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Citation for final published version:

Bornioli, Anna, Parkhurst, Graham and Morgan, Phillip 2018. The psychological wellbeing benefits of place engagement during walking in urban environments: a qualitative photo-elicitation study. *Health and Place* 53, pp. 228-236. 10.1016/j.healthplace.2018.08.018

Publishers page: <https://doi.org/10.1016/j.healthplace.2018.08.018>

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**THE PSYCHOLOGICAL WELLBEING BENEFITS OF PLACE ENGAGEMENT DURING WALKING
IN URBAN ENVIRONMENTS: A QUALITATIVE PHOTO-ELICITATION STUDY.**

Manuscript accepted in Health & Place (pre-publication version)

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Abstract

The psychological wellbeing potential of walking in urban environments has received limited attention from scholars, despite the important public health implications of identifying characteristics of urban settings that support wellbeing and encourage behaviour change. The study is the first to explore psychological wellbeing experiences of urban walking framed by theories of restorative environments and therapeutic landscape. Self-reported psychological wellbeing experiences of walking in urban settings were investigated with an innovative application of the photo-elicited interview. Fourteen adults took individual walks in Bristol city centre and photographed their journey; photographs were then discussed during the interview. Participants reported specific engagements with place related to personal connections, the identity of place, and sense of community that resulted in psychological wellbeing benefits. The findings also support the notion that non-natural elements can promote positive affective and cognitive appraisals. Building on the finding that also urban walking can support psychological wellbeing, it encourages future research into the health potential of different characteristics of built environments.

Keywords

Urban environments; Walking; Wellbeing; Perceived restoration; Affective appraisals

1. Introduction

Identifying the characteristics of urban settings that support psychological wellbeing and encourage healthy behaviours (such as walking as a key form of mobility) is a priority for research and policy. This is due to the increasing global urbanisation trends (United Nations - UN, 2014) and poor psychological wellbeing conditions in Western countries. In fact, research has shown that more than 25% of European (World Health Organization – WHO, 2015) and 18% of American populations (Nguyen et al., 2018) have poor psychological wellbeing, most commonly suffering from stress and depression. There is a growing agreement on the notion that physical environments influence health and wellbeing variables (Gesler, 2005; Kaplan, 1995). Walking is an activity that entails important physical and psychological wellbeing benefits (Gatrell, 2013), including alleviating psychological health symptoms

(Robertson et al., 2012). In line with this, the health and wellbeing potential of walking in natural environments has received extensive attention from scholars, and a growing number of studies indicate that nature contact has important benefits for health and wellbeing (WHO, 2016; Hartig et al., 2014). Some researchers have also noted that not all natural environments support psychological health and wellbeing (Bigley, 2013). However, very limited attention has been given to the psychological wellbeing potential of walking in the urban built landscape. The current research aimed to address this gap by exploring wellbeing experiences of walking in urban environments, specifically focusing on the potential of non-natural elements to support wellbeing. We conceptualised wellbeing as holistic and dynamic concept of “being well” and a positive dimension of mental health (WHO, 2014; Ryan and Deci, 2001). Specifically, similarly to previous contributors (Bell et al., 2015, 2018; Finaly et al., 2015; White et al., 2013, 2017; Gatrell, 2013), we focused on subjective wellbeing, e.g. “people's evaluations of their lives on affective and cognitive states” (Diener, 2000, p. 34). An innovative application of a qualitative photo-elicitation quasi-mobile methodology was chosen to explore first-person psychological wellbeing experiences of walking in urban settings, thus providing a thick and rich accounts of experiences (Braun and Clarke, 2006). While a similar methodology has been used in the exploration of urban experiences (e.g., Dennis et al., 2009), we implemented a novel application focusing on the study of wellbeing-related urban experiences specifically.

In order to advance theoretical debate, the current study integrated two theoretical frameworks on the psychological wellbeing-promoting potential of environments: restorative environments theories (Kaplan and Kaplan, 1989; Ulrich et al., 1983) and therapeutic landscape and mobilities (Bell et al., 2018; Cresswell, 2014; Gatrell, 2013; Gesler, 2005). It is argued that such a multi-disciplinary perspective can offer a theoretical and practical contribution to the research on psychological wellbeing experiences in urban settings.

1.1. Restorative environments

Restorative environments are defined as those settings that facilitate recovery from a depleted psychological state. Restorative environments research builds on two leading frameworks: Ulrich's *Stress Recovery Theory* (SRT; 1983) and Kaplan and Kaplan's *Attention Restoration Theory* (ART; 1989). SRT (Ulrich, 1983, 1984; Ulrich et al., 1991) defines as restorative those settings that evoke positive emotions and alleviate negative affect, including stress, negative states, and understimulation. SRT states that natural environments can be restorative due to the innate inclination of humans towards nature, which is their evolutionary habitat (Ulrich et al., 1991), and that contact with nature can aid restoration from stress, but also from under-stimulation or low arousal (Ulrich, 1983).

Kaplan and Kaplan's ART (Kaplan and Kaplan, 1989; Kaplan, 1995) focuses on cognitive capacities and conceptualises restorative environments as those settings that reduce attentional fatigue. While ART posits that it is the natural environment that supports attention restoration, it also notes that any setting can potentially support restoration in presence of several restorative properties (Kaplan and Kaplan, 1989). These include: *being away* (being mentally away from routine or demanding activities), *fascination* (a necessary but not sufficient condition for restoration: being engaged without attentional effort), *compatibility* (providing a good fit with one's activities or inclinations), and *extent* (an environment that is coherent, ordered, and of substantial scope).

Building on the focus of SRT and ART on the restorative properties of nature, an extensive body of research has supported the idea that walking in natural environments is more restorative than walking in built settings (Roe and Aspinall, 2011; van den Berg et al., 2003; Hartig et al., 2003). However, this does not necessarily imply that built environments cannot offer restoration. In fact, previous experimental research studies have found that some built settings can be restorative (Bornioli et al., 2018a; San Juan et al., 2017; Stigsdotter et al., 2017; Staats et al., 2016; Karmanov and Hamel, 2008). However, there is a lack of studies examining how and why urban environments can be restorative. It is a key aim of the current paper to address this imbalance by exploring the processes behind these restorative experiences.

1.2 Geographical ideas of walking and place

The framework of therapeutic landscapes explores how physical settings, social conditions and human perceptions combine to contribute to healing (Bell et al., 2018; Gesler, 1992). Some of this literature has focused specifically on walking, with several authors suggesting that walking can be therapeutic (Gatrell, 2013). These ideas build on the conceptualisation from human geography of place as container of experiences and centre of meanings (Tuan, 1977; Relph, 1976), rather than mere physical contexts. Hence, while restorative environments research tends to conceive environments as impersonal physical *settings*, human geographers conceive these settings as *places*, and put the emphasis on the ways experiences, associations, and intentions contribute to create a place for an individual. In addition, restorative environments research tends to consider the bottom-up, perceptual properties of certain settings to offer restoration – with some exceptions: Korpela et al. (2008); Ratcliffe and Korpela (2016) – while the therapeutic landscape framework considers the relational outcomes emerging from the interactions between the individual and the environment (Conradson, 2005).

Despite Gesler (1996) also suggesting that built environments can promote healing, the research field has mainly focused on rural walking in green (Maddrell, 2013) and blue spaces (Bell et al., 2015; Coleman and Kearns, 2015). In parallel, specific focus on the healing potential of walking in everyday urban settings has received only limited attention. Scholars have noted that engagement with urban environments contributes to reducing negative states of mind (Calvert, 2015), but the physical world can provide sensory overstimulation (Edensor, 2010) and sometimes be “cognitively demanding” (Calvert, 2015, p. 146).

Given the general lack of literature on the restorative and therapeutic potential of walking in urban environments, the current study empirically explored self-reported psychological wellbeing experiences of walking in urban environments. Therefore, it drew upon and developed the approaches of restorative environments and the geographical literature on walking, place, and wellbeing. We

argue that such a multi-disciplinary perspective is required to understand the impact of landscapes on human health and to advance theory and practice. Despite both approaches focusing on healing and recovery from depleted mental states, there is a growing interest in the potential of ordinary, everyday experiences and places to contribute to psychological health promotion, and not just healing from negative states (Bell et al., 2015). The study aimed to (1) inform the theoretical debate on urban walking and psychological health promotion and recovery, and (2) provide an initial platform of new avenues of research on restorative and therapeutic urban environments. A qualitative quasi-mobile photo-elicitation methodology was employed, and aim (3) was to test the effectiveness of this technique and its usefulness in the field.

2. Methods

2.1 Participants and design

The study was part of a larger research project examining the influence of built environments on psychological wellbeing. Fourteen walkers (eight city centre organisation employees and six university students; eight females) were recruited (see below) from amongst the original sample of 269 employee and student participants who had participated in a quantitative study on walking in urban environments (Bornioli et al., 2018a). Interviewee ages ranged from 18 to 53 ($M = 31.8$ years, $SD = 13.2$). Ten were White British, two were White non-British, and two were of Arab ethnic background. The recruitment strategy was purposeful and aimed to collect a variety of views and experiences related to urban environments and walking; the sampling frame included walking levels (heavy/medium walkers – e.g., individuals who walk more/less than 4 times a week for at least 30 minutes), attitudes towards urban and natural environments (nature versus urban oriented), and age (under 25; 26 to 39 years old; over 40), all based on the experimental data. The successfully-recruited participants are identified by pseudonyms in Figure 1.

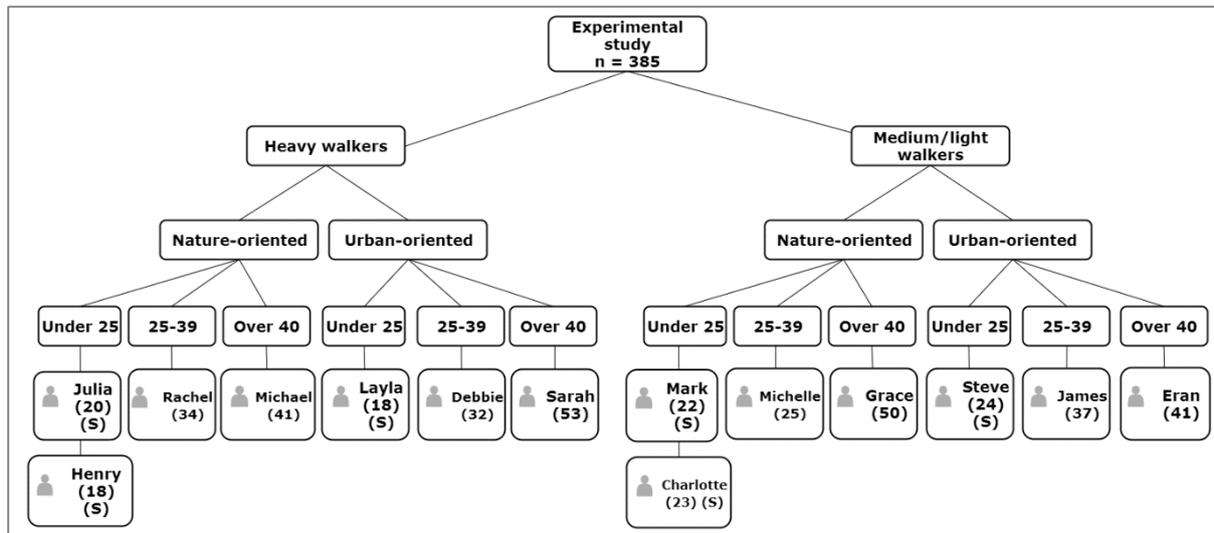


Figure 1: Sampling strategy. Legend: (n) = age; (S) = student participant

The methodology consisted of quasi-mobile photo-elicited interviews based on photographs taken by participants during individual walks in Bristol city centre. Photo-elicitation methods are a popular tool in social (Guell and Ogilvie 2013), health (Frith and Harcourt, 2007) and psychology research (Bagnoli, 2009), but no published record of previous use in relation to psychological wellbeing experiences of urban walking was found when designing the current study. With respect to traditional go-along, mobile methods, in which researchers physically travel with research subjects, the quasi-mobile photo-elicitation does not disturb the normal walking practice, whilst still allowing the researcher to witness the experience via the photographic evidence. Discussing photographs can uncover details, memories, and feelings related to in situ experiences (Bagnoli, 2009; Frith and Harcourt, 2007) and can aid the reflective processes of both participants and interviewers.

One challenge of the photo-elicitation method is that photographs are a *representation* of reality, with participants given control over the specific subjects to represent, and therefore the exercise is potentially subject to expectation bias. For this reason, the interview followed the advice of previous researchers (Frith and Harcourt, 2007) and explored in detail the reasons why participants took specific photographs, what they wanted to make visible, and why. The photographic evidence was never treated as data *per se*.

The research area was the city centre of Bristol, UK. The urban environment includes architectural styles ranging from medieval, Victorian, to recent-contemporary styles. The urban landscape is characterised by the Harbourside, a redevelopment of the former historic docks of Bristol which nowadays offers a traffic-free promenade around the 80 acres of tidal river, with a mix of historic boats, restaurants, green areas, and residential complexes (Bristol City Council, 2009). Bristol is recognised internationally as a vibrant centre for hip-hop and street-art culture.

2.2 Data collection and administration

Potential employee participants were sent a recruitment email. Students were recruited through the University's Psychology Participatory Panel; they were required as part of their degree study to gain research experience and participate in research studies of their choice.

A project information sheet was provided via email prior to participation, presenting the project as an investigation of the experience of urban walking. Written consent was provided before the interview. Participants were asked to take a single daytime walking journey of their choice within Bristol city centre and to photograph *"the things of the surroundings that draw your attention during the walk and make you feel good or bad during the walk"*. Subjects were given the option of borrowing a camera, but all participants decided to use their own equipment.

A total of 256 photographs were collected (*Median* = 15.5; *SD* = 6.35). Interviews took place a maximum of 48 hours after the walking journey, to ensure that memories of the walk were still fresh in participants' minds. They were asked to share their photographs with the researcher before the interview, and were then interviewed by the first author in a quiet setting (cafes or a university space). Interviews started with a participant-led discussion, in which the interviewee had the chance to talk freely about his/her journey using the photographs. The second phase was led by the researcher and involved specific questions on self-reported wellbeing experiences in and perceptions of environments during walking, including perceived affective outcomes (e.g.: What were your feelings? Was it stressful/relaxing/enjoyable? Why?) and perceived cognitive recovery (e.g.: when stressful and

demanding situations were reported by participants: To what extent did you feel refreshed and better able to concentrate on things?). Questions were open-ended in order to encourage in-depth discussion. Interviews lasted between 40 and 90 minutes, were recorded with a digital recorder and transcribed verbatim. The study was approved by the Faculty's Research Ethics Committee.

2.3 Analysis

The transcripts were thematically analysed (Braun and Clarke, 2006) according to a deductive approach framed by the context of ART (Kaplan and Kaplan, 1989) and SRT (Ulrich, 1983), and of therapeutic landscape and mobilities (Gatrell, 2013). The software NVivo 10 was used; the first author conducted the reading and transcribed the interview recordings, thus simultaneously familiarising herself with the data (Braun and Clarke, 2006). Transcripts were then re-read in order to become fully 'immersed' in the data. Initial coding was conducted by the first author; coding being theory-driven, initial codes stemmed from ART, SRT, and therapeutic landscape theory. After all relevant codes had been extracted, themes were developed. Each theme synthesises and describes features of ART, SRT, and therapeutic landscape theories. Coding and theme development were discussed with the second and third authors and common qualitative categories of analysis were identified. The interpretation of the quotes was also discussed with a third independent reviewer in order to enhance the reliability of the analysis. The independent assessment largely validated the researcher interpretations although following the feedback some changes in the presentation of the results and in the discussion of specific affective states were applied. The authors also examined their own roles and influence on the research by discussing previous professional experiences and respective epistemological positions, and no important bias was identified.

3. Results

Four themes emerged from the analysis. One theme describes the restorative potential of walking; the remaining three themes explore the affective and cognitive experiences of place engagement and

the related psychological wellbeing benefits. Participant quotes and photographs are also presented when they offer an additional layer of complexity around the research focus.

3.1 Walking as a restorative practice

It emerged from the interviews that walking was perceived as a restorative practice, as it contributed to self-reported relaxation and positive affect, but also supported perceptions of attention restoration as it stimulated reflection and feelings of refreshment. Participants described walking as “relaxing” and engaging. For example, talking about his lunchtime walk, James explained that it made him feel less stressed and generally improved his affective state:

James: I find walking quite good to de-stress generally. It is good for you. When I came back to work [from the walk] it felt pretty good. I think generally it is good.

Someone also noted that walking stimulated attachments to places; it was in particular details such as “different boats, and the old buildings”, or “signs of schools, dogs and cats” that made some participants “stay in touch with the environment”.

Walking also stimulated reflection and helped participants to reorganise thoughts, as it is about “doing nothing” and “getting lost in thoughts” – themes that echo ART’s concept of soft fascination (Kaplan and Kaplan, 1989). As Sarah noted, “walking helps think things through, ordering your thoughts”, while James reported:

James: [After the lunchtime walk] I felt my mind was cleared, and I was refreshed.

The natural speed of walking allowed participants to notice detail:

Eran: Cycling is more exciting because you are faster. [When you are walking] you can pay attention to details.

Comparing walking in cities with walking in natural areas, Sarah noted:

Sarah: When walking in Bristol you have more things to look at. It makes it more interesting. Walking in nature, in the woods [...] is not as interesting as walking in cities.

The next sections discuss how relating to place can contribute to this restorative effect.

3.2 Personal connection

Personal memories and habits related to place emerged as elements that offer a positive distraction and trigger positive affect. First, memories related to specific elements of the urban realm made places more familiar, which in turn stimulated attachment. For example, James explained that walking in a particular street made him feel at home:

James: I used to work there, and I registered my kids there, you've got some connections!

I feel quite connected to this. I feel at home, when I walk down here.

Even imagined scenarios related to the future made places more familiar and fascinating. Talking about Bristol Cathedral, where important ceremonies take place, 18-year-old student Henry explained that he photographed the cathedral as it made him imagine his future university graduation. This triggered positive affective appraisals (Figure 2):

Henry: That's where the graduation ceremonies take place! It's good to imagine that moment.



Figure 2: Physical places trigger excitement related to future events

Second, for those individuals whose birthplace is not Bristol, socio-cultural references to their own place of birth or country of origin triggered positive affect and sense of belonging. For example, Layla, originally from the Middle East, felt happy when a falafel shop reminded her of home (Figure 3). This triggered positive feelings:

Layla: This falafel shop made me happy. I noticed it, they have products that they sell here and in Egypt, so it makes me feel more at home. It makes me happy.



Figure 3: A falafel shop triggered happiness and nostalgia

Third, routine contributed to attention restoration. Grace discussed aesthetic appraisals and fascination related to seeing the same shops and people every day (Figure 4):

Grace: This is a tailoring shop [...] and the girl inside looks exactly like this cartoon on the window! She has got beautiful red hair, very fifties style. I don't know her personally, but I could recognise her in the street. She is working on her sewing machine every day. I could stare at the window all day.



Figure 4: Familiarity triggers fascination

The quotes above by Henry and Layla also highlight attention restoration features. References to ‘back home’ seemed to trigger feelings of *being away* by remembering objects, people, and childhood places. Some participants, non-native to Bristol, reported that the city could be a hostile environment as they were used to smaller urban or rural contexts and that they tended to miss their home places. For this reason, references and memories related to home could take them away from their routines and offer a relieving distraction. For instance, Marcus explained that seeing Bristol Cathedral and the surrounding park triggered interest, happiness, and nostalgia, whilst at the same time reminding him of his hometown. He discussed how when walking past the area he tends to take some time to take a mental break from the daily city routine and think of “home” (*being away*):

Marcus: This [area] is absolutely beautiful. It reminds me a lot of home. Whenever I walk past here, I smile. I always slow down, and go around it, instead of along it. Because it reminds me of home [...]. It makes me happy. I’m linking so many things to it. That’s the “missing home” thing that I want to stress. When I was walking my mind was wandering somewhere else and I was getting sentimental all the time.

3.3 Engaging with the identity of place

Other than personal associations, also engaging and feeling connected with the identity of Bristol had positive affective appraisals. In some urban places individuals could “feel history”, and this triggered positive affective perceptions and reflections:

Eran: When you're in the ground, I always feel in this land that there are other people who walked before me, and it's such a different feeling, I think it gives you more than just reading history books. That's a very different feeling, 'cause you can really feel the past. History is not just for the books. When I'm walking, I look at the ground and I ask: "What am I doing here?". What I feel from the ground is very important. Sometimes it makes you feel it's your place.

Participants also described feelings of awe, pride, and sense of belonging triggered by historic architectures. Some felt “inspired” by the effort put by previous generations to build “majestic” churches and buildings. In other cases, walking in historic areas made them feel proud of their city; talking about the Harbourside, Rachel explained:

Rachel: I feel that there is history there, when I'm walking around there I feel proud. I'm a Bristol person, [...] and the Harbourside to me represents part of the pride of being a Bristolian, and I feel proud, when I walk around.

Such awe and sense of pride also emerged in relation to street art, which is a crucial feature of Bristol's identity:

Sarah: The creativity of Bristol... This huge street art, which must have taken lot of design, lot of planning. [It is] the willingness to do something well, and to the cultural life of the city, I find it quite inspiring.

Other than affective appraisals, it also emerged that participants attributed aspects of ART to place identity in the urban environment, notably *fascination* and *being away* (Kaplan and Kaplan, 1989). Participants explained that seeing old buildings and historic artefacts during walking “gave interest and beauty” to the journey and provided something to notice and to think about. Talking about an old

buoy that he photographed (Figure 5), James explained that he was fascinated by the history of the object:

James: I think where it comes from, and the history behind it, I find it interesting, I quite like history, so I was like “that’s an old buoy”, I like it, it’s sort of intriguing. Because sometimes you’re in a place and there’s not much that marks out that place from another place, so it is good to know the identity of your place.



Figure 5: Historic elements are symbols of the identity of Bristol

Similarly, participants described how historic and cultural features could trigger positive affective appraisals and take them away from reality (*being away*) whilst offering a *fascinating* distraction during their walks:

Steve: It is like... escapism. When you see older stuff, it takes you to another state of mind, takes you away from the present, modern world and distracts you with different, older scenarios that you [are] not used to anymore. It takes you away from the daily routine that you have.

Eran: Historically Bristol used to be a slavery centre [...]. I like the artwork, because it makes me think of history (Figure 6).

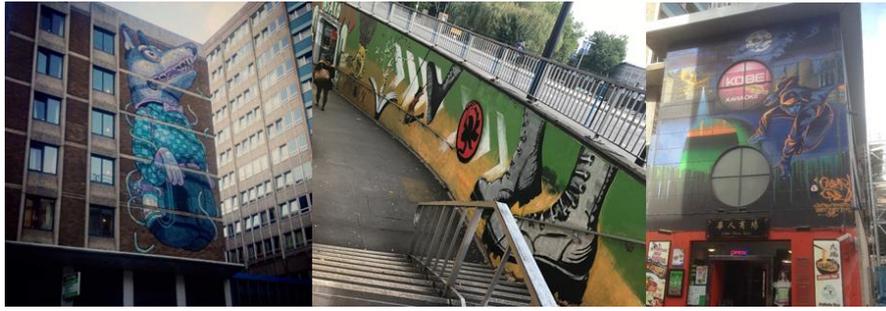


Figure 6: Participants' photographs representing interest in street art

Finally, the details of historic architectures triggered fascination, imagination, and positive affective appraisals in some participants (Figure 7). For example, Julia commented an old building that stimulated positive affective appraisals and a soft distraction, making her feel engaged and comforted:

Julia: I love this building, it's the way it's like, almost like a triangle like a curve at the end, and I think it is so interesting! And I like the patterns of the bricks, it's not just plain, it gives you something to look at, and I do find it really appealing. It is powerful because of the architecture. It catches me because I then think of the history of it. I start making up my head, and my imagination goes. And I just think when something has history, it just feels so comforting, because it has got its own story, and that makes it interesting because there is so much more to think about.



Figure 7: An old building triggers positive affect and imagination

3.4 Connection with community (sense of belonging)

Perceiving a sense of community also supported positive affective appraisals and perceived attention restoration. For example, Rachel explained that seeing a well-kept garden made her smile because she could see the effort put in by members of the community (Figure 8):

Rachel: It's the second year that they've done it, it's not to my taste, but they have... cared.

[...] you've made an effort, so that's what matters. And it makes me smile.



Figure 8: Feeling a sense of community makes walking more pleasant

In addition, seeing people socialising or generally in a good mood triggered positive affective appraisals. Talking about her walk in the neighbourhood of St Werburgh's, Michelle explained:

Michelle: There is always people around, stuff happening. It feels that people are happy and relaxed, are just chilling. Looking at people enjoying themselves, it is like... wow! Walking there is kind of engaging. It feels like people made an alive system, it feels like their environment, it is a nice dynamic.

Also, the presence of other people socialising, drinking coffee, or busking improved safety perceptions, thus aiding relaxation and reducing tension. Charlotte reported that when walking in the Bearpit (an open space underneath the roadway linked to the street-level via several tunnels), where she generally feels unsafe, she felt comforted by the presence of people drinking coffee, skateboarding, and chatting (Figure 9):

Charlotte: I don't like the Bearpit, [...] it just makes me feel very uncomfortable. But they have got the store and the café, and there was such a big mix of people [...]. People having lunch break, families, teenagers. I really like the fact that everyone comes together, it is like a small community. [...] it is like knowing that people around me are 'ok people'.

R: Does it help you feeling more comfortable?

Yes, definitely. When everyone is there, I feel much more relaxed than when it is just people hanging around.



Figure 9: Presence of people improves safety perceptions in the Bearpit

Similarly, Rachel reported that she does not normally like to walk in the Broadmead shopping quarter because “there is no colour, no character”. However, music performances and Bristol-produced art installations made these environments more fun:

Rachel: People have started to do busking, and they started to do performances there, God it's good to have that there to keep the spirit! Because... when the Gromits have been there, and Shaun the Sheep [models of Bristol-produced animation characters], that has made it fun.

Finally, the quote above also highlights that sense of community fostered perceived attention restoration. First, similarly to sense of history, sense of community generated the restorative property

of *extent* (Kaplan, 1995) by giving the idea of an environment where there is sufficiently “much going on” to occupy one’s mind (from Michelle’s quote, an “alive system”). Second, it contributed to *compatibility*, as the environment became safer (from Charlotte’s quote) and more pleasant (from Rachel’s quote), thus supporting individuals’ intentions and activities.

4. Discussion

The present study explored the psychological wellbeing potential of walking in urban environments by building on restoration theories (Kaplan and Kaplan, 1989; Ulrich et al., 1983) and on conceptualisation of therapeutic landscape and mobilities from human geography (Bell et al., 2018; Gatrell, 2013; Gesler, 2005), to enhance the understanding of the impact of urban landscapes on wellbeing. To address this aim, a quasi-mobile photo-elicited interview methodology was employed with 14 adult participants. It emerged that specific engagements with place through urban walking resulted in positive self-reports of affective and cognitive state improvement, and this occurred despite the absence of natural features. These findings are in line with Ulrich’s untested idea that “a lively city street might be [...] therapeutic” (1984, p. 421) and similar suggestions by Kaplan (1995) and Gesler (1996) on the potential of built environments to support health. In addition, surroundings that were meaningful to individuals also triggered positive responses. This supports the idea that the nature of therapeutic and restorative outcomes arising from interactions with environments is relational (Conradson, 2005) and the idea that restoration may be contingent on additional, person-related factors, other than the intrinsic qualities of nature (Morton et al., 2017; Ratcliffe and Korpela, 2016, 2018; Bell et al., 2015; Ratcliffe et al., 2013). Four themes were identified as potential contributors to restoration in the urban setting. First, the walking activity presented some restorative features. Second, personal memories and references related to place were implicated as offering positive distractions and triggering improvements in wellbeing. Third, engaging and feeling connected with the symbolic identity of Bristol supported positive affective appraisals and perceived restoration. Finally, perceiving a sense of community supported similar positive identifications. The next section critically discusses the current findings according to the theoretical frameworks applied and the

previous empirical evidence (Aim 1). Section 4.2 suggests new research avenues (Aim 2) and discusses the quasi-mobile photo-elicitation interview method (Aim 3).

4.1 Engaging with place can support psychological wellbeing

The interview phase revealed that urban walking can be perceived as restorative, as it aided perceptions of relaxation and stimulated positive affect and engagement, which are other aspects of SRT in addition to stress recovery (Ulrich, 1984; Ulrich et al., 1991; Collado and Staats, 2016). Urban walking was also described as “a good way to clear thoughts” and feel refreshed. This finding confirms previous geographical ideas that walking is a therapeutic practice that offers time to think and relax (Calvert, 2015; Gatrell, 2013) and echoes the concept of fascination from ART (Kaplan and Kaplan, 1989). The current study has highlighted that also urban walking, similarly to rural walking, can offer these positive affective appraisals and cognitive perceptions.

In addition, engagement and connection with place were found to contribute to wellbeing. First, personal associations with physical elements triggered self-reported positive affect. Other authors have highlighted the importance of stimulation in restorative processes (Collado and Staats, 2016; Staats, 2017) and the current findings demonstrate that urban environments can provide opportunities to stimulate interest and engagement. Personal associations were also found to generate a sense of *fascination* and *being away*, as they provided for a soft, effortless distraction that temporarily removed participants from everyday routines. This was in line with the idea that “people create, renew and transform meaning in places” (Cresswell, 2014, p. 120), be it personal or collective meanings related to past and present histories. Furthermore, these findings add to the literature by indicating that such a connection enhances positive perceptions of the benefits of walking, including cognitive rest and affective appraisals. While both SRT and ART tend to overlook the role of personal associations, attitudes, and cognitions in restorative processes, a body of restorative environments research has recently attested that these elements influence restorative outcomes (Ratcliffe and Korpela, 2016; Korpela et al., 2008). Similar to Ratcliffe and Korpela’s (2016) findings, in the current

study places were found to prompt memories of experiences that happened in situ, thus contributing to familiarity and comfort. Importantly, it was shown that these restorative perceptions can also arise in built settings specifically.

Second, it was shown that the symbolic nature of place can contribute to wellbeing. Some elements of the built environment triggered a sense of history in individuals; the sensation of “feeling the ground” supported perceived *fascination* and *being away* by providing a soft distraction from everyday routines. The current findings revealed that this is related to the symbolic narrative offered by some historic elements (Lynch, 1981). By imagining, picturing, and feeling connected to such a narrative, individuals reported experiencing a fascinating, positive distraction. Sense of history also appeared to contribute to *extent* on a conceptual level, as it made individuals feel connected to past ages (in Eran’s quote, “other people who walked before me”, “feeling the past”) or communities (in Sarah’s quote, feeling “inspired [by] the creativity of Bristol”), thus “to a larger world” (Kaplan, 1995, p. 174). For some interviewees, walking in historic areas also elicited positive affective appraisals, notably awe, sense of pride, and relaxation. These positive affective appraisals were particularly strong for those who considered place as part of themselves, such as Rachel, who considered the Harbourside as “part of the pride of being a Bristolian”, or Sarah, who felt inspired by the cultural artefacts of her city. Therefore, these findings highlight the role of place identity in the perceived restorative and therapeutic experience (Ratcliffe and Korpela, 2016, 2018; Bell et al., 2015; Korpela and Hartig, 1996) and add that symbolic experiences of place can promote positive affective and cognitive appraisals also in built environments. Hence, these findings partially explain previous research that walking in historic centres (Bornioli et al., 2018a; Stigsdotter et al., 2017; Roe and Aspinal, 2011) and spending time in historic plazas (San Juan et al., 2017; Fornara, 2011) was restorative, which have previously remained unexplained.

Third, social liveliness, community events, and people socialising in public spaces were shown to contribute to perceived attention restoration and positive affective appraisals. Sense of community

contributed to positive affective appraisals such as hedonic tone, curiosity, and engagement. This was partially related to perceived safety, which the literature indicates as an element that can contribute to restoration (Gatersleben and Andrews, 2013). While the peace and quietness offered by natural spaces are identified by previous contributors as crucial features that make nature restorative (e.g. Nordh et al., 2017), the current study has shown that the social dimension identified by Bell et al. (2015) with regards to blue settings also applies to psychological wellbeing experiences in urban environments. Sense of community also contributed to *compatibility*, improving the fit with participants' activities or inclinations, and to *extent*, as it contributed to the perception of a coherent and rich environment which constitutes a whole world (Kaplan, 1995). Hence, while natural settings provide a soft, passive fascination (Kaplan and Kaplan, 1989), urban environments were found to stimulate wellbeing in terms of active engagement, interest and curiosity. Urban walking can be a shared experience and support psychological wellbeing, even when walking alone.

4.2 Limitations and future research recommendations

There are some limitations of the current study that need to be discussed. First, the study findings were drawn from a sample of a specific city population and may not generalise to different groups. On the other hand, the in-depth qualitative approach aimed to offer a rich and thick account of participants' experiences, and this was also aided by the photographic evidence. These findings potentially generalise more readily to some contexts rather than others; Bristol is a post-industrial, port city that is fairly typical of British and western and central European cities of this type. Bristol is also renowned for having a strong and distinctive cultural identity (e.g.: Tallon, 2007), and this was one of the key features highlighted in participants' reported walking experiences. Hence, the findings also support the idea that current urban design efforts to maximise diversity and distinctiveness in the context of globalisation can have positive outcomes for wellbeing. Second, the self-selection biases associated with voluntary participation must also be acknowledged. However, a purposeful sampling strategy that represented specific criteria sought breadth in data collection, maximised the range of experiences recorded for the given number of participants, with both "enthusiastic" and average

walkers and both nature and urban-oriented individuals participating in the study. Nonetheless, the study represents an initial investigation, which will need to be followed by further qualitative and quantitative work with a wider range of participants before its normative significance can be clarified. Third, the findings are based on self-reports, rather than on actual health states. Research has shown that affective and cognitive experiences can have long-term health consequences and positive emotions are related to lower mortality, lower cardiovascular arousal and general improved health (Consedine and Moskowitz, 2007); however, the generalisability to actual psychological health will need to be verified with future research, for example with self-reported experiences of walking supported by physiological measurements of affective and cognitive variables (e.g., Tilly et al., 2017), possibly over multiple testing periods. Related to this, it should be noted that the approach that allowed for freedom of choice on routes taken may have increased the chances of positive experiences being reported (i.e., participants may have been more likely to choose positive over negative routes). Nevertheless, while the current paper has explored the psychological wellbeing potential of urban walking, negative aspects also emerged, and these are discussed elsewhere (see Bornioli et al., 2018b). Finally, the current findings refer to walking in daylight and thus are not generalisable to night-time walking. Related to this, data collection took place between August and October, a time of the year when weather conditions are mild. Hence, it is possible that experiences of walking might differ with more extreme temperatures and weather conditions.

Despite these limitations, the current study has the strength of being the first empirical, participant-based qualitative exploration of psychological wellbeing experiences of walking in urban environments framed by theories of restorative environments and therapeutic landscape. Urban environments are the settings where most individuals spend most of their time; therefore, this is a topic that has important policy implications for public health domains. Based on the finding that some built elements can aid psychological wellbeing in terms of affective experiences and perceived cognitive recovery, future research on the full range of urban settings that can support psychological health and wellbeing outcomes is warranted (Aim 2). Future quantitative and/or qualitative (including

mixed methods) research could further explore the role of architectural styles and characteristics in the restorative experience, thus extending previous research (Van Den Berg et al., 2016; Lindal and Hartig, 2013). Second, future research is also warranted on the different types of historic settings that can support health and wellbeing, also looking at different cultural contexts and different socio-economic groups. The findings related to awe echo recent research that links awe to wellbeing (Rudd, Vohs, and Aaker, 2012); future research should explore the characteristics of built settings that stimulate awe and the links to restorative processes. Given the restorative perceptions discussed in this study emerged in relation to walking in urban environments with a mix of historic and natural features, such as the Harbourside, research could explore how different combinations of historic and natural settings can contribute to restoration – for example, in historic cemeteries (Nordh et al., 2017), historic parks (Bornioli et al., 2018a), and historic plazas with fountains (White et al., 2010). Third, future experimental research is needed to assess how psychological health and wellbeing experiences are influenced by personal factors. This should include measurements of residential location, sense of community, place attachment, and place identity (see Ratcliffe and Korpela, 2016) to assess the extent to which these factors influence restoration. Fourth, while the literature on restorative environments generally indicates that when walking in natural spaces solitude and quietness positively contribute to restoration (Nordh et al., 2017), the role of sense of community in the restorative experience emerged as important, and further investigation is warranted. Finally, the results have shown that engaging with and being aware of the surroundings can aid psychological wellbeing. Future research could further investigate restorative experiences of *mindful walking* interventions (Teut et al., 2013) in urban environments specifically.

A second strength is that this study tested the effectiveness of the photo-elicited quasi mobile interview methodology for restorative environments research (Aim 3). The method successfully contributed to uncovering experiences related to place, with the photographic evidence adding an additional layer of complexity and contributing to the richness and thickness (Braun and Clarke, 2006) of the interviews. Interview discussions were crucial to capturing a specific narrative from the

photographs, and the photographic evidence supported the interview, also avoiding potential expectation bias. In addition, reflections were made on potential disruptions to the normal practice of walking related to the technological task. All participants showed confidence and familiarity with the technology; every interviewee used his/her own equipment and the exercise was not found to disturb the walking practice. Finally, reflections were also made on how the photographic exercise influenced participants' experiences and perceptions. It emerged that the task enabled participants to consciously identify the object of affect, but never influenced the experience itself, which would have taken place even in absence of the photo task. As James explained, the process made him "*consciously think of what [he] was thinking about*", thus revealing the strength of the photographic task to aid participant reflection. Therefore, the photo-elicitation approach has deepened processes and practices; the method could be seen as valuable particularly in the restorative environments research field, where quantitative methods are generally predominant.

5. Conclusions

The current study explored psychological wellbeing experiences of walking in urban environments. This is the first study framed by theories of restorative environments and therapeutic landscape to investigate wellbeing experiences in urban walking specifically. It was found that walking in urban environments can support wellbeing as it can foster positive affective and cognitive appraisals, and that non-natural elements can promote these perceptions. Personal associations, meanings, and symbolic connections related with place had a pivotal role, thus confirming the relational nature of the interaction between individuals and places (Conradson, 2005). The implications for restorative environments research are that 1) non-natural elements are indeed perceived to have restorative qualities and promote perceived restoration, and 2) personal factors and experiences contribute to psychological wellbeing experiences.

Several policy recommendations can be suggested based upon the findings of the current study, and considering urbanisation trends worldwide, these have global relevance. First, policy makers could

develop strategies to enhance place attachment and to encourage awareness during walking in order to enhance the benefits of walking and to encourage more physical activity. This could be achieved with the support of information plaques and panels in urban environments or by promoting awareness exercises to take notice of surroundings. Second, the current findings have shown that historic and identity-related elements in the city can foster psychological wellbeing, thus strengthening the case to preserve the historic cultural landscape and local cultural heritage and promote identity features. Third, several urban design tools, including active frontages, safe and pleasant public spaces, and the promotion of community events, could be used to enhance the psychological wellbeing benefits of walking.

6. Funding Sources

This research was funded by a [university hidden] PhD scholarship (2014-2017).

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