity outside of the home environment” (ibid).

The closure of some parks (not applicable in the context of Berlin) and outdoor leisure or sports facilities meant that opportunities for physical exercise were greatly diminished, with many people told to exercise at home instead. Aside from physical health, “during the COVID-19 isolation, UGS was [also] important for providing places of solace and respite” (Ugolini et al., 2020; 1) and supporting mental wellbeing. Ugolini et al. (2020) conducted an international online survey to identify the “effects of social isolation on the usage and perception of UGS during the COVID-19 pandemic” (1), finding that behaviours and usage patterns had indeed

changed, with people restricting their activities or tending to visit smaller green spaces closer to home. Yet during a time of societal crisis, feelings of isolation and anxiety are likely to be “amplified” (ibid) and the need for psychological respite and restoration becomes even greater.

In response to the pandemic, Pouso et al. (2011; 8) have found that “younger people had higher odds of depression and anxiety symptoms than older people. This is interesting, since this age group had been less severely hit by the disease, with generally milder physical symptoms and fewer severe cases than older people”. Associated factors such as loss of employment, lack of access to social activities, uncertainties related to studies, and general restrictions on normal life are likely to have contributed to this. This is why it is so interesting and relevant within the context of this thesis to further investigate young people’s experience in UGS during the pandemic, what their emotional response was, and whether their perceptions or use patterns have changed.

The current literature also puts forward some recommendations for UGS use and accessibility in light of the pandemic, which would also provide more resilience in similar situations in the future. These include:

- Short-term recommendations:
 - Keep parks open: introduce time-slots or schedules to ensure vulnerable populations have access, maintain transit routes to parks and green space, adopt Open or Slow Streets initiatives (making green streets more accessible to cyclists and pedestrians)
- Long-term recommendations:
 - Ensure that including green space is prioritised in neighbourhoods that lack them
 - Consider access for all users e.g. install protected bicycle lanes, increased bicycle parking, and access for disabled persons
 - Conduct ongoing monitoring e.g. examining negative consequences such as increased litter, increased crime, substandard bathroom facilities

(Slater et al., 2020; 2-4)

There certainly needs to be a consideration of the disadvantages or unpleasant factors that ensued, such as overcrowding (and associated lack of social distancing),

as well as the degradation of the natural environment/landscape e.g. due to littering. These are all points and experiences that can be learnt from and bring to light issues such as underinvestment, poor regulation, or a lack of community resources to care for green spaces. Both the positive and negative consequences of UGS use during the pandemic brought to light the needs, perceptions, and preferences of green space users during this time and need to be integrated into “planning proposals and management of this resource in the future” (Ugolini et al., 2020; 2).

2.5 Research Gaps

The novel situation caused by the pandemic in itself presents a gap in the research. As Ugolini et al. (2020) point out, people did turn to UGS to fulfil their everyday needs, whether that be for physical exercise, socialising, or other reasons. This thesis thus aims to collect a myriad of experiences and recollections of use patterns and behaviours to understand how UGS came to take on new roles, functions and meanings for people during this time, and how this will impact their interaction with green space in the future. What is abundantly clear from the current research is that the diversity of ways in which UGS was used increased and visitation numbers did grow. Therefore, what needs to be investigated now is how these spaces changed in light of increased visitor numbers. Kabisch and van der Bosch (2017; 216) echo this by stating “left for future research and intensive discussions is the question of how much ecosystem service can an urban green space provide when it starts to get very frequently used, get crowded or even overused in very dense urban districts”, and can also be extended to encompass cultural ecosystem services. Whilst there are also “gaps in our understanding [...] as to the processes and relationships involved in experiencing wellbeing from greenspace engagement” (Dinnie et al., 2013; 104), this thesis does not seek to provide answers for why and how wellbeing is improved by UGS.

Instead, it will add a layer of voices and experience to existing research and reflect on a very current and largely unexplored societal crisis to determine how people’s use patterns changed, and to understand whether they were able to experience the restorative potential of green space which lies as a theoretical foundation to this field of research. Lockdown measures have undoubtedly “changed the relation between humans and public spaces, in terms of use and perception” (Ugolini et al., 2010; 2), which is why it is such a pressing opportunity to explore how we, as a society, can ensure that green space remains a functional and accessible urban resource that has the potential to bring about restoration and relief from feelings of isolation and

anxiety, especially for population groups who dealt with extreme uncertainty and became increasingly vulnerable to mental health impacts. Moreover, Holt et al. (2019; 1) state, “there is still limited research exploring the restorative benefits associated with differing types of green space use among students”, which is why this sample group has been chosen as the focus of this thesis.

3. Research Questions

In order to explore the aforementioned topics further, the following research questions have been developed:

1. How did the students/expats’ emotional response and experience of place change during the lockdown – did they face any restrictions, or rather opportunities to interact with UGS differently?
2. Did interaction with UGS in Berlin help to alleviate feelings of stress or isolation, during the COVID-19 related lockdown?
3. Has the students/expats’ perception of UGS changed at all since the pandemic, and if so is it likely to affect their future interaction with these spaces?

Interpreting the qualitative data collected via semi-structured interviews will allow for these questions to be discussed and answered. Through this, I aim to illuminate the stories and experiences of UGS interaction during such a novel and unprecedented global crisis, which can help us to understand the value of green space access during this time and to see if/how they took on a certain role and significance in people’s daily lives.

4. Methodology

4.1 Justification of Methods

In order to answer the research questions of the thesis qualitative methods in the form of semi-structured interviews were used. Jacob and Furgerson (2012; 1) argue, “at the heart of qualitative research is the desire to expose the human part of a story”. Since the aim of the thesis is to infuse a layer of stories and lived experience into an established body of previous research, it seemed appropriate to use more interpretive and observational methodologies.

Furthermore, using semi-structured interviews permits a way of talking to people that has more structure and active listening than an informal conversation but offers a

way of speaking that is “self-conscious, orderly and partially structured” (Longhurst, 2016; 103). This means that the interview process itself allows space for a conversational and free-flowing structure whilst maintaining fixed points and questions to anchor and guide the discussion in such a way that meaningful and useful data is produced.

4.2 Data Collection

In order to collect the data, ten semi-structured interviews were conducted over the course of October to December 2020. These varied in duration from around 25 minutes to 45 minutes, largely depending on factors such as the speed of the individual’s speech or the amount of time that the individual required to provide an answer. The interviews were conducted in English, which was the native language of several of the participants and the second language of the rest. However, there were no specific moments in which I believed there to be a language barrier, both to comprehension of the question and to the ability of the respondents to provide a complete answer. All of the participants are expats in Berlin, three of whom were from the US, two from the UK (England and Scotland), and the rest from Argentina, Australia, Brazil, Poland, and South Korea. They are either currently studying in Berlin or had been a student for parts of the lockdown.

The interviewees were recruited largely through my existing social network via social media. At first I made use of a group chat via WhatsApp (a digital messaging service), which contained peers and students from my current study program. Most of the individuals within this group are international students, which meant that I could employ a very targeted approach to finding participants matching the desired target group of the study. This yielded four responses, whilst three further participants were personal connections/friends. The final three were recruited through snowballing i.e. asking the interviewees if they could recommend other people that may be interested in participating. After interviewing ten people, I decided that the data was sufficient to appropriately answer the research questions and therefore did not carry out any more interviews.

One main ethical consideration of the interview process was how to engage in a face-to-face conversation in a safe and socially distanced manner, as there was still the possibility of viral transmission of COVID-19 during this time. In light of this, I offered the option of meeting in person, either outside or inside, or conducting a virtual call via the platform Zoom. Two interviews were conducted via Zoom because

of this reason, as the participants were more comfortable to not meet in person. This was not necessarily due to concerns with meeting and talking face-to-face, but rather the desire to avoid taking public transport for long distances across the city. The remaining interviews were carried out at a place suggested by the individual, either in a café or their home (after having been invited in). As interviews can be a new or unpredictable experience for some, I felt it would be important for the interviewee to be as comfortable as possible in either a familiar or neutral setting, which would allow them to feel at ease when talking about themselves and their experiences. Furthermore, the in-person interviews were conducted in line with the “AHA” (Abstand halten, Hygiene und Alltagsmaske) rules set out by the German public healthy authority². In practice, this meant no physical contact i.e. not shaking hands, wearing a mouth/face covering when not sat down (in public places), and ensuring regular ventilation when sitting inside.

For those respondents that I was able to meet in person, I offered compensation for their time by buying them a coffee or snack, which I hoped would also build a rapport. To establish this rapport further, I started by giving a short personal introduction and providing a short overview of my thesis, as recommended by Jacob & Furgerson (2012). In addition, as “two important ethical issues are confidentiality and anonymity” (Longhurst, 2016; 111), I asked for consent to record the interview, explained how the data and their identity would remain confidential and anonymous, respectively, and offered to provide them with a copy of the thesis upon final completion.

4.3 Interview Content

The interviews were conducted using an interview schedule that was prepared beforehand. This was a double-sided page with semi-structured questions (see appendix) with spacing in between the questions to allow for notes and comments to be written down. However, I decided to keep physical note taking to a minimum as it can undermine rapport and distract from attentive listening (Dunn, 2016). Instead, the interviews were audio recorded using a smartphone. This allowed me to “focus fully on the interaction instead of feeling pressure to get the participants’ words recorded” (Longhurst, 2016; 110). Audio recordings however cannot keep a record of “non-verbal data” (Dunn, 2016; 120), so note taking did prove to be useful in recording meaningful gestures such as smiling, nodding, or body language in general.

² AHA rules: <https://www.zusammengegenscorona.de/aha/>
“(Distance, hygiene and masks)”

The questions were written in a way that encouraged more open-ended answers, as 'yes/no' answers would have presented a barrier to gaining additional information. This also prompted the respondents to speak freely, resulting in data with more depth. A pilot interview test helped to structure the flow of the interview and the test interviewee was able to provide feedback, ideas, and "important insider information [to make my] interview protocol work better" (Jacob & Furgerson, 2012; 6). Through this process, I was able to see where there maybe were barriers or questions that did not prompt the respondent enough to deliver open-ended and free-flowing answers. I was then able to alter the interview structure accordingly. Furthermore, throughout the process of talking to the ten interviewees I maintained a flexible and dynamic approach – adapting the content or order of the interview questions, or adding further questions. As more data was gathered this was fed back into the research design and I adapted the interview structure to maybe devote less attention to questions that were not contributing to answering the research questions, and supplementing areas of the conversation where I felt more interesting data could be generated. For example, one part of the interview asked the respondent to describe how the lockdown situation was in their home country. Often this led to quite a lengthy discussion, which although was interesting and helped to build empathy and rapport, it did not contribute so much towards revealing the respondent's experience in Berlin. Furthermore, I found that it was redundant to compare the situation in each respondent's home country at length, to that of Berlin, because they/their family/friends do not live in a large city and green space access may not have been an issue for them.

The interview questions largely fell into three primary types (Dunn, 2016; 106):

- **Descriptive** - easy opening questions, provide detail on events, places, and experiences,
- **Storytelling** - identifies an ordering of events,
- **Opinion** - impressions and feelings.

Descriptive questions were used to gather initial information about the interviewee's background e.g. "*can you tell me a little bit about where you're from, how long you've been in Berlin, what you do here...*". This largely helped to 'set the scene', whilst asking the participant about themselves also helped to further build trust and rapport. Information about their background and personal details also helped to structure further questions later on in the interview, for example, for comparing how the

lockdown situation was in Berlin with the situation experienced by their friends and family in their home countries.

From there, storytelling questions were used to prompt the interviewee to recall a sequence of events. In this case, I asked them if they could cast their minds back to March 2020 and recount the ways in which their daily life and routine changed as a result of the pandemic-related restrictions e.g. *“how were your studies or your work impacted by the lockdown, were you still able to go to university/the office, or were you spending more time at home?”*. As Longhurst (2016; 107) notes, “it can take time for participants to ‘warm up’” and by engaging the participants to focus their attention on the discussion topic e.g. by imagining a particular situation, this can help them to feel supported and ease into a more natural conversation.

Later on, once the scene was established and I felt that the interviewee was more relaxed and comfortable, I began to ask more personal questions, for example about their feelings, experiences, and emotions. These were often started with the phrase “Tell me about...” which acted as an invitation for them to tell me a story and gain control to steer the conversation in a direction that they wanted, allowing opinions and concepts to naturally emerge that I may not have previously expected (Jacob and Furgerson, 2012; 4). Delving into the emotions and experiences that the interviewees had when interacting with green spaces then provided a solid framework for comparison. For example, I would be able to compare the interviewees’ feelings in the analysis stage, and be able to establish similarities or differences.

During this stage of the interview, when interviewees were recalling experiences and talking about more sensitive personal topics such as mental wellbeing and emotions related to the pandemic lockdown, it was important for me as the interviewer to act as a good listener. As Krueger & Casey (2000. In: Longhurst, 2016; 105) state, the interview is “...about listening. It is about paying attention. It is about being open to hear what people have to say. It is about being non-judgmental. It is about creating a comfortable environment for people to share”. I was conscious to maintain an open and relaxed body language to show interest in the interviewees’ stories, which allowed them to open up more. At this stage, I often put my pen down, maintained eye contact, and used non-verbal “receptive cues” (Dunn, 2016; 108) such as nodding and affirmative sounds (‘uh-huh’, ‘yes’) to show empathy and encourage the interviewee to continue talking.

Identifying certain emotions, whether positive or negative then allowed me to move on to more opinion-based questions. For example, *“do you feel like people used the green spaces fairly during this time, how did the activities of other users of the green space make you feel?”*. As well as, *“if this lockdown were to happen again, do you hope that the parks would remain open for all, or do you think certain restrictions should be put in place?”*. Such questions allowed the interviewees to further reflect on their own experiences, interactions, and behaviours and to contemplate future scenarios. This also helped to broaden the scope of the conversation, moving from a more personal reflection towards the greater sphere of the general public e.g. other green space users. The aim of such opinion-related questions was to stimulate a broader conversation about green space accessibility and whether the interviewee may see their own experiences and opinions reflected in their peer group, circle of friends, or society in general e.g. that urban green spaces are an important public health resource.

To signal the end of the interview I wrapped up the main points expressed by the interviewee and reflected on the conversation e.g. *“it was interesting to hear about your experience during this time...”*. I then asked whether the interviewee had any final remarks or opinions that they wanted to share, thanked them for their time, and ended the audio recording.

4.4 Data Processing & Transcription

The audio recordings were immediately saved and backed-up. These were then manually transcribed by replaying the recording and typing up the contents of the interview, in order to create a physical text for coding and analysis. According to Easton et al. (2000; 706), a common error in transcription *“involves the misinterpretation of a word, or mishearing of a word”*. To mitigate this, I reviewed and edited the transcript two further times after the initial transcription process to address any typing errors and misheard audio.

Although the *“informational content of the data has priority”* (Stuckey, 2014; 7), I found it important to employ a naturalised approach and retain non-verbal or non-language features within the transcriptions such as laughing, stuttering, or the use of filler sounds such as ‘umm’ in order to maintain the *“authenticity of lived experiences”* (Widodo, 2009; 105).

4.5 Data Analysis

Once the interview transcription was complete, I was able to begin analysing the data to tease out the main themes and narratives that emerged. Before starting the coding process, I read through the transcripts again and noted some initial reflections and ideas to get an idea of what analytical categories might emerge (Schmidt, 2004; 254). However, I was cautious about keeping this processes open and fluid, not letting myself create any theoretical assumptions that could result in simply searching for locations in the text that were suitable as a proof or illustration of these assumptions (ibid; 255).

Although a manual coding process was applied, the software package ATLAS.ti was used to organise and store the written transcripts and to allow for codes to be collected and compared in one place. Moreover, I chose to use inductive coding – creating codes based on the qualitative data itself – to allow for codes to emerge naturally from the text rather than applying any predetermined sets of code (deductive coding). I started reading through the transcripts individually and creating codes for phrases or words that highlighted a phenomenon or theme that would be useful to the research. The recurrent “emic” codes (Crang, 2005) were then applied to the other interview transcripts. At first, many codes were generated that reflected the data, and then later either combined or deleted as necessary (Deterding and Water, 2018). Furthermore, this was not a linear process but rather an iterative one, which involved going back and forth between material, theory and ideas – referred to by Crang (2005; 224) as ‘analytic induction’.

4.6 Limitations

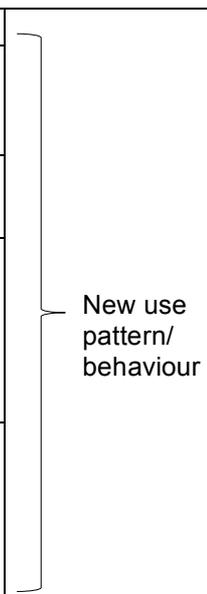
In reflection of the data collection and analysis processes there are some aspects that could be improved if a similar study were to be conducted again. For example, one interview respondent stated that they felt somewhat unprepared for the interview and were not able to necessarily convey their feelings as openly as they would have liked. They mentioned that they would have found it helpful to have a list of questions beforehand so that they could prepare their answers or know what content to expect. Although this factor was not explicitly expressed by any of the other interviewees, I think it would have been beneficial to hand out the interview guide (see appendix) in advance, to help the participants to feel more confident, informed, and prepared. However, I do not believe that this had a significant negative impact on the quality of the data collected.

Furthermore, the sample group was small and quite specific in terms of age and employment/student status. Therefore, there was the risk that the data/answers may be quite similar. If the scope of the research project could be extended, it would have been beneficial and interesting to attract a greater number of respondents. Although the respondents' background (in terms of home country) had a well-distributed geographic spread, I acknowledge that there was a lack of representation from several continents, namely Africa. This echoes the sentiment of Kabisch et al. (2015; 27), that "large geographical knowledge gaps still exist", highlighting the fact that more diverse voices and lived experiences need to be collected to ensure holistic and representative accounts of experience in UGS.

5. Results

This chapter will present the findings that emerged through analysing the interview transcripts. This process generated a set of main codes and sub-codes, which are used here to structure the chapter (*fig. 1*) - the code 'new use pattern/behaviour' became an overarching theme which was applicable across the main code groups and is therefore mentioned throughout the chapter rather than in a separate paragraph. Quotes taken directly from the interview transcripts are identified with their respective number e.g. [1].

Main theme/code group	Individual codes
Personal circumstances	Routine change
	Vulnerability <ul style="list-style-type: none"> • Housing situation • Impact on health/wellbeing
Experience in UGS	Individual Experience <ul style="list-style-type: none"> • Escape
	Social Interaction <ul style="list-style-type: none"> • Meeting friends • Party • Other park users • Policing
	UGS features <ul style="list-style-type: none"> • Availability • Qualities • Usage restrictions and regulations
Emotional response and perception	Positive <ul style="list-style-type: none"> • Wellbeing
	Negative
	New realisation/appreciation



5.1.1 Routine Change

All of the interviewees stated that they had experienced a very sudden routine change. For example, one interviewee stated, “*within the space of about three weeks my world really had receded into my bedroom*” [9]. This entailed an increased amount of time at home, or spending five days a week in ‘home office’. For some, their normal work did not necessarily take place in an office environment but nonetheless involved more human interaction before lockdown restrictions. One interviewee who works in a children’s daycare facility (Kita) mentioned that they found it “*stressing [sic]*” [7] to spend a lot more time in front of a computer screen engaging in remote teaching. It also became clear that because of these new working conditions and the absence of a daily commute, individuals often did not leave their house/apartment for several days in a row.

Aside from this, the lockdown also restricted people’s social lives as only essential activities such as grocery shopping were allowed. Governments also discouraged people from mixing with others outside of their household and forced indoor socialising spaces such as restaurants and nightlife venues to close³. In light of this, one interviewee felt that they had “*a lot less access to my social life so [...] I was completely cut off from a lot of the things*” [9] with others also reporting that they spent more time alone indoors. Moreover, group sports and fitness activities were no longer allowed to take place and were conducted online instead. One participant expressed that “*[when] things moved online I didn’t participate ‘cause I don’t wanna’ do fitness online; that’s not why I do this sport, [I do it] to be outside and be around other people*” [6], so not only did this affect this individual’s opportunity for social contact in green space, but it also had an impact on their physical wellbeing.

However, this change in routine also meant that some individuals created new routines and habits. For example, one interviewee would go on more regular walks with their dog to have more time outside and more contact with nature. Others also had access to gardening facilities, namely a *Kleingarten* (allotment) and a *Gemeinschaftsgarten* (community garden), which they started to visit more regularly i.e. up to four times a week [4] to tend to their plot and meet other friends and gardeners there. Furthermore, as the use of public transport was discouraged, some of the interviewees stated that they walked through green spaces more frequently, either for recreational purposes or in order to reach a particular location on foot. For

³ European lockdown measures (Deutsche Welle, 14.04.2020) <https://www.dw.com/en/coronavirus-what-are-the-lockdown-measures-across-europe/a-52905137>

example, one interviewee stated, *“I would walk through Hasenheide and walk through Templehof three, four, five times a week because I was barely taking public transport”* [5], in order to meet up with friends who live on the other side of the green space. These practices are evidence that the lockdown influenced new patterns of green space use and new behaviours.

5.1.2 Vulnerability

Certain lifestyle factors such as the interviewee’s housing situation made them more vulnerable to experiencing negative impacts on wellbeing during the lockdown.

Housing Situation

The living situation of the interviewees during lockdown and in general in Berlin was very similar. Most live in flat shares with a single bedroom to themselves and common areas such as a kitchen shared by one or more other people. Some interviewees cited the size of their room or the lack of a common living room as factors behind needing to escape or to be outside of the flat for some time. Members of the household may have had different routines in a more normal situation, meaning that the flat was not always occupied by everyone at all times. However, as the pandemic meant more time spent indoors in home office, one interviewee in particular expressed that they could not find any time for themselves at home: *“[normally] you have different schedule – like, you have the apartment while the other person is out and so, like, you’re just always there together and sometimes you really just need that space”* [6]. Whilst none of the interviewees suffered housing insecurity themselves, some did mention that friends had faced situations where they were forced to move e.g. because of loss of employment. This is also likely to have contributed to feelings of anxiety and stress.

Impact on Health/Wellbeing

During the interview process it quickly became apparent that all of the individuals had faced negative mental health impacts as a result of the circumstances. Some examples include:

- *“You’re living with this, like, constant stress”* [2]
- *“I was quite depressed”* [10]
- Feeling *“cooped up”* and *“frustrated”* [4]
- *“I was having a really rough time and feeling really anxious”* [6]

- *"Some mornings I'd wake up and think, what's the point of getting out of bed?"* [5]

Some interviewees mentioned that the repetitive nature of life had become increasingly frustrating. Others stated that the physical claustrophobia of being stuck inside all the time had contributed negatively towards their wellbeing. Meanwhile, social isolation also contributed to feelings of loneliness and depression, particularly for those who live alone. Uncertainty about the regulations had also caused some fear and anxiety, while changes in behaviour and social distancing outside had become a *"high stress factor for parents"* [3], who had to ensure that their children were at a safe distance to others when playing outside.

5.2 Experience in UGS

5.2.1 Individual Experience

Feeling isolated and frustrated provoked a need to escape and to be outside, which resulted in the interviewees spending an increased amount of time in UGS. For many, parks had become *"an extension of personal space"* [2] and an alternative place to spend time outside of the home. The notion of 'escaping' was expressed by many of the interviewees as something they felt an urgent need to do. Being in green space was an *"escape from the restrictions and this whole repetitive life"* [8], as well as an escape from other people; despite generally spending more time alone and isolated during the pandemic, there was still a desire and a need to be alone in UGS to recharge and mentally switch off. When talking about having a walk in the park, one interviewee stated *"I think it's a good way to disconnect a little bit to get yourself back on track and I thank the parks for that"* [7]. Another interviewee described how they spent more time in their allotment, stating *"I think Kleingärten - they're so, so valuable, and I think that was an escape for a lot of people, and that meant that we could basically be somewhere where we could be away from lots of other contact and lots of other people and lots of normal routine"* [3]. This exemplifies how escaping then served a dual purpose – both to have a change of scene from the normal routine and to be further away from other human contact.

Some others also mentioned the size of the green spaces that they visited as a factor that helped them to feel like they were escaping from the pressures or tension of living in a large city. Talking about being in Volkspark Friedrichshain, one interviewee

stated *"it was more this relaxing getaway feeling because you could walk through it and you feel like you're not even in the city anymore"* [8]. For them, spending time in these large UGS during the summer in a way facilitated the feeling of being on holiday and became a replacement for that.

As the lockdown in Berlin began to ease towards the summer, there was a definite trajectory that saw people going from spending time alone in UGS towards being more social again and spending time in large groups. For example, *"I started using the parks for a moment for myself and for a moment to meet up with other people"* [7]. UGS then served a dual purpose of facilitating time alone, but also serving as a space to interact with other people outside.

5.2.2 Social Interaction

During the pandemic, UGS in Berlin became a vital resource that enabled social gathering in a safer way, due to the circulation of fresh air and the ability to socially distance. Being outside in green space facilitated being around other people - whether friends or strangers - in an appropriate way. One interviewee stated *"and 'cause of the realities of the pandemic you realise that parks aren't escapist places, they're social melting pots, they're public spaces and they belong to everyone and that's why I felt drawn to them"* [9]. For them, UGS was rather an opportunity to feel a sense of connection and community rather than to escape and be alone. Therefore, the value that individuals got from green space exposure and their subsequent use patterns were dictated largely by their needs – whilst some craved a peaceful and restorative environment, others felt the need to remedy feelings of isolation.

According to the interviewees, UGS *"really became a social meetup place"* [8] which often provided the *"only opportunity to interact with other humans"* [1]. They also mentioned several forms of social interaction that UGS facilitated, for example:

- Meeting friends in a larger group (which was not permitted inside)
- Acting as a replacement for indoor social venues: *"when things became uncertain it fulfilled the role of a bar a café"* [4]
- Meeting individual friends who were not comfortable with meeting up indoors: *"it created an opportunity to socialise with someone who was really really concerned"* [5]

- Doing shared activities outdoors: *“now I start doing exercise with my friends, sometimes yoga”* [7]

Being outside in green space therefore became *“the new standard for social gatherings”* [3], as they became an *“all-purpose socialising space”* [4]. Several of the interviewees recalled that as the summer progressed, these gatherings became larger and the atmosphere became more celebratory, with a lot of *“parties and raves going on”* [6]. Many of the interviewees mentioned how the experience in UGS was likely to have been made so enjoyable because it was paired with other things that bring them joy, such as being close to other people, playing music, and being allowed to drink alcohol in public. As a result of this, *“the whole atmosphere of those places was a lot different and the activities were a lot different as well”* [8]. One particular green space that was mentioned repeatedly is Hasenheide, located in Neukölln. It gained a reputation during the summer as a place where a lot of illegal night-time parties were taking place, which also attracted attention from the media⁴ and a heightened police presence. Some interviewees stated that they had attended these parties as *“we had to release our energy”* [10] – they enabled people to have fun with friends, enjoy the summertime and ease stress/tension.

However, other park users did not always look upon these activities favourably. Whilst one interviewee enjoyed attending these events, they acknowledge that *“some people, like, went too crazy there as well so, um, misused this space which is actually for recreation and not partying too for their own purposes”* [1]. Moreover, certain behaviours triggered more intense policing of these spaces which affected the others’ enjoyment and experience of the green space: *“because of certain behaviour like being with a lot of people in a big group blasting loud music those were triggering police to come around and check”* [10] – causing a feeling of anxiety and of being watched or monitored constantly.

Policing of green space was an issue that was mentioned repeatedly by the interviewees who recalled the police ‘shutting down’ social gatherings and asking people to leave the space. For example: *“it was in the evenings where the police would come and do a full clean out of the parks where they would remove everyone, that happened to us at least once or twice, we’d be there a bit too late and they*

⁴ ‘Berlin parties as pandemic threatens to return’ (Deutsche Welle, 28.07.2020)
<https://www.dw.com/en/berlin-parties-during-pandemic/a-54357745>

would just say okay everyone go home” [8]. Another interviewee described the policing style as “very aggressive” [6] and felt like they were only targeting space and social gatherings that were occupied by groups of young LGBT+ people. They stated: *“they’d scare all of the queers out of the park and then you’d turn around and see those at least straight-appearing people or whatever having their party and being completely left alone”* [6]. They found this experience to be upsetting and unfair, particularly as UGS had taken on the role as a meeting space for the LGBT+ community in Berlin – providing a safe space to socialise outdoors. One interviewee described how being present in green spaces in the city was vital in the production and maintenance of their personal identity, *“it’s really made me reconsider them [green spaces] as somewhere you can go, like they’re so important in Berlin for the production of different identities - for queer people, for people of colour - and that will stick with me, I think. And for my own personal development I think it’s really important to go out in these spaces”* [9]. In moments of confrontation with the police for example it led individuals to perceive these spaces as unsafe or unwelcoming, not only damaging their experience but also threatening their wellbeing and sense of self.

Several interviewees who experienced similar situations felt frustrated and confused about these behaviours. Although they acknowledged that the scale of these gatherings was often quite large, they were conscious of the regulations and ensured that social distancing was still adhered to – however, *“the police were like, ‘no this is unacceptable, you all need to leave’, it’s like, but we’re following the rules, there’s nothing wrong with what we’re doing right now”* [6]. In this way, some individuals felt that the police regulation of UGS was too aggressive, harsh, and unfair – frustrations played out both on the basis of ambiguity surrounding the lockdown-related regulations about social distancing, but also feeling unfairly victimised and targeted because of their identity. As a result one interviewee stated: *“because this party scene’s at night, it’s getting really loud, or polizei getting involved after nine pm so at some point I remember I decided not to go to Hasenheide anymore”* [10]. Therefore, the actions of other park users and the way activities were being regulated became a deterrent and had a direct impact on their interaction with UGS, leading them to seek out alternative spaces that could provide a safer, calmer and less threatening environment.

Furthermore, the interviewees mentioned how spaces such as Hasenheide were left

strewn with litter – mostly glass bottles and plastic food packaging. They mentioned how spaces were often very crowded, leading to them becoming “*overrun [and] destroyed*” [1], in turn also causing damage to the park’s vegetation which was seen as a selfish behaviour that showed “*disrespect towards nature*” [1]. This particular individual therefore “*wished that people would be more conscious about their behaviour*” [1] to allow for an equitable, fair, and sustainable use of green space to allow other park users to enjoy it too.

In general all of the interviewees pointed to how busy the parks in Berlin had become over the spring and summer. One individual who regularly visited Tiergarten mentioned, “*usually I always had my spot and it was always empty, since this lockdown I had to fight for it. I had to defend my spot*” [7]. This affected the level of restoration and relaxation they were able to achieve, as there was a perceived disturbance of their routine and they became impacted more by the people around them. However, others also enjoyed the fact that parks were busier as it allowed them to feel less isolated even when spending time alone. For example, one interviewee enjoyed people-watching at Templehofer Feld and looking at all of the activities that were taking place, such as skateboarding or people flying kites [5].

5.2.3 UGS Features

Aside from the social element, the interviewees also commented on the physical and natural features of UGS and how they influenced their experiences. Several people valued the flora and the fauna present in the parks because they helped to instil a sense of calmness and peace: “*I think the nature itself is quite relaxing, listening to the noises of the nature being completely calm*” [7]. The sounds of nature such as wind or birds contributed to a relaxing experience. Moreover, as the seasons began to change the aesthetic qualities such as flowers blooming and trees becoming greener gave some of the interviewees a sense of happiness and excitement.

Regarding availability and access to green space, the interviewees had quite varying experiences. Those living in the districts of Wedding and Lichtenberg stated that they had a very good level of UGS availability as well as variety e.g. parks of different sizes, urban gardening facilities, green cemeteries, and also blue/green spaces. Those living in denser urban areas such as Mitte, Charlottenburg and Neukölln however often struggled to access UGS close to home or were not satisfied by the quality or size of the space. Whilst some did make use of small neighbourhood green

spaces and basic facilities such as benches or areas of grass to sit down, time spent here was often very short and did not have much potential for restoration or escape. Because of this lack of access as well as the desire to explore new UGS, some interviewees mentioned that they walked or cycled to green spaces further away that offered a more pleasant environment to spend time in. For those avoiding public transport these distances were often quite far: *“there were weeks and weeks where I wasn’t on any public transport at all so it was anywhere I could get by foot and some days I would walk 20km so it was quite a bit of an adventure around the city”* [5]. However, this was not strictly due to necessity but the desire to explore new green spaces.

One interviewee also mentioned that they consulted a Facebook group of expat women living in Berlin where people had shared recommendations and information about their favourite green spaces in the city. This gave the individual more inspiration and motivation to travel further afield and discover previously unknown spaces allowing them to *“see something different maybe [have] a change of scene”* [7]. In addition, several of the interviewees talked about how they had bought inflatable boats which allowed them to use inner-city blue spaces such as the Landwehr Canal in Kreuzberg: *“when you’re on the boat with a few other people but even then, like, it was fine - we were allowed to hang out with other people outside - and it created such a beautiful place to be outside, to hang out, to socialise, to have a good time”* [5]. Spending time on the canal then became a phenomenon and a unique feature of summer 2020. More than in previous years, people reclaimed the opportunity to use this alternative space, mainly for socialising purposes as it offered a sense of excitement and fun.

However, despite having the freedom to explore various green spaces, certain regulations and restrictions meant that people were not able to carry out all of their usual activities. For example, playgrounds were closed during the majority of the lockdown period. This presented a challenge for one interviewee with children who stated *“the playgrounds were also closed for a time it wasn’t possible to go to them [...] the private kind of Hinterhof areas were not officially closed so they were something we could still access”* [3]. Because of the usage restrictions they actively sought out alternative UGS, which are not usually frequented by the general public. However, these ‘Hinterhof’ (backyard) spaces often contain grass, trees, and

playground equipment so provided a *“substitute for the public parks even though they’re not really public space”* [3].

The other interviewees did not mention any physical barriers to using UGS during this time. However, many of them saw their habits *“become a lot more regimented”* [9] because they were cautious about regulations set out by the government with regards to maintaining distance to others and not spending time in green space as part of a larger group of people. One interviewee stated *“I feel like its been a lot more controlled this year”* [8] when reflecting on time spent with friends outdoors; they mentioned feeling anxious about whether sitting in a park with several friends was considered illegal and whether the police would approach them. In general, others also experienced feelings of anxiety, caution, and uncertainty because the rules were changing so frequently and were therefore often ambiguous.

The interviewees wished that they had more knowledge and clarity about the regulations, which would have allowed them to feel more responsible and relaxed when spending time in UGS:

- *“I think it’s important that we’re informed about what’s going on, I think it’s important that there are certain rules put in place”* [5]
- Imposing clearer regulation → *“I feel we’d go into the summer with a lot more knowledge and feeling of responsibility like we’re in this situation again let’s do it properly this time”* [8]
- *“I think just having very clear regulations which has been a part of the problem is that they change so often that no one is ever really sure about what they’re really allowed to do”* [6]
- *“I wish there was less regulations”* [10] → felt very restricted and would have visited UGS more often if the situation had been more relaxed

At the same time, there was an awareness that *“restrictions and rules aren’t really gonna’ stop anyone”* [8]. Other park users who were not adhering to regulations such as social distancing created a sense of tension and disenfranchisement: *“There’s a wide variety of people who sort of take the seriousness of the regulations to varying degrees”* [4]. Seeing others flout the rules encouraged some of the interviewees to also not adhere to them. There was also a feeling of frustration and discord because some individuals were approached by the police or park authorities even when

following the rules and acting appropriately in UGS: *“People are then like, if I’m gonna’ be punished even when I follow the rules why follow them at all?”* [6].

Despite frustrations over ambiguous regulations and the behaviour of other park users, the interviewees were all in agreement that it was a positive thing to keep parks open during this time. Despite the associated risks it was better to maintain outdoor public space access to allow people to socialise, otherwise they would have met indoors instead where the risk of transmission is higher: *“I think its also better that a group of 10/15 people congregating in this green space in really close proximity and not masked, I don’t necessarily think that’s super smart but you know what, way better that you’re doing it out here where the sun is shining so you have the UV rays at play, there’s a lot of air circulation, better do that out here than in a closed space”* [4]. However, some interviewees also mentioned that this paradox of being told: *“Everyone please stay in and suddenly it gives you this itch to go outside even more”* [4] - the idea of being restricted made it somehow more appealing to go outside. Furthermore, flouting the rules gave some people a good feeling and some stress relief: *“It was kind of a risky behaviour to have back then, but then it was actually cool to do that - it felt, like, liberating somehow because also you’re living with this, like, constant stress, so kind of like breaking the rules also makes you feel good somehow”* [2]. The presence of these regulations, paired with a need to be outside and escape the feelings of being isolated or restricted, engendered new use patterns and behaviours involving certain levels of risk, which were justified by the enjoyment and relief that individuals obtained from spending time in UGS.

5.3 Emotional Response and Perception

The emotional response to green space exposure during the lockdown was overwhelmingly positive. Whilst there were several negative experiences such as encounters with the police, these were more circumstantial and resulted from lockdown-related restrictions rather than UGS itself. Reflecting on UGS during this time, the interviewees stated:

- *“It became our, you know, permanent place to go, and took on a completely different meaning for us because before it was something that was a free-time activity and something that we could do on the weekends but suddenly it was an everyday thing, it was a very important part of our lives”* [3]

- Their community garden plot became a permanent place for recreation and respite as well providing a productive outlet for stress relief.
- *"I'm really one hundred percent sure that those green spaces and the opportunity to gather gave many people - sort of, at least - the feeling that everything is okayish, and it protected many people probably from going crazy" [1]*
- *"That one thing that is gonna' make you happy during the week, it's a good thing that these spaces were there" [8]*
 - The ability to spend time in UGS at the weekends/after work became something to look forward to and be excited about.
- *"The people that didn't get a chance to go to the parks will regret it actually because for me it's like a memory box" [7]*
 - For them, time spent in UGS became something memorable and was one on the positive aspects of 2020 to reflect on.

This positive response also had a positive impact on the interviewees' wellbeing, for example:

- Being in green space *"just reduced this stress and anxiety and unhappiness" [1]*
- *"when I'm outdoors I get that Vitamin D sort of that surge of dopamine where it's like the wind is blowing, you feel good, the sun is shining on your skin" [4]*
- Being in green space *"was critical for my sanity during corona" [5]*
- *"I realised how good it was for me to actually leave the house and go to the park" [7]*
- *"being outside is very important for like, to feel that you're doing something, it just makes your life more productive" [10]*

These positive experiences and memories led to a new realisation of the benefits of UGS and an appreciation for the available green space in Berlin. The interviewees all expressed that they felt fortunate, *"incredibly grateful" [6]*, and lucky to have had access to UGS during this time. The value that people derived from green space exposure and their importance for wellbeing increased: *"Suddenly the utility I got out of green spaces went up a lot this year" [4]*; *"I can say that green spaces have taken on a huge role for me in my life" [5]*. Furthermore, many of the interviewees came to

the realisation that there was a lot of accessible and previously unexplored green space in the city which led to them to discover new spaces that they will now continue to visit. Reflecting on their shift in perception of UGS, one interviewee stated *“it’s probably the last vestige of a truly democratic society, openly accessible green space that everyone can use to their own ends, so it has actually really made me reconsider what I think green spaces are and what how they fit into the wider rhythms of what it is to live in a city, I definitely think so. Yeah, it’s completely changed how I think about them”* [9]. This illustrates how the interviewees came to realise the importance of UGS both on a personal level and how it was a beneficial resource to wider society during this time.

The unique lockdown situation meant that UGS also transformed and, for many, took on a new meaning and purpose. One interviewee described how Hasenheide *“[if it] wouldn’t exist [sic] I feel that many of us would have suffered a little bit more because of this pandemic and for me it was a complete substitute for clubs it was as I said a way to spontaneously meet people to actually bound new friendships and socialise with strangers”* [1] – it became a safe space to meet friends and was a reliable constant in a time of uncertainty. Others also mentioned that the enjoyment and excitement they felt when using this space may also influence the amount of time they spend in UGS in years to come – favouring time spent outdoors rather than inside. The general consensus is that *“this year has really changed people’s perceptions on these spaces”* [8] – perhaps beforehand people may have had a more neutral or indifferent attitude towards UGS but would now appreciate spending time in a peaceful environment surrounded by nature or appreciate the social function that it fulfils.

5.4 Broader Issues

As the lockdown led people to appreciate the presence of UGS more, they also came to see it as a valuable resource for their mental health and wellbeing. This appreciation led the interviewees to form an attachment to these environments as they constructed certain meanings around their time spent in green space. For some, parks like Hasenheide became vital for combating social isolation, whilst others valued the opportunity to visit larger UGS and forests alone for combating fatigue and stress. Through this, some of the interviewees came to realise that UGS is not always a highly protected resource and is vulnerable to the pressures of urban development. For example, one interviewee who tends to a gardening plot at a

community garden in Wedding expressed that they were concerned about the space's survival in the future as a planned redevelopment project would force the garden to close. They stated: *"I think these areas could be used in different ways that are very productive and not necessarily, it's not always about extracting and optimising as much profit as you can. There are other things that are still valuable even if they're more intangible and that's what these spaces provide I think"* [4]. Their time spent in the garden *"was, like, really saving our mental health"* [4], suggesting that these green spaces need to be valued in terms of the social/cultural services (as well as ecosystem services) that they offer. Another interviewee stated: *"I know we have a housing shortage here, especially an affordable housing shortage - that's, like, it needs to be considered, like, you need a place to be in green"* [6]. These discussions then pointed to the fact that there are broader urban planning concerns about the protection of UGS and how it should be seen as a vital public health resource regardless of whether it is a large park, small neighbourhood green space, or a community garden.

In addition, in reflection of their home city one interviewee stated, *"what I really noticed when I came to Berlin was the massive amount of available green space, even though it's patchy and at times very dirty, or there are problems, it's under maintained, but you never really have what we had a lot of in Edinburgh which is privatised gardens for residents"* [9]. They describe how UGS access is limited and exclusionary in their home city as it is comprised of private neighbourhood gardens/green squares meaning that only a specific group of people was able to benefit from them i.e. those with a key. Although this was not the case in Berlin, they stressed how it is important to recognise the value of open public green space (at all times, not just during a crisis) as it is *"a complete necessity for any healthy democratic urban society"* [9].

Furthermore, when asked about potential future lockdown scenarios several interviewees stressed the importance of keeping UGS open and accessible. One interviewee [2] expressed how green space exposure, particularly in times of uncertainty, is an essential need and has to be guaranteed as a minimum right in order to maintain a good quality of life and wellbeing. Others were also concerned with the long-term mental health impacts of the COVID-19 lockdown: *"the long term mental health impact on our society is a bigger risk than corona and I think that's a discussion that was had around using these spaces like Hasenheide or Grunewald"*

[6]. They argued that although people did not always follow the regulations when using UGS, they should not be punished or restricted for this, as being outdoors in green space is vital for combatting social isolation and loneliness.

6. Discussion

Reflecting on the results, several key findings emerged that help to answer the research questions of this thesis. This chapter will discuss the significance of the results and analyse them in more detail, also linking them back to the literature and theoretical foundations of UGS and mental health/wellbeing research.

The first major finding is that **the unique situation created by the COVID-19 lockdown in Berlin increased people's interaction with UGS**. This correlates with similar research findings (Derks et al. 2020, Venter et al. 2020) that also suggest that UGS use increased significantly in light of the pandemic. The 10 students/expats who were interviewed for this thesis were living in the city during the time of the first lockdown (March 2020 onwards) and encountered a sudden change of daily routine. This meant that they were spending significant amounts of time working from home with little reason to travel across the city or to commute. The retreat of their daily lives into the home environment left them feeling confined, claustrophobic, and at times isolated – engendering a need for escape, to be outside in green space.

Cramped housing conditions, as well as other underlying stress-factors such as reduced social interaction with friends and colleagues as well as anxieties related to the pandemic saw green spaces become an extension of peoples' personal or private space, offering respite through the opportunity to spend time alone. Moreover, working from home meant that the interviewees used local neighbourhood green spaces more e.g. for having a short walk/break to get some fresh air and movement during the working day. Therefore, even short periods of green space exposure appeared to offer some restoration in terms of physical and mental wellbeing, allowing them to feel more productive and less stressed. This correlates with SRT, as green space exposure in this case offered relief from stress and contributed to “a more positively-toned emotional state” (Ulrich et al., 1991; 201). These findings provide an answer to research question 2 (whether interaction with UGS in Berlin help to alleviate feelings of stress or isolation) – green space exposure and interaction were vital for relieving adverse mental health outcomes such as “depression and increased sense of loneliness” (Soga et al. 2021; 1) brought about by the lockdown.

As normal activities such as sports classes and socialising indoors were no longer possible, spending time in green space became the only option. Increasingly frequent visits to green space were at first a distraction from boredom and a way to fill the interviewees' free time, but as the lockdown progressed they began to realise and appreciate the positive impacts that green space exposure was having on their wellbeing. Spending time alone helped them to disconnect and reflect on the situation to get them "*back on track*" [7]. This is evidence that green space exposure allowed for attention restoration, as "a deeply restorative experience is likely to include reflections on one's life, on one's priorities and possibilities, on one's actions and one's goals" (Kaplan and Kaplan, 1989; 197). UGS also became a reliable constant in such an uncertain time – a resource that was always there, accessible at all times. It became apparent that spending time in green space developed into a default and routine activity, with some interviewees talking about how they could go to parks such as Hasenheide and know that they would see the same people there. These places took on a new importance for them and led them to form an attachment, which promoted "feelings of familiarity, rootedness and self-esteem" (Subiza-Pérez et al., 2020; 2). This supports the findings of previous research, which suggests that UGS is fundamental in providing mental health and wellbeing-related services to urban dwellers particularly during a time of societal crisis (Ugolini et al., 2020).

Therefore, another key finding is that **UGS served a dual purpose as a space to escape to and also a place to connect with others**. This links back to the research of Dinnie et al. (2013; 104) who state that "connecting with others" is a key factor for wellbeing. Jennings and Johnson Gaither (2015; 1958) also found that "The cultural services from green spaces may revitalise a community and encourage a sense of place and place attachment, both of which can play a beneficial role in psychological health and well-being." (1958). Whilst it is important to interrogate the benefits of green space exposure for the individual, this thesis has also shown how the social value of UGS is fundamental for strengthening communities and offering spaces to meet. Although green spaces have always been inherently social spaces where communities meet and interact, during the lockdown in Berlin their social function became heightened and took on unique forms. In the absence of bars and clubs, parks served as social hubs that allowed people to feel connected to one another, surrounded by strangers or meeting friends. In other words, green spaces were not always a place to escape to but often a crucial resource in which fragments of

'normal' life played out. It was not necessarily the peace and quiet that allowed the interviewees to 'switch off', but rather the convivial and vibrant atmosphere felt in the parks during this time gave them hope and offered a much-needed distraction from the lockdown regulations that played out in the spatiality of the home and study/workplace. Soga et al. (2021) also found that "urban greenspace provides opportunities to interact with other members of local communities" when measuring green space interaction of people living in Tokyo during the pandemic. They suggest that despite social distancing regulations seeing other park users was a key pathway in reducing feelings of isolations.

Moreover, particularly for LGBT+ identifying people in Berlin, spaces like Hasenheide gained a reputation as a meeting point for members of their community, which became vital for maintaining identity and self-esteem. Music and outdoor illegal parties became a regular feature over the summer in this space; although this flouted the imposed regulations (amount of people gathering in one space, social distancing), the interviewees stressed that they benefitted enormously from having the opportunity to release energy, feel good, and just have fun. Because of this they were able to form tangible memories of the summer, making them feel grateful and appreciative that they were able to use UGS in this way and be "*part of something special*" [2].

This leads into the third key finding that **the lockdown situation in Berlin created new use patterns, constellations, behaviours and routines in UGS that are likely to remain** even once the regulations are eased. This also corresponds to research question 1 (whether the students/expats' emotional response and experience of place change during the lockdown) – not only did they experience UGS differently but they encountered opportunities to interact with these spaces differently to previous years. Aside from using UGS for illegal parties and large social gatherings, other interviewees also provided evidence for new routines and habits linked to green space interaction, which they are likely to continue in the future. For example, some may choose to walk or commute through green space rather than taking public transport, have a lunch break outdoors during the working day, or continue to visit their community garden/allotment on a regular basis. Others also discovered new green spaces further afield e.g. in Brandenburg, as they were craving a change of scene and a new space to explore. Some people came to appreciate the green spaces closer to home e.g. their backyards, because they

provided a sheltered green environment that did not require taking public transport or walking long distances. Especially as certain park facilities were closed e.g. playgrounds and outdoor exercise facilities, these alternative green spaces allowed the interviewees to be creative and harness the potential benefits of neighbourhood green space, such as putting play equipment e.g. a trampoline in the shared *Hinterhof* to allow children a safe space to play in.

Another interesting phenomenon to emerge was the reclaiming of blue spaces within the city e.g. the Landwehr Canal – several of the interviewees bought inflatable boats during the summer and spent time on the water with friends. Often this was a way of avoiding the crowded green spaces e.g. the green embankment next to the canal, and also offered a kind of exploration of the city as the canal connects several inner-city districts. Some parts of the canal embankment also do not provide adequate usable green spaces, for example, because the banks are too steep or there is a lack of seating facilities and access to the water. So perhaps being on the water provided an opportunity to be outside and enjoy nature in localities that lack adequate green space provisions. Although this was not explicitly expressed in the interviews, there was a sense that being on the water created an additional opportunity to be outside and was a fun local activity. Although it is not in the scope of this thesis, the public interest for accessing green/blue spaces could inform urban ecohydrology and planning developments to see whether more waterscapes could be implemented in the city. These experiences led the interviewees to appreciate their time spent in UGS and state that they are likely to spend more time outdoors next summer to enjoy the sunshine, fresh air, being in nature, and the positive atmosphere created by the other park users.

However, the intensified use of UGS during the lockdown also had some negative repercussions such as littering, damage to nature, and increased policing. These issues often became negative factors that dissuaded the interviewees from visiting certain green spaces, either because they perceived them as unattractive or felt threatened by the strict regulation imposed by the police or park authority. One interviewee in particular mentioned “I would have gone to Hasenheide and Templehof more often but we decided to go to Gleisdreieck or somewhere nearby instead” [10], because the park at Gleisdreieck offered a cleaner and calmer environment. Others also stressed how Hasenheide and Templehof in particular as well as Volkspark Friedrichshain were often overrun and too crowded which led to a lot of littering and anti-social behaviour. Some people experienced underlying tension

and uncertainty as they felt they were being punished even when following the rules. An associated issue was the vagueness of the lockdown rules as they changed on a regular basis. This contributed to another key finding that interviewees **wished that the regulations surrounding behaviour in UGS had been clearer** so that they could be better informed and act in a safer and more responsible manner. These circumstances and the consequences of increased UGS use/crowdedness led to some having a negative emotional response; although only a specific group of people were interviewed for this thesis it would also be interesting to survey the emotional response and opinions of other park users. However, in general the use patterns that played out over the summer act as a useful tool for making recommendations about the management of green spaces to ensure that all users benefit from the wellbeing services that they offer. This contributes to other studies carried out in light of the pandemic which suggest that on-going monitoring and maintenance of green spaces is essential to keep problems such as excess littering under control (Slater et al., 2020; 4).

This thesis does not seek to make concrete recommendations e.g. for UGS management or urban planning as it is recognised that the sample size and specific demographic surveyed are small, and therefore unrepresentative of the wider population in general. However, what has been achieved is an in-depth perspective on a specific sub-population (international students and expats living in Berlin) who suddenly became more vulnerable than usual due to the imposed lockdown restrictions. Although UGS access was not greatly limited in Berlin during this time, it is important to note how the interviewees' appreciation and perception of green space shifted towards seeing it as a valuable resource and an essential element of their daily lives. Upon reflecting on the scenarios in their home countries (fig. 3), they mentioned feeling 'grateful' and 'lucky' to have been in Berlin during this time because the regulations still allowed them the freedom to be outside. This makes a strong case for ensuring that UGS remains accessible during future times of crisis. By reflecting on the new use patterns that played out e.g. the organisation of illegal parties, it is possible to see why these occurred (e.g. need for escape) and to foresee how these might take place again in the future. It is now important to discuss, either on a societal level or on a local scale, how such activities can be tolerated and managed appropriately to ensure that a fine balance of freedom and regulation enforcement can exist, so that all park users can have a fair experience in green space and benefit equally from its restorative potential.

Participant	Home country	Reported situation (with regards to lockdown regulations)	Comments/Emotional response
1	Poland	<ul style="list-style-type: none"> • Not allowed to go to forests or parks • More common to have private gardens 	<ul style="list-style-type: none"> • “I think that green spaces, maybe it’s different in Warsaw, but in Poland are not really considered as important because people are really more into keep stuff [...] in their own garden” • Family/friends were grateful to have their private green spaces, but others maybe did not value public green space as much
2	Brazil	<ul style="list-style-type: none"> • Strict lockdown, regulations enforced very quickly, people became tired and frustrated – only essential activities allowed, spending time in UGS was discouraged • Lots of countryside in Brazil, but in the cities e.g. São Paulo limited access/small spaces 	<ul style="list-style-type: none"> • Felt guilty sharing with friends/family back home how they were interacting with UGS • “I wasn’t like kind of telling I was just being very discreet with my behaviour” • Felt that we had a lot more freedom in Berlin to go outside
3	Australia	<ul style="list-style-type: none"> • Stringent lockdown • “people wouldn’t go outside of the house for more than an hour a day and they couldn’t go beyond a 5 kilometre radius from their house, they were supposed to umm if they were going to have contact with anybody they needed to choose like a contact bubble” 	<ul style="list-style-type: none"> • Doesn’t make sense to lock people into their apartments, felt lucky that in Berlin there was freedom to be outside and visit their <i>Kleingarten</i>
7	Argentina	<ul style="list-style-type: none"> • Strict lockdown • “they have more freedom now but they’ve been in full lockdown I think it was like four months” 	<ul style="list-style-type: none"> • Friends/family → “they were quite envious how I was living in my lockdown being able to meet with one two friends” • “being in the park reminded me a lot to being back home” • Family member had a special medical-related permit to go outside during lockdown otherwise their psychiatric condition would have worsened → interviewee stated “I think we all should have that special permit to go and walk even fifteen minutes per day”,

			because the lockdown had negative mental health outcomes for everyone
8	UK/England	<ul style="list-style-type: none"> • Strict lockdown • Family not affected so much because they live in the countryside 	<ul style="list-style-type: none"> • Posting UGS activities in Berlin on social media created a negative response from friends back home • “people back home replying saying oh my god how is this allowed so I think they were sort of annoyed sort of jealous” • “I feel like I was happier to be in Berlin during this time” → had a lot more freedom to interact with UGS

Figure 3. Examples of the situation in the interviewees' home countries

Furthermore, the lockdown period emphasised the fact that **green space is not just an environmental good but also a social good**. The interviewees' experience with urban gardening, for example, allowed them to feel more productive, in control, and focussed. Because urban gardens provide social wellbeing and a sense of community as well as individual wellbeing it is important that this is recognised in urban development policy. These resources are powerful tools that, according to the interviewees, are undervalued and therefore under threat of being developed for profit-led purposes. As Kaplan and Kaplan noted already in 1989, “It is rare to find an opportunity for such diverse and substantial benefits available at so modest a cost. Perhaps this resource for enhancing health, happiness, and wholeness has been neglected long enough.” (198). Three decades later it seems that to some extent UGS (or certain types of UGS) is still not valued as a long term solution to improving urban citizen's wellbeing. What this crisis has exemplified is that UGS is often the only remedy or at least one of the most potent remedies against mental health issues brought about by stressful life events. Whilst COVID-19 has affected the entire world at a specific point in time, people can naturally have personal crises at any point in their lives. Some interviewees stated that because they have come to realise the way in which green space exposure can improve their emotional state, they will actively spend time in UGS in the future if they are feeling stressed or dealing with negative emotional experiences. This provides evidence for answering research question 3 (whether the students/expats' perception of UGS changed at all since the pandemic) – not only did they encounter a positive shift in perception, but this new appreciation will influence how they value and interact with UGS in the future. Therefore UGS, particularly on the local scale, will hopefully be recognised by the city as an asset

that not only needs to remain open, but also needs to be protected, maintained, and invested in for the benefit of the urban community.

7. Conclusion

This thesis has illuminated the ways in which UGS exposure contributed to supporting the wellbeing of individuals during the global pandemic and how it created new opportunities for interaction. Whilst the interviewees had a shared lifestyle situation (being an expat/international student in Berlin), their needs and use patterns of UGS were varied and nuanced. Some preferred the stillness and the sounds of nature, which provided calm - meanwhile others craved the more vibrant and social atmosphere that large green spaces provided. Spending time in UGS also provided a shared sense of escape – for some this was an escape from claustrophobic living conditions, from city life, or from the constant pressure of lockdown-related regulations. For others this escape meant leaving the outside world behind and upon entering the park feeling a sense of rootedness and normality.

Regardless of the pathway, all of the individuals surveyed for this thesis gained an appreciation for the value of UGS in Berlin for supporting their wellbeing. It provided a safe arena to escape, to exercise, to socialise, and - most importantly - to have fun. Whilst this thesis is based on theoretical foundations, interrogating the pathways through which exposure to green space can facilitate restoration and stress reduction, the research here sought to explore the stories and experiences of a certain group of people. In doing so, it has shown that these theories are still relevant and applicable to the novel lockdown situation brought on by the COVID-19 pandemic.

It has been an uncertain and testing time for everyone, but the interviewees still emphasised that being in green space with a large degree of freedom to interact with it according to their own needs and desires has allowed them to form tangible memories of summer 2020, providing hope and respite from a stressful situation. It remains to be seen how the pandemic situation will unfold, but this research has proven that at least for a certain sub-group of the population UGS is a reliable constant, which will undoubtedly mitigate some of the long-term mental health impacts that the pandemic has created.

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Appendix

Interview Guide

Date + time:

Participant:

Location:

If you think back to the beginning of March when the lockdown started, can you describe how your day-to-day routine changed – for example, were you forced to work/study from home?

Can you describe to me the details of the green space(s) that you visited and how you interacted with it

- What activities would you normally do in this space? e.g. sports, socialising, walking, other...
- Were you still able to carry out these activities, or use all of the facilities that you normally would?

Did your perception of green space(s) change at all during this time?

- How did you feel about the other park/space users – did you interact with them or rather practice social distancing?
- How did being in this space make you feel?

In Berlin, there was quite a large degree of freedom to be outdoors during the pandemic, and make use of public spaces – how (if so) does it differ to your home country/city during this time?

- Were you happy to be able to have access to green spaces during this time?
- Were your own practices/routines influenced at all by the experiences of your friends/family back home?
- How did/do your opportunities to access public green space (during the lockdown) differ in comparison to your home country?

If a lockdown or period of isolation were to happen again, what role do you think green spaces would play?

- Would you hope for them to remain accessible and open to the public, or restricted?
- What kind of activities/behaviour should be allowed to take place?