

1 THE PSYCHOLOGICAL WELLBEING BENEFITS OF PLACE ENGAGEMENT DURING WALKING 2 IN URBAN ENVIRONMENTS: A QUALITATIVE PHOTO-ELICITATION STUDY.

3 *Abstract*

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

17 *Keywords*

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

19 1. Introduction

20 Identifying the characteristics of urban settings that support psychological wellbeing and encourage
21 healthy behaviours (such as walking as a key form of mobility) is a priority for research and policy. This
22 is due to the increasing global urbanisation trends (United Nations - UN, 2014) and poor psychological
23 wellbeing conditions in Western countries. In fact, research has shown that more than 25% of
24 European (World Health Organization – WHO, 2015) and 18% of American populations (Nguyen et al.,

25 2018) have poor psychological wellbeing, most commonly suffering from stress and depression. There
26 is a growing agreement on the notion that physical environments influence health and wellbeing
27 variables (Gesler, 2005; Kaplan, 1995). Walking is an activity that entails important physical and
28 psychological wellbeing benefits (Gatrell, 2013), including alleviating psychological health symptoms
29 (Robertson et al., 2012). In line with this, the health and wellbeing potential of walking in natural
30 environments has received extensive attention from scholars, and a growing number of studies
31 indicate that nature contact has important benefits for health and wellbeing (WHO, 2016; Hartig et
32 al., 2014). Some researchers have also noted that not all natural environments support psychological
33 health and wellbeing (Bigley, 2013). However, very limited attention has been given to the
34 psychological wellbeing potential of walking in the urban built landscape. The current research aimed
35 to address this gap by exploring wellbeing experiences of walking in urban environments, specifically
36 focusing on the potential of non-natural elements to support wellbeing. We conceptualised wellbeing
37 as holistic and dynamic concept of “being well” and a positive dimension of mental health (WHO,
38 2014; Ryan and Deci, 2001). Specifically, similarly to previous contributors (Bell et al., 2015, 2018;
39 Finlay et al., 2015; White et al., 2013, 2017; Gatrell, 2013), we focused on subjective wellbeing, e.g.
40 “people's evaluations of their lives on affective and cognitive states” (Diener, 2000, p. 34). An
41 innovative application of a qualitative photo-elicitation quasi-mobile methodology was chosen to
42 explore first-person psychological wellbeing experiences of walking in urban settings, thus providing
43 a thick and rich accounts of experiences (Braun and Clarke, 2006). While a similar methodology has
44 been used in the exploration of urban experiences (e.g., Dennis et al., 2009), we implemented a novel
45 application focusing on the study of wellbeing-related urban experiences specifically.

46 In order to advance theoretical debate, the current study integrated two theoretical frameworks on
47 the psychological wellbeing-promoting potential of environments: restorative environments theories
48 (Kaplan and Kaplan, 1989; Ulrich et al., 1983) and therapeutic landscape and mobilities (Bell et al.,
49 2018; Cresswell, 2014; Gatrell, 2013; Gesler, 2005). It is argued that such a multi-disciplinary

50 perspective can offer a theoretical and practical contribution to the research on psychological
51 wellbeing experiences in urban settings.

52 1.1. Restorative environments

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

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

69 Building on the focus of SRT and ART on the restorative properties of nature, an extensive body of
70 research has supported the idea that walking in natural environments is more restorative than walking
71 in built settings (Roe and Aspinall, 2011; van den Berg et al., 2003; Hartig et al., 2003). However, this
72 does not necessarily imply that built environments cannot offer restoration. In fact, previous
73 experimental research studies have found that some built settings can be restorative (Bornioli et al.,
74 2018a; San Juan et al., 2017; Stigsdotter et al., 2017; Staats et al., 2016; Karmanov and Hamel, 2008).

75 However, there is a lack of studies examining how and why urban environments can be restorative. It
76 is a key aim of the current paper to address this imbalance by exploring the processes behind these
77 restorative experiences.

78 1.2 Geographical ideas of walking and place

79 The framework of therapeutic landscapes explores how physical settings, social conditions and human
80 perceptions combine to contribute to healing (Bell et al., 2018; Gesler, 1992). Some of this literature
81 has focused specifically on walking, with several authors suggesting that walking can be therapeutic
82 (Gatrell, 2013). These ideas build on the conceptualisation from human geography of place as
83 container of experiences and centre of meanings (Tuan, 1977; Relph, 1976), rather than mere physical
84 contexts. Hence, while restorative environments research tends to conceive environments as
85 impersonal physical *settings*, human geographers conceive these settings as *places*, and put the
86 emphasis on the ways experiences, associations, and intentions contribute to create a place for an
87 individual. In addition, restorative environments research tends to consider the bottom-up,
88 perceptual properties of certain settings to offer restoration – with some exceptions: Korpela et al.
89 (2008); Ratcliffe and Korpela (2016) – while the therapeutic landscape framework considers the
90 relational outcomes emerging from the interactions between the individual and the environment
91 (Conradson, 2005).

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

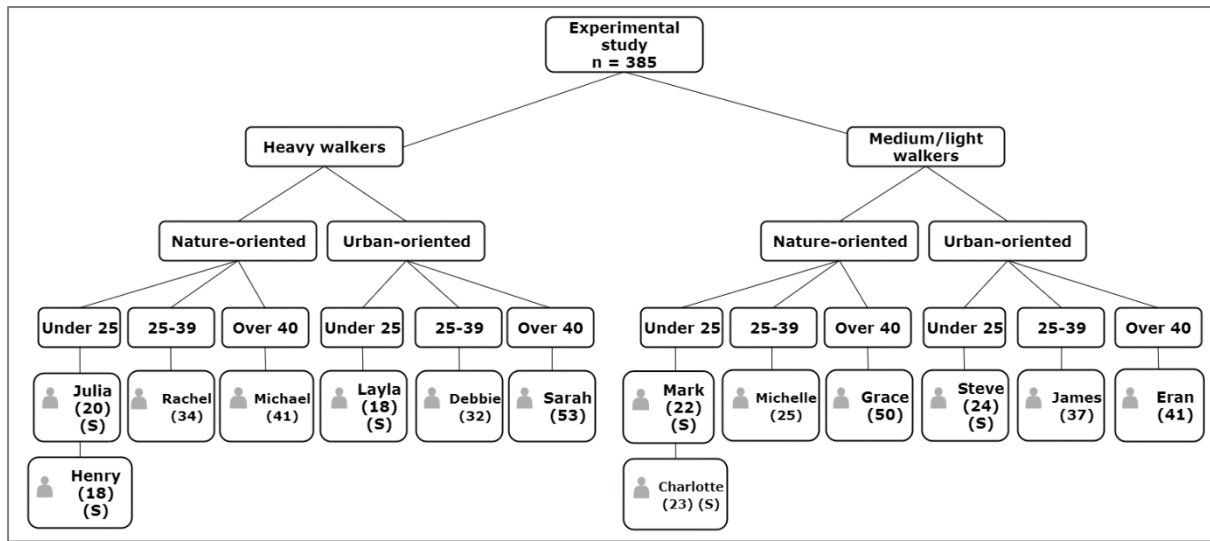
99 Given the general lack of literature on the restorative and therapeutic potential of walking in urban
100 environments, the current study empirically explored self-reported psychological wellbeing
101 experiences of walking in urban environments. Therefore, it drew upon and developed the approaches
102 of restorative environments and the geographical literature on walking, place, and wellbeing. We
103 argue that such a multi-disciplinary perspective is required to understand the impact of landscapes on
104 human health and to advance theory and practice. Despite both approaches focusing on healing and
105 recovery from depleted mental states, there is a growing interest in the potential of ordinary, everyday
106 experiences and places to contribute to psychological health promotion, and not just healing from
107 negative states (Bell et al., 2015). The study aimed to (1) inform the theoretical debate on urban
108 walking and psychological health promotion and recovery, and (2) provide an initial platform of new
109 avenues of research on restorative and therapeutic urban environments. A qualitative quasi-mobile
110 photo-elicitation methodology was employed, and aim (3) was to test the effectiveness of this
111 technique and its usefulness in the field.

112 2. Methods

113 2.1 Participants and design

114 The study was part of a larger research project examining the influence of built environments on
115 psychological wellbeing. Fourteen walkers (eight city centre organisation employees and six university
116 students; eight females) were recruited (see below) from amongst the original sample of 269
117 employee and student participants who had participated in a quantitative study on walking in urban
118 environments (Bornioli et al., 2018a). Interviewee ages ranged from 18 to 53 ($M = 31.8$ years,
119 $SD = 13.2$). Ten were White British, two were White non-British, and two were of Arab ethnic
120 background. The recruitment strategy was purposeful and aimed to collect a variety of views and
121 experiences related to urban environments and walking; the sampling frame included walking levels
122 (heavy/medium walkers – e.g., individuals who walk more/less than 4 times a week for at least 30
123 minutes), attitudes towards urban and natural environments (nature versus urban oriented), and age

124 (under 25; 26 to 39 years old; over 40), all based on the experimental data. The successfully-recruited
 125 participants are identified by pseudonyms in Figure 1.



126

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

128 The methodology consisted of quasi-mobile photo-elicited interviews based on photographs taken by
 129 participants during individual walks in Bristol city centre. Photo-elicitation methods are a popular tool
 130 in social (Guell and Ogilvie 2013), health (Frith and Harcourt, 2007) and psychology research (Bagnoli,
 131 2009), but no published record of previous use in relation to psychological wellbeing experiences of
 132 urban walking was found when designing the current study. With respect to traditional go-along,
 133 mobile methods, in which researchers physically travel with research subjects, the quasi-mobile
 134 photo-elicitation does not disturb the normal walking practice, whilst still allowing the researcher to
 135 witness the experience via the photographic evidence. Discussing photographs can uncover details,
 136 memories, and feelings related to in situ experiences (Bagnoli, 2009; Frith and Harcourt, 2007) and
 137 can aid the reflective processes of both participants and interviewers.

138 One challenge of the photo-elicitation method is that photographs are a *representation* of reality, with
 139 participants given control over the specific subjects to represent, and therefore the exercise is
 140 potentially subject to expectation bias. For this reason, the interview followed the advice of previous
 141 researchers (Frith and Harcourt, 2007) and explored in detail the reasons why participants took

142 specific photographs, what they wanted to make visible, and why. The photographic evidence was
143 never treated as data *per se*.

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

150 2.2 Data collection and administration

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

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

160 A total of 256 photographs were collected (*Median* = 15.5; *SD* = 6.35). Interviews took place a
161 maximum of 48 hours after the walking journey, to ensure that memories of the walk were still fresh
162 in participants' minds. They were asked to share their photographs with the researcher before the
163 interview, and were then interviewed by the first author in a quiet setting (cafes or a university space).
164 Interviews started with a participant-led discussion, in which the interviewee had the chance to talk
165 freely about his/her journey using the photographs. The second phase was led by the researcher and

166 involved specific questions on self-reported wellbeing experiences in and perceptions of
167 environments during walking, including perceived affective outcomes (e.g.: What were your feelings?
168 Was it stressful/relaxing/enjoyable? Why?) and perceived cognitive recovery (e.g.: when stressful and
169 demanding situations were reported by participants: To what extent did you feel refreshed and better
170 able to concentrate on things?). Questions were open-ended in order to encourage in-depth
171 discussion. Interviews lasted between 40 and 90 minutes, were recorded with a digital recorder and
172 transcribed verbatim. The study was approved by the Faculty's Research Ethics Committee.

173 2.3 Analysis

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

190 3. Results

191 Four themes emerged from the analysis. One theme describes the restorative potential of walking;
192 the remaining three themes explore the affective and cognitive experiences of place engagement and
193 the related psychological wellbeing benefits. Participant quotes and photographs are also presented
194 when they offer an additional layer of complexity around the research focus.

195 3.1 Walking as a restorative practice

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

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

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

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

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

211 The natural speed of walking allowed participants to notice detail:

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

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

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

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

218 3.2 Personal connection

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

223 *James: I used to work there, and I registered my kids there, you've got some connections!*
224 *I feel quite connected to this. I feel at home, when I walk down here.*

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

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



231

232

Figure 2: Physical places trigger excitement related to future events

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

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



239

Figure 3: A falafel shop triggered happiness and nostalgia

240

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

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



247

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Figure 4: Familiarity triggers fascination

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

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

263 3.3 Engaging with the identity of place

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

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

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

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

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

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

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

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

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



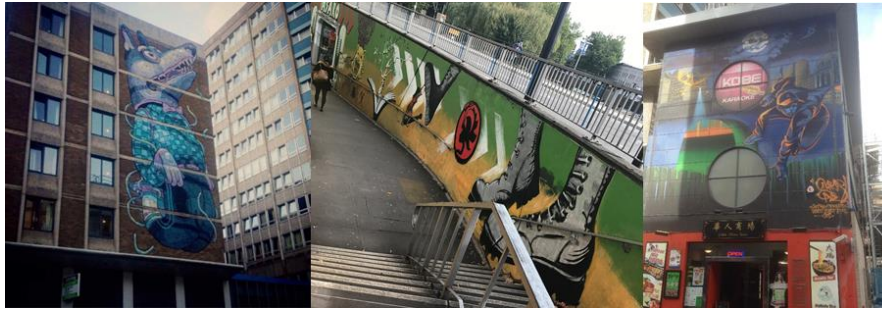
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296 *Figure 5: Historic elements are symbols of the identity of Bristol*

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

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

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



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Figure 6: Participants' photographs representing interest in street art

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Finally, the details of historic architectures triggered fascination, imagination, and positive affective

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appraisals in some participants (Figure 7). For example, Julia commented an old building that

310

stimulated positive affective appraisals and a soft distraction, making her feel engaged and comforted:

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Julia: I love this building, it's the way it's like, almost like a triangle like a curve at the end,

312

and I think it is so interesting! And I like the patterns of the bricks, it's not just plain, it gives

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you something to look at, and I do find it really appealing. It is powerful because of the

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architecture. It catches me because I then think of the history of it. I start making up my

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head, and my imagination goes. And I just think when something has history, it just feels

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so comforting, because it has got its own story, and that makes it interesting because there

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is so much more to think about.



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Figure 7: An old building triggers positive affect and imagination

320 **3.4 Connection with community (sense of belonging)**

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

324 *Rachel: It's the second year that they've done it, it's not to my taste, but they have... cared.*
325 *[...] you've made an effort, so that's what matters. And it makes me smile.*



326

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

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

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

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

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

343 *R: Does it help you feeling more comfortable?*

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



346

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

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

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

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

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

361 4. Discussion

362 The present study explored the psychological wellbeing potential of walking in urban environments
363 by building on restoration theories (Kaplan and Kaplan, 1989; Ulrich et al., 1983) and on
364 conceptualisation of therapeutic landscape and mobilities from human geography (Bell et al., 2018;
365 Gatrell, 2013; Gesler, 2005), to enhance the understanding of the impact of urban landscapes on
366 wellbeing. To address this aim, a quasi-mobile photo-elicited interview methodology was employed
367 with 14 adult participants. It emerged that specific engagements with place through urban walking
368 resulted in positive self-reports of affective and cognitive state improvement, and this occurred
369 despite the absence of natural features. These findings are in line with Ulrich’s untested idea that “a
370 lively city street might be [...] therapeutic” (1984, p. 421) and similar suggestions by Kaplan (1995) and
371 Gesler (1996) on the potential of built environments to support health. In addition, surroundings that
372 were meaningful to individuals also triggered positive responses. This supports the idea that the
373 nature of therapeutic and restorative outcomes arising from interactions with environments is
374 relational (Conradson, 2005) and the idea that restoration may be contingent on additional, person-
375 related factors, other than the intrinsic qualities of nature (Morton et al., 2017; Ratcliffe and Korpela,
376 2016, 2018; Bell et al., 2015; Ratcliffe et al., 2013). Four themes were identified as potential
377 contributors to restoration in the urban setting. First, the walking activity presented some restorative
378 features. Second, personal memories and references related to place were implicated as offering
379 positive distractions and triggering improvements in wellbeing. Third, engaging and feeling connected
380 with the symbolic identity of Bristol supported positive affective appraisals and perceived restoration.
381 Finally, perceiving a sense of community supported similar positive identifications. The next section
382 critically discusses the current findings according to the theoretical frameworks applied and the

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

385 4.1 Engaging with place can support psychological wellbeing

386 The interview phase revealed that urban walking can be perceived as restorative, as it aided
387 perceptions of relaxation and stimulated positive affect and engagement, which are other aspects of
388 SRT in addition to stress recovery (Ulrich, 1984; Ulrich et al., 1991; Collado and Staats, 2016). Urban
389 walking was also described as “a good way to clear thoughts” and feel refreshed. This finding confirms
390 previous geographical ideas that walking is a therapeutic practice that offers time to think and relax
391 (Calvert, 2015; Gatrell, 2013) and echoes the concept of fascination from ART (Kaplan and Kaplan,
392 1989). The current study has highlighted that also urban walking, similarly to rural walking, can offer
393 these positive affective appraisals and cognitive perceptions.

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

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

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

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

433 contributed to positive affective appraisals such as hedonic tone, curiosity, and engagement. This was
434 partially related to perceived safety, which the literature indicates as an element that can contribute
435 to restoration (Gatersleben and Andrews, 2013). While the peace and quietness offered by natural
436 spaces are identified by previous contributors as crucial features that make nature restorative (e.g.
437 Nordh et al., 2017), the current study has shown that the social dimension identified by Bell et al.
438 (2015) with regards to blue settings also applies to psychological wellbeing experiences in urban
439 environments. Sense of community also contributed to *compatibility*, improving the fit with
440 participants' activities or inclinations, and to *extent*, as it contributed to the perception of a coherent
441 and rich environment which constitutes a whole world (Kaplan, 1995). Hence, while natural settings
442 provide a soft, passive fascination (Kaplan and Kaplan, 1989), urban environments were found to
443 stimulate wellbeing in terms of active engagement, interest and curiosity. Urban walking can be a
444 shared experience and support psychological wellbeing, even when walking alone.

445 4.2 Limitations and future research recommendations

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

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

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

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

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

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

523 5. Conclusions

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

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

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

545

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548 **7. References**

549 BAGNOLI, A., 2009. Beyond the standard interview: The use of graphic elicitation and arts-based
550 methods. *Qualitative research*, **9**(5), pp. 547-570.

551 BELL, S.L., FOLEY, R., HOUGHTON, F., MADDRELL, A. and WILLIAMS, A.M., 2018. From therapeutic
552 landscapes to healthy spaces, places and practices: A scoping review. *Social science & medicine*, **196**,
553 pp. 123-130.

554 BELL, S.L., PHOENIX, C., LOVELL, R. and WHEELER, B.W., 2015. Seeking everyday wellbeing: The coast
555 as a therapeutic landscape. *Social science & medicine*, **142**, pp. 56-67.

556 BINGLEY, A., 2013. Woodland as working space: Where is the restorative green idyll? *Social science &*
557 *medicine*, **91**, pp. 135-140.

558 BORNIOLO, A., PARKHURST, G. and MORGAN, P.L., 2018a. Psychological Wellbeing Benefits of
559 Simulated Exposure to Five Urban Settings: an Experimental Study from the Pedestrian's
560 Perspective. *Journal of Transport & Health*, **9**, pp.105-116.

561 BORNIOLO, A., PARKHURST, G. and MORGAN, P.L., forthcoming 2018b. Affective Experiences of Built
562 Environments and the Promotion of Urban Walking.

563 BRAUN, V. and CLARKE, V., 2006. Using thematic analysis in psychology. *Qualitative research in*
564 *psychology*, **3**(2), pp. 77-101.

565 BRISTOL CITY COUNCIL, 2009-last update, Bristol Floating Harbour.
566 Available: <http://www.bristolfloatingharbour.org.uk/>.

567 CALVERT, T., 2015. *An exploration of the urban pedestrian experience, including how it is affected by*
568 *the presence of motor traffic*. PhD edn. University of the West of England.

569 COLEMAN, T. and KEARNS, R., 2015. *The role of bluespaces in experiencing place, aging and wellbeing:*
570 *Insights from Waiheke Island, New Zealand*. *Health & Place*, **35**, pp. 206-217.
571 <https://doi.org/10.1016/j.healthplace.2014.09.016>.

572 CONRADSON, D., 2005. Landscape, care and the relational self: Therapeutic encounters in rural
573 England. *Health & place*, **11**(4), pp. 337-348.

574 CONSEDINE, N.S. and MOSKOWITZ, J.T., 2007. The role of discrete emotions in health outcomes: A
575 critical review. *Applied and Preventive Psychology*, **12**(2), pp. 59-75.

576 CRESSWELL, T., 2014. *Place: an introduction*. John Wiley & Sons.

577 DENNIS JR, S.F., GAULOCHER, S., CARPIANO, R.M. and BROWN, D., 2009. Participatory photo mapping
578 (PPM): Exploring an integrated method for health and place research with young people. *Health &*
579 *place*, **15**(2), pp. 466-473.

- 580 DIENER, E., 2000. Subjective well-being: The science of happiness and a proposal for a national
581 index. *American psychologist*, **55**(1), pp. 34.
- 582 EDENSOR, T., 2010. Walking in rhythms: place, regulation, style and the flow of experience. *Visual*
583 *Studies*, **25**(1), pp. 69-79.
- 584 FORNARA, F., 2011. Are “attractive” built places as restorative and emotionally positive as natural
585 places in the urban environment? In: M. MARINO BONAIUTO, M. BONNES, A.M. NENCI and G. CARRUS,
586 eds, *Urban Diversities - Environmental and Social Issues*. Hogrefe Publishing, pp. 159-169.
- 587 FRITH, H. and HARCOURT, D., 2007. Using photographs to capture women's experiences of
588 chemotherapy: Reflecting on the method. *Qualitative health research*, **17**(10), pp. 1340-1350.
- 589 GATERSLEBEN, B. and ANDREWS, M., 2013. When walking in nature is not restorative—The role of
590 prospect and refuge. *Health & place*, **20**(0), pp. 91-101.
- 591 GATRELL, A.C., 2013. Therapeutic mobilities: walking and ‘steps’ to wellbeing and health. *Health &*
592 *place*, **22**, pp. 98-106.
- 593 GESLER, W., 1996. Lourdes: healing in a place of pilgrimage. *Health & place*, **2**(2), pp. 95-105.
- 594 GESLER, W., 2005. Therapeutic landscapes: An evolving theme. *Health & place*, **11**(4), pp. 295-297.
- 595 GESLER, W.M., 1992. Therapeutic landscapes: medical issues in light of the new cultural
596 geography. *Social science & medicine*, **34**(7), pp. 735-746.
- 597 GRUEBNER, O., RAPP, M.A., ADLI, M., KLUGE, U., GALEA, S. and HEINZ, A., 2017. Cities and Mental
598 Health. *Deutsches Arzteblatt international*, **114**(8), pp. 121-127.
- 599 GUELL, C. and OGILVIE, D., 2013. Picturing commuting: photovoice and seeking wellbeing in everyday
600 travel. *Qualitative Research*, , pp. 1468794112468472.
- 601 HARTIG, T., EVANS, G.W., JAMNER, L.D., DAVIS, D.S. and GÄRLING, T., 2003. Tracking restoration in
602 natural and urban field settings. *Journal of Environmental Psychology*, **23**(2), pp. 109-123.
- 603 HARTIG, T., KORPELA, K., EVANS, G.W. and GÄRLING, T., 1996. *Validation of a measure of perceived*
604 *environmental restorativeness*. University of Göteborg, Department of Psychology.
- 605 HARTIG, T., MITCHELL, R., DE VRIES, S. and FRUMKIN, H., 2014. Nature and health. *Annual Review of*
606 *Public Health*, **35**, pp. 207-228.
- 607 KAPLAN, R. and KAPLAN, S., 1989. *The experience of nature: A psychological perspective*. CUP Archive.
- 608 KAPLAN, R. and KAPLAN, S., 1989. *The experience of nature: a psychological perspective*. Cambridge
609 University Press.
- 610 KAPLAN, S., 1995. The restorative benefits of nature: Toward an integrative framework. *Journal of*
611 *Environmental Psychology*, **15**(3), pp. 169-182.

- 612 KARMANOV, D. and HAMEL, R., 2008. Assessing the restorative potential of contemporary urban
613 environment(s): Beyond the nature versus urban dichotomy. *Landscape and Urban Planning*, **86**(2),
614 pp. 115-125.
- 615 KORPELA, K. and HARTIG, T., 1996. Restorative qualities of favorite places. *Journal of Environmental*
616 *Psychology*, **16**(3), pp. 221-233.
- 617 KORPELA, K.M., YLÉN, M., TYRVÄINEN, L. and SILVENNOINEN, H., 2008. Determinants of restorative
618 experiences in everyday favorite places. *Health & place*, **14**(4), pp. 636-652.
- 619 LINDAL, P.J. and HARTIG, T., 2013. Architectural variation, building height, and the restorative quality
620 of urban residential streetscapes. *Journal of Environmental Psychology*, **33**, pp. 26-36.
- 621 LYNCH, K., 1981. *Good city form*. Cambridge, Massachusetts: MIT Press.
- 622 MADDRELL, A., 2013. Moving and being moved: More-than-walking and talking on pilgrimage walks
623 in the Manx landscape. *Culture and Religion*, **14**(1), pp. 63-77.
- 624 MORTON, T.A., VAN DER BLES, ANNE MARTHE and HASLAM, S.A., 2017. Seeing our self reflected in
625 the world around us: The role of identity in making (natural) environments restorative. *Journal of*
626 *Environmental Psychology*, **49**, pp. 65-77.
- 627 NGUYEN T., HELLBUYCK M. and HALPERN M., 2018. The state of mental health in America, 2018.
628 Mental Health America.
- 629 NORDH, H., EVENSEN, K.H. and SKÅR, M., 2017. *A peaceful place in the city—A qualitative study of*
630 *restorative components of the cemetery*. <https://doi.org/10.1016/j.landurbplan.2017.06.004>.
- 631 PEEN, J., SCHOEVERS, R., BEEKMAN, A. and DEKKER, J., 2010. The current status of urban-rural
632 differences in psychiatric disorders. *Acta Psychiatrica Scandinavica*, **121**(2), pp. 84-93.
- 633 RATCLIFFE, E. and KORPELA, K.M., 2016. Memory and place attachment as predictors of imagined
634 restorative perceptions of favourite places. *Journal of Environmental Psychology*, **48**, pp. 120-130.
- 635 RATCLIFFE, E. and KORPELA, K.M., 2018. Time-and self-related memories predict restorative
636 perceptions of favorite places via place identity. *Environment and Behavior*, **50**(6), pp. 690-720.
- 637 RATCLIFFE, E., GATERSLEBEN, B. and SOWDEN, P.T., 2013. Bird sounds and their contributions to
638 perceived attention restoration and stress recovery. *Journal of Environmental Psychology*, **36**, pp. 221-
639 228.
- 640 RELPH, E., 1976. *Place and placelessness*. Pion London.
- 641 ROBERTSON, R., ROBERTSON, A., JEPSON, R. and MAXWELL, M., 2012. Walking for depression or
642 depressive symptoms: a systematic review and meta-analysis. *Mental Health and Physical*
643 *Activity*, **5**(1), pp.66-75.
- 644 ROE, J. and ASPINALL, P., 2011. The restorative benefits of walking in urban and rural settings in adults
645 with good and poor mental health. *Health & place*, **17**(1), pp. 103-113.

- 646 RUDD, M., VOHS, K.D. and AAKER, J., 2012. Awe expands people's perception of time, alters decision
647 making, and enhances well-being. *Psychological science*, **23**(10), pp. 1130-1136.
- 648 RYAN, R.M. and DECI, E.L., 2001. On happiness and human potentials: A review of research on hedonic
649 and eudaimonic well-being. *Annual Review of Psychology*, **52**(1), pp. 141-166.
- 650 SAN JUAN, C., SUBIZA-PÉREZ, M. and VOZMEDIANO, L., 2017. Restoration and the City: The Role of
651 Public Urban Squares. *Frontiers in psychology*, **8**.
- 652 STAATS, H., JAHNCKE, H., HERZOG, T.R. and HARTIG, T., 2016. Urban Options for Psychological
653 Restoration: Common Strategies in Everyday Situations. *PloS one*, **11**(1), pp. e0146213.
- 654 STIGSDOTTER, U.K., CORAZON, S.S., SIDENIUS, U., KRISTIANSEN, J. and GRAHN, P., 2017. It is not all
655 bad for the grey city – A crossover study on physiological and psychological restoration in a forest and
656 an urban environment. *Health & place*, **46**, pp. 145-154.
- 657 TALLON, A.R., 2007. Bristol. *Cities*, **24**(1), pp. 74-88.
- 658 TEUT, M., ROESNER, E.J., ORTIZ, M., REESE, F., BINTING, S., ROLL, S., FISCHER, H.F., MICHALSEN, A.,
659 WILLICH, S.N. and BRINKHAUS, B., 2013. Mindful walking in psychologically distressed individuals: a
660 randomized controlled trial. *Evidence-based complementary and alternative medicine : eCAM*, **2013**
- 661 TILLEY, S., NEALE, C., PATUANO, A. and CINDERBY, S., 2017. Older People's Experiences of Mobility
662 and Mood in an Urban Environment: A Mixed Methods Approach Using Electroencephalography (EEG)
663 and Interviews. *International journal of environmental research and public health*, **14**(2), pp. 151.
- 664 TUAN, Y., 1977. *Space and place: the perspective of experience*. Arnold, Edward.
- 665 ULRICH, R.S., 1983. Aesthetic and affective response to natural environment. *Behavior and the natural
666 environment*. Springer, pp. 85-125.
- 667 ULRICH, R.S., 1984. View through a window may influence recovery. *Science*, **224**(4647), pp. 420-421.
- 668 ULRICH, R.S., SIMONS, R.F., LOSITO, B.D., FIORITO, E., MILES, M.A. and ZELSON, M., 1991. Stress
669 recovery during exposure to natural and urban environments. *Journal of Environmental
670 Psychology*, **11**(3), pp. 201-230.
- 671 UNITED NATIONS, 2014. *World Urbanization Prospects*. UN.
- 672 VAN DEN BERG, A.E., JOYE, Y. and KOOLE, S.L., 2016. Why viewing nature is more fascinating and
673 restorative than viewing buildings: A closer look at perceived complexity. *Urban forestry & urban
674 greening*, **20**, pp. 397-401.
- 675 VAN DEN BERG, A.E., KOOLE, S.L. and VAN DER WULP, N.Y., 2003. Environmental preference and
676 restoration: (How) are they related? *Journal of Environmental Psychology*, **23**(2), pp. 135-146.
- 677 WHITE, M.P., ALCOCK, I., WHEELER, B.W. and DEPLEGGE, M.H., 2013. Coastal proximity, health and
678 well-being: results from a longitudinal panel survey. *Health & place*, **23**, pp. 97-103.

679 WHITE, M.P., PAHL, S., WHEELER, B.W., DEPLEDGE, M.H. and FLEMING, L.E., 2017. Natural
680 environments and subjective wellbeing: Different types of exposure are associated with different
681 aspects of wellbeing. *Health & place*, **45**, pp. 77-84.

682 WHO, 2014. *Mental health: a state of well-being*.

683 WHO, 2016. Urban Green Spaces and Health. *WHO Regional Office for Europe*.