

When urban environments meet pedestrians' thoughts: implications for pedestrian affect.

Corresponding Author

Dr. Thomas Calvert.

Email: thomas2.calvert@uwe.ac.uk

Work telephone (UK) (0)117 9737393

Mobile (UK) (0)7837 130423

ORCID: <https://orcid.org/0000-0001-7919-4351>

Address:

Department of Geography and Environmental Management

Faculty of Environment and Technology

University of the West of England, Bristol

Frenchay Campus

Coldharbour Lane

Bristol BS16 1QY

United Kingdom

Affiliation : Centre for Transport and Society and Centre for Sustainable Planning and Environments, University of the West of England, UK

Co-author (2nd Author):

Dr. Juliet Jain

Email: Juliet.Jain@uwe.ac.uk

ORCID: <https://orcid.org/0000-0001-8027-261X>

Address:

Department of Geography and Environmental Management

Faculty of Environment and Technology

University of the West of England, Bristol

Frenchay Campus

Coldharbour Lane

Bristol BS16 1QY

United Kingdom

Affiliation: Centre for Transport and Society, University of the West of England, UK

Co Author (3rd Author):

Dr. Kiron Chatterjee

Email: Kiron.Chatterjee@uwe.ac.uk

Address:

Department of Geography and Environmental Management

Faculty of Environment and Technology

University of the West of England, Bristol

Frenchay Campus

Coldharbour Lane

Bristol BS16 1QY

United Kingdom

Affiliation: Centre for Transport and Society, University of the West of England, UK

Word count 9655

Abstract

This UK-based study explores the ways in which urban environments and pedestrians' thoughts interact. Such interactions have implications for hedonic wellbeing and affect. Analysis of innovative interviews with pedestrians highlights different orientations of thought while walking in the urban environment: the pedestrian can ignore surroundings in order to reflect, solve problems, day dream or think creatively, although this process can be interrupted by features within the urban environment, particularly motor traffic. Alternatively thoughts, positive or negative, can be provoked or inspired by urban surroundings. Thus the paper presents evidence that interactions between urban environment and thinking are an important pathway in understanding urban walking's influence on wellbeing, one that is neglected in much walking policy.

Key Words

walking, thinking, urban, cities, wellbeing, pedestrian, affect

Walking in the urban environment can be beneficial to the individual in providing an opportunity to think. Such environments interact with pedestrian's thoughts in varying ways and to varying degrees. However these interactions have been underexplored in extant evidence. By investigating them, this study furthers understanding of quotidian urban walking, creating implications for policies pertaining to walking environments and how these might affect pedestrian thinking. The evidence and discussion presented also chart the effects of the meeting between urban environment and thinking pedestrian on wellbeing. Thus, the discussion addresses three questions:

1. What types of thinking can pedestrians do in the urban environment?
2. What role do urban environments play in the thought life of pedestrians?

3. What are some of the outcomes, especially for affect and wellbeing, of the interplay between walking, thinking and urban surroundings?

It is well-documented, and intuitively apparent, that walking can be a good time for thinking (See for example Solnit, 2001). However, the present study examines the above questions through a number of lenses, which combined yield new insight into walking and thinking. The first of these lenses is the walking environment: Little has been written about the effect of urban environments on pedestrians' thinking. More has been written on rural walking contexts (see Wylie 2005; Crust et al. 2011, for example). The study is also unusual in focusing on quotidian urban trips rather than more exceptional journeys such as pilgrimages (Maddrell 2011) or long hikes (Wylie 2005; Crust et al. 2011). The walkers this study draw evidence from also make it untypical: they are thirty one individuals, from varying walks of life. In comparison, previous studies have often featured famous thinkers (Solnit 2001) or have been largely based on the author's own experience of walking (Wylie 2005). A final lens is the use of an innovative data collection method.

A review of previous evidence first establishes the general benefits of walking. The review then discusses extant evidence relating to each of the study's three questions. The results and discussion are structured through exploring three main orientations between urban environment and pedestrians' thoughts. The study concludes that pedestrians evidenced engaging in enjoyable and useful thinking, and suggests implications this could have in the spheres of mental health and business. The conclusions also argue for cognitively-inspiring and non-intrusive pedestrian environments. Some wellbeing benefits that thinking whilst walking in cities can have for the pedestrian are charted.

Established benefits of walking

A range of societal benefits of walking have been acknowledged through history (see Edensor 2000; Solnit 2001) and more recently in academic study. Where walking can replace car trips for short journeys it can help alleviate the global and local challenges of CO² emissions (Higgins and Higgins 2005), injury or death from collisions (DfT 2010), the breakdown of streets as social spaces (Hamilton-Baillie 2008) and potentially traffic congestion (Koska and Rudolph 2017).

Local communities can also benefit from people walking. For example, the presence of more pedestrians can lead to greater feelings of community cohesion and urban vibrancy. This is to the extent that walkers may be instrumental in creating a city (De Certeau 1984, as quoted in Bean, Kearns and Collins 2008, 2834). Economically, the facilitation of increased walking, according to the British Government, has a ‘strong business case’ (DfT 2015, 4) with a survey of walking and cycling schemes finding ‘very high’ benefit/cost ratios (Davis 2014).

A strong current interest in walking relates to public health benefits. Walking is an accessible, and uncostly form of physical activity for many, which can be incorporated in daily routines. Thus, in recent decades the importance of walking has particularly been highlighted in the context of public health, where physical activity has been identified as important in both health and economic terms (Ding et al. 2016; Lee and Buchner 2008; Morris 1994).

Recent investigations indicate that walking also carries associations with greater positive impacts on psychological wellbeing (Martin, Goryakin and Suhrcke 2014) and higher measurements of satisfaction (Olsson et al. 2013) than motorized modes. This is in a context of increasing global awareness of the importance of mental health (WHO 2018). The aim to reduce ‘premature mortality’ through improving ‘mental health and wellbeing’ for example, features in the UN’s

current Sustainable Development Goals (UN 2018).

What types of thinking can pedestrians do in the urban environment?

Historically, walking has been considered a good time for thinking (see Edensor 2000; Solnit 2001). Experimental evidence has strengthened this contention (Berman, Jonides and Kaplan 2008; Netz et al. 2007; Oppezzo and Schwartz 2014). The physical act of walking has been found, for instance, to increase types of creative thinking (Oppezzo and Schwartz 2014.) In addition to the physical conduciveness of walking, pedestrians may make mental progress whilst walking due to the restriction on other activities available to them as they move (Smith and Hall 2016).

Gaps in evidence remain however on whether walking is conducive to certain types of thinking. The scant previous evidence on this often relates specifically to rural walking. Problem solving is one form of thinking for which walking may be conducive (Crust et al. 2011; Darker, Larking and French 2007). Crust et al.'s (2011, 254) long distance rural walkers for instance commented on being able to achieve 'clear thinking' about problems while walking that arrived at 'alternative solutions'. Similarly participants in a qualitative study on urban walking reported using walking time to think about work problems (Middleton 2010).

Inspirational thinking, including daydreaming, is another type of thinking that can emerge from the experience of walking (Edensor 2000; Solnit 2001). Some qualitative empirical evidence is present in previous studies of urban walking being a time for inspirational thinking and daydreaming: for example, one of Darker, Larking and French's (2007, 2178) participants used walking as a time for her 'mind to wander.' Another of their participants commented that while walking 'Sometimes I am just day-dreaming, which is really fun'. But such evidence has not been developed in the literature.

Another form of thinking referred to, in previous evidence, is reflection (Crust et al. 2011; Edensor 2000; Maddrell 2011). However, discussion of reflection whilst walking has normally been in a rural context with Edensor (2000, 86) suggesting states of self-reflection ‘are believed to be difficult to achieve in an urban context’.

The types of pedestrian thinking discussed above may be inspired by a trip’s destination. For instance, trips, by various transport modes, can form transition times during which the traveller mentally prepares for the demands of the destination (Jain and Lyons 2008; Redmond and Mokhtarian 2001; Blumen 2000). In the specific case of walking, one of Middleton’s (2010) walking participants reported making lists of things to be undertaken at their destination as they walked.

Although the discussion in this section has suggested various types of thinking that have been reported by walkers, there is scant evidence regarding these in urban contexts. Urban environments may influence these types of thinking in a variety of ways that are different to rural settings. Experimental studies have examined the effect of different environment types on the walker’s ability to think (Berman, Jonides and Kaplan 2008). Berman, Jonides and Kaplan suggest from their findings that urban environments replenish the mind’s ability to think less effectively than natural environments. They suggest this is because natural environments provide gentle stimulation for the mind compared to the disruptive effects of urban environments. Understanding the relationships between urban environment and pedestrian thought may provide new insight relevant to the creation of pedestrian-friendly environments.

What role do urban environments play in the thought life of pedestrians?

Evidence regarding urban environments’ effects on pedestrian thinking is scarce. Policy

documents do comment on how negative aspects of urban walking environments demand the pedestrian's conscious attention in order to be navigated. A plan for 'Making London a walkable city' for example acknowledged that in some places in the UK capital:

Concentration and effort are required to steer through the obstacle course of inappropriately designed and placed street furniture, poles supporting traffic signage, bursting rubbish bags, uneven and dirty paving, dug-up roads and footpaths while at the same time avoiding collision with vehicles and other pedestrians. (TfL 2004, 6)

The document refers elsewhere to such surroundings being 'threatening or confusing' (23), hinting at the way they may demand cognitive attention.

Recent UK policy scarcely addresses the importance of pedestrian's thought life: The UK Department for Transport's 'Cycling and walking investment strategy' for example refers to walking and cycling holding importance for 'mental health' but does not specify the impact of urban environments on pedestrian thinking (DfT 2017a, 7). Recent technical guidance for creating local plans for improving walking and cycling tends to focus on maximising increases in the number of people walking (DfT 2017b). This guidance lists desired design features of walking routes as 'attractiveness, comfort, directness, safety and coherence' (DfT 2017b, p.27), but it does not mention the importance of pedestrian cognition. The document refers to 'improving signage and wayfinding' (DfT 2017b, p.27). This could have the benefit of making journeys cognitively easier for pedestrians, although the document does not discuss this specific benefit.

Walking as a time to think, and urban environments' part in this, is also only rarely commented in the academic and practitioner literature on walkability. Litman (2017) for example gives a list of eight factors that contribute to economic valuing of walkability. Whilst including physical

health benefits, the list does not include the benefits of having time to think. Forsyth (2015, 276) summarises definitions of walkability, structured around nine themes. Whilst the definitions discussed include recognition of making walkable places ‘lively’ ‘attractive’ ‘sociable’, ‘liveable’ and ‘happy’, they do not address effects on pedestrian’s thoughts. Similarly, indexes of walkability, such as in Fan et al. (2018), omit the importance of protecting or stimulating the pedestrian’s thought life.

Urban walking environments have often been framed negatively in comparison to rural environments, in ways that have implications for walking as a time to think. Edensor (2000) summarises writings by lovers of rural walking. These indicate that some prefer rural walking environments due to greater degrees of solitude and freedom from social control. Romantic writers (summarised by Edensor 2000) eulogise about the benefits of rural walking, often in relation to its restorative qualities for mind and body. Some have suggested that, in contrast, urban environments can produce sensory overstimulation, there being so many different sensory experiences in the city that in effect they confuse and diminish each other (Edensor 2000.)

In comparison to some rural settings, urban environments can contain elements that can frequently disrupt the thinking of pedestrians. Different subgroups of pedestrians may experience these to different degrees. Tilley et al.’s (2017) older participants, for example, reported having to watch pavements for uneven paving, to avoid falls as well as having to concentrate on avoiding street furniture and other pedestrians, particularly on narrow pavements. Such needs for concentration were associated with negative affect.

The predominant disruptive element distinguishing (some) urban from (some) rural environments, is motor traffic. In 'The death and life of great American cities' Jane Jacobs (1992) presents a dystopic image of walking curbed by faster modes of transit with the rise of automation. Thus, aesthetic and sensory enjoyment is hampered by navigating busy intersections. Taylor (2003, 1623) suggests that motor traffic prevents urban walking from being 'reflective or meditative'. He contends that motor traffic can preoccupy pedestrians such that they are hindered from thinking about other things. Traffic noise may be a significant factor in this, and has been found to affect the functioning of people's memory (Hygge, Boman and Enmarker 2003, 13). However, Taylor's intuitions did not draw on empirical evidence, while Hygge, Boman and Enmarker conducted their research in an experimental setting. Gaps in evidence remain therefore around how city elements such as traffic affect the thinking of quotidian urban pedestrians.

Urban environments may inspire, as well as intrude upon, the thoughts of pedestrians, but this possibility has not been greatly explored in academic study. Robinson (1989, as quoted by Edensor 2000, p.86) comments 'as one enters the variety and movement of the outside world, the space for interior wandering also grows.' City environments can provide interest for pedestrians. Paris, for example has been considered historically to offer the pedestrian 'A visual and sensual feast' (Berman, cited in Urry 2007, p.68). Urry comments that Paris has offered urban walkers a host of fellow pedestrians to take interest in. In addition to these, cities can provide 'interrelations between bodily movement, fantasy, memory and the texture of urban life' (Urry 2007, p.70). Similarly, in vibrant terms, Sontag (1979, p.55 cited in Urry, 2007 p.70) describes the city as a 'landscape of voluptuous extremes'.

Policy and design documents also allude to urban walking environments inspiring interest for the

pedestrian. The Manual for Streets, (UK guidance for practitioners involved in creating streets, DfT 2007, 63) suggests that a sense of time passes faster for pedestrians when they are walking in ‘rich and stimulating’ streets. Other guidance recommends that the walking environment should be ‘interesting’ and should allow for interesting activities whilst walking such as talking, window shopping and stopping to take in views (DfT 2004a, 8). However, there are different types of ‘interest’ and such policy references rarely refer to the importance of inspiring the thoughts and imagination of the walker. More often the emphasis is on aesthetic attractiveness and practicality of walking conditions. For instance documents mention aesthetic factors such as ‘attractive materials’, forming surfaces which should be kept functional and clean (DfT 2004a, 8, 2007). Practical qualities such as well-maintained pavements are also mentioned, and so is the removal of obstacles impairing progress such as rubbish and abandoned cars (DfT 2004b).

Extant evidence has noted then that urban environments play both negative and positive roles in the thought lives of pedestrians: Negatively requiring concentration for the pedestrian to navigate the city streets, positively providing interest for pedestrians. However, empirical evidence about the impact of urban environment on pedestrian thought is scarce, and little detail is available about how such impacts occur.

What are some of the outcomes, especially for affect and wellbeing, of the interplay between walking, thinking and urban surroundings?

Recent studies have argued that emotional outcomes of walking have been previously under researched in comparison to physical health outcomes (Ettema and Smajic 2014). Wellbeing can be defined as hedonic or eudaimonic (Ryan and Deci 2001). The ‘hedonic viewpoint’ (Ryan and Deci 2001) suggests wellbeing is about ‘positive affect,’ (161), ‘pleasure’ and ‘happiness’ (143).

This definition focuses on achieving a pleasurable rather than painful existence. This pleasure can derive from positive emotion and transitory experiences but can also be gained from achieving life goals. The ‘eudaimonic viewpoint’ (161) relates to the ‘fully functioning person’ and suggests a life in harmony with deeply held values and the realisation of personal potential.

Hedonic and eudaimonic definitions of wellbeing are distinct, but can overlap (Ryan and Deci 2001). The present study addresses walking, and particularly pedestrian cognition’s effects on hedonic wellbeing and affect, more than on eudaimonic wellbeing. The discussion adopts a principle underpinning Cognitive Behavioural Therapy that thinking, positive or negative, can lead to corresponding affect (NHS 2018; Mentalhealth 2018).

Much of the evidence examining wellbeing benefits of walking has related to specific negative mental conditions. Walking has been referred to as a time to work off angst (Solnit 2001), reduce stress (Darker, Larking and French 2007), relieve ‘depressive symptoms’ (Mobily et al. 1996, 119; Robertson et al. 2012) increase self-esteem and reduce anxiety and other negative mental states (Richardson et al. 2005). Explanations for links between walking and wellbeing are explored by Gatrell (2013). He suggests that pedestrians’ wellbeing may depend on factors such as paying attention to surroundings and having time to think about problems. Gatrell’s study however does not include primary empirical data to support these arguments. There is, generally, a lack of empirical evidence on the topic of walking and wellbeing, particularly on the different mechanisms through which walking and wellbeing may be linked.

The urban environment is a defining, and to some degree controllable, factor in urban walking experience. Interactions between urban environment and pedestrian wellbeing have been explored by quantitative studies (Ettema and Smajic 2014; Quercia, Schifanella and Aiello

2014; Bornioli, Parkhurst and Morgan 2018). Quercia, Schifanella and Aiello conducted a largely quantitative study using affective ratings from images of London walking environments. This study found associations between aspects of urban environments, such as cars and historical buildings, and positive and negative affect. Bornioli, Parkhurst and Morgan (2018) find that good quality urban environments can improve wellbeing even when not accompanied by green infrastructural features. In these quantitative studies associations are found between walking environments and affect but they do not explore in detail the mechanisms through which these occur. One such mechanism may be the triggering of memory (see Tilley et al. 2017). The specific ways that urban environments and pedestrians' cognition may interact to influence affect have not been examined in detail. The analysis presented focuses on the nexus of urban environments, types of thinking and pedestrian wellbeing, by drawing on in-depth qualitative data.

Research design

The research underpinning this study, (Calvert 2014) was designed to explore the essence of the urban walking experience, as well as the psychological and emotional benefits of that experience. A qualitative methodology was employed that was suited to an open-ended (Hayes 1997; Choy 2014) and in-depth (Pattern 2002, 353) exploration of pedestrians' experiences. The research had phenomenological commitments, including its focus on the essential elements of an experience, and freedom afforded to participants to explore their thoughts about these experiences. However, it was not a phenomenological study in the philosophical sense of the word, because it did not utilise a radical epistemology or phenomenological training of participants (see Crotty 1996). Phenomenological influences adopted included a focus on what it is about the urban pedestrian experience (for the participant) that makes it what it is and an

orientation towards the phenomena of pedestrian experience, *as they appeared within the participant's awareness* (Crotty 1996). Data analysis was inductive and used thematic analysis (Braun and Clark 2006).

Data collection consisted of individual interviews with thirty one participants from in and around Bristol, UK. Bristol offers a wide range of urban walking conditions, particularly within the city centre. Interviews were in two phases, with different participants in each phase. Phase one looked specifically at the pedestrian experience of motor traffic, using 'walkalong' interviews in the city centre of Bristol. Phase two examined the urban walking experience more generally through indoor interviews, where walking experiences were explored in recollection. A small sample precluded the possibility of gaining a 'representative' sample of the city. It was important to find people willing to take time for the research.

Urban walking can be a matter of choice or an unwelcome necessity (Bostock 2001). In order to address this participants were chosen reporting a range of enthusiasm towards walking. This resulted in variety in whether the journeys discussed were taken for pleasure or not. Indicative of this, of the twenty phase two participants, eleven reported walking frequently by choice.

Eighteen of the participants were female and thirteen male. Nine participants were aged eighteen to twenty nine, nine were in their thirties or forties, ten were in the fifties or sixties and three were in their seventies. Participants were recruited from a range of places including personal networks, the local civic society and organisations working with older people. Both phases of interviews were structured in ways that encouraged in-depth conversation about what can be a taken-for-granted daily experience. The eleven walkalong interviews provided the real-life prompts to conversation of the surroundings through which researcher and participant walked.

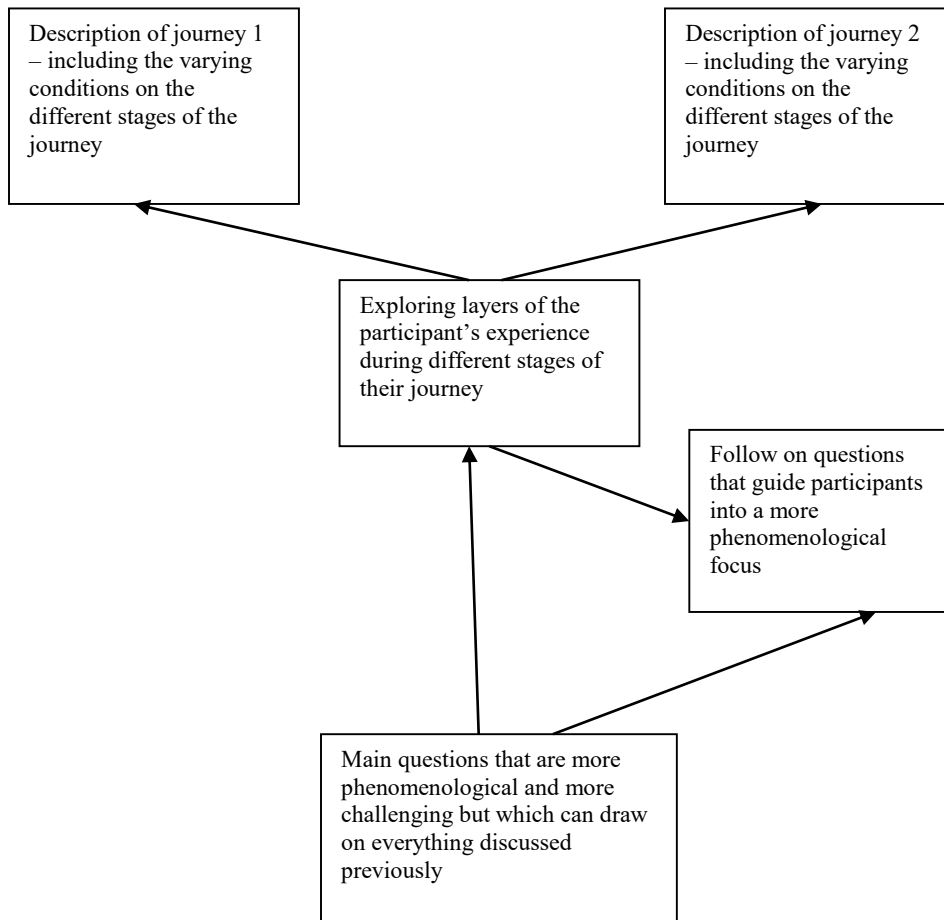
As a simple example, the sound of a passing ambulance led one participant to talk about city noise.

Interview questions were prepared for the walkalong interviews. However, considerable leeway was given for the participant to explore their own experiences and ideas. This was in accord with a phenomenological approach. Some questions explored general core elements of pedestrian experience, for example, ‘How would you describe the essence of being near motor traffic?’ Other questions were more specific, such as: ‘Do you feel safe on the pavement?’ The choice of which questions were asked, and when, was improvised according to the flow of conversation. Eight of the walking interviews were in Bristol city centre, a varied and commonly experienced area in the city. Routes were devised by the interviewer, to include a variety of street environments. For contrast, the other three walkalong interviews followed participants’ commute routes. The interviews were recorded by lapel microphones, and transcribed.

The twenty indoor interviews began by summarising participants’ descriptions of two quotidian walks that they had written prior to the interview. Previous research provided examples of specific journeys being recounted by *the researcher* as autobiographical prompts for discussion (Jones 2005; Wylie 2005), although research in which *participants* recount an example journey was not identified. Thus new insight into walking experience was gained through this novel method. Having started the interview with a recap of the participant’s journey descriptions, discussion then added layers of further details to these descriptions. For example participants might discuss sensory experiences or their experiences of other pedestrians. In the second half of the interview more abstract questions were asked about the walking experience. Thus the interviews began with tangible details of specific walks that built momentum for a progressive move into discussing the essence of experiences. The design for the indoor interviews is shown

in figure 1.

Figure 1 Dynamics that room interview process drew upon



The two interview methods meant that journeys of different types were used as prompts for thinking about walking. The walkalong interviews were mainly researcher led routes around the city centre. Thus they were not necessarily normal trips for the participants, but were an exploration of differing conditions in the centre. For the indoors interviews participants wrote about journeys of any purpose. These included trips to drop off children at school, recreational trips, through built up areas or through parks, commutes to work, lunchtime errands, etc. Thus experiences of urban walking, shaped by varying levels of familiarity with surroundings, and

under varying amounts of time pressure etc. were explored, yielding rich contrasts but also common threads in urban pedestrian experience.

The journeys that participants discussed were mainly solitary. Solitary walks allow for deep reflection whilst walking that companionship will often not facilitate. This reflection can be particularly important for those with busy family or social lives. Experiences of talking with companions whilst walking, and also the different cognitive challenges of walking with young children for example, did feature in the interviews but are beyond the scope of this paper. Also beyond the present scope are journeys where substantial wayfinding needs to be accomplished. The journeys discussed were either well known to the participant (for the indoor interviews) or were being led by the researcher (in the walkalong interviews.) This focus on journeys where extensive wayfinding was unnecessary was justified as many quotidian urban trips are along routes known to the pedestrian. All names in the following analysis are pseudonyms.

Results and discussion

Whilst informing all three of the discussion's questions highlighted above, our analysis is structured by the second: 'What role do urban environments play in the thought life of pedestrians?' Individuals' thoughts can interact with their urban surroundings in different ways. The thoughts can, for example, be directly about immediate surroundings, or can be on a completely unrelated matter. Thoughts can be inspired by surroundings or can vie against them for attention. Three main relations between the inner thought life of the pedestrian and their urban environment area discussed in turn, along with the types of thinking these orientations encompass, and implications for wellbeing and affect.

Thoughts retreating from city surroundings

Participants often talked about thinking whilst walking in ways that required a retreat into an inner world, taking their attention away from their surroundings. Such thinking included pondering problems, personal reflection and daydreaming. Pondering problems whilst walking was reported by a number of participants. Melanie, for example, reported walking in order to think through problems:

Melanie (female, 18-30) Often I go out *to walk* (emphasised) if I'm stuck thinking about something, you know stuck on something - 'Oh I'm going to go for a walk' (said in tone indicating frustration).

Melanie finds such efficacy in walking, for thinking through problems, that her journey's intended destination is sometimes a solution to a problem, rather than a physical location. Melanie's tone of frustration indicated that the chance to walk when faced with an intellectual problem could relieve feelings of frustration. This combination of walking and thinking to relieve negative emotions was made more explicit by Ben:

Ben (male, 18-30) Right and I just go off right and think about problems, money problems, things that I got going on in my head. What's the best way to work it out. Right because I can have that moment's peace where it's like I *can*' (emphasised) get my thoughts together and I can actually sit down and work it out: 'Right I got this, I need this to do this...let's do it this way.' And nine times out of ten it gets sorted....But when I'm surrounded or I'm locked in it just feels like my whole world's coming in on top of me, right and I really hate that feeling.

Ben talks about the benefits of walking whilst addressing his problems, ('peace'), and the inferior option of addressing them in his indoor environment, ('hate'), in emotive terms. Ben indicated elsewhere that city walking enabled him to escape from his daily realities, including

phone, friends etc. Escaping from difficulties associated with interior places has been explored, in relation to jogging, by Cook, Shaw and Simpson (2016). Perhaps then the urban dweller is less troubled, whilst walking, with the requirements and realities of his daily ongoing existence, which can at times be negative, compared to at other times of day.

The physical progress inherent in walking may also make walking time a useful and enjoyable opportunity for addressing problems. Melanie for instance indicated:

Melanie Yeah it helps the flow of thinking and I think it just...helps you, maybe it's something about the marching forward, that the forward motion maybe that keeps....that your mind maybe sort of mimics, do you know what I mean and sort of....yeah, you don't get stuck in the same way or I feel like I never go round in the same sort of circles, that I do if I'm sort of trying to work something out..(sitting down).

Walking then, by being resonant of progress, may undermine cognitive impasse and reach the solution of problems. Melanie's quote supports Middleton's (2010) evidence that the 'clear thinking' when addressing problems on long rural hikes (Crust et al. 2011, 254) can be facilitated to some degree by short urban walks.

Personal reflection, often on self or work, was another type of thinking that a number of participants reported engaging with. Jane for instance commented that on her walk home she gets a useful chance to reflect 'a little bit' on her working day. Maisie talked about it being 'really important' to have alone time for reflecting on her day on her walk home while Lucy considered herself wasteful for not reflecting enough while walking.

Both problem solving and personal reflection can involve the pedestrian going off into their 'inner world' and disengaging with surroundings. Ben, for example, described himself as 'being on another planet':

Ben especially if I've got a lot going through my head, right I've got a lot of emotional stuff going on, or I've got a load of problems that I'm trying to deal with or just generally life, right I do....find myself wondering in my head when I'm walking, and it's like I bump into something and it's like 'Whooah' (interviewer laughs) let's get back to the moment shall we?' It's like being on another planet basically. Right but....that's how I get my problems sorted. That's how I process what I need to process.

For Ben, processing his problems and effectively navigating his surroundings are in some degree of conflict, although this does not prevent Ben from finding the walk very useful for such processing. Participants generally suggested they found walking cognitively easier (allowing more thinking on tasks besides navigation) than other means of mobility, because of lesser concerns around safety. For this reason some participants thought walking had advantages over driving (or even being a car passenger) or cycling as a time to think.

Personal reflection can also be a form of thought which is quite separate to interactions with surroundings. Lee, for example, contrasted personal reflection with paying attention to his surroundings, suggesting there can be a dichotomy between the two processes:

Lee (male, 30s) Yeah...yeah...definitely and more, I think, If I was to look at all the times I've walked in my life there's probably more time I spend thinking about my own life and what's involved in my own life than I do thinking about the physical environment around me.....

A drop in pressure or expectation to think can ironically mean urban walking facilitates some useful or enjoyable types of thinking. These can include inspirational thinking and daydreaming. In the following quote Lee explicitly links the gaining of, inspirational insight with the drop in pressure:

Lee Yeah because I think also there's no pressure on you. Sometimes it's like when they say about writer's block. When you're almost told to do something, that's when you struggle to do it because it's almost like that, invisible pressure on you, but when you're just going about your everyday life sometimes, suddenly, the.... join up the dots and you can see things a lot clearer.

Lee's statement is in harmony with Baird et al.'s (2012) comment that the benefits of being engaged in an unrelated activity for achieving problem-solving insights have been remarked upon anecdotally for millennia.

Links between walking and creative thinking have been found in previous experimental research by Oppezzo and Schwartz (2014). A number of our participants made the connection between the relative cognitive relaxation of walking and more creative and inspirational thinking. Lee for example reported mental solutions coming to him while walking or running:

Lee I've definitely had that in the past where I've....been walking or running and I've....got clear mind and I suddenly, 'ah', a light bulb moment when you suddenly think 'Ah...why don't I just do that and that solves it, solves my problem, or issue or.....

The relative cognitive relaxation of walking, which can lead to insight, is partly facilitated by being away from IT devices such as laptops. Although smartphones can be, and are, used whilst walking the particular sample interviewed did not discuss using them, or the importance they had to their thought life, whilst walking.

Jackie talked about enjoyable and useful relaxation coming from a drop in pressure, likening thinking whilst walking to thinking before dropping off to sleep.

Jackie (female, 50s) It's kind of a bit like...that... few moments, if you're in, either when you're just going off to sleep....where....If you have been working.....right up to the minute before you decide, right you're going to bed...your head's whirring.... so you can't

necessarily get to sleep straight away because if you've stopped working half an hour before, made a cup of tea, just let your brain kind of, slow down a bit, then you usually, as your head hits the pillow, you've got a little while while your brain just kind of....wanders, not quite aimlessly but.....meanders back and forth, and sometimes interesting thoughts pop in at that point but sometimes you just, it just randomly.....gently drifting off to sleep. Or if you wake in the night and it's, you've been sleeping, you're sleeping lightly, you drift back, into sleep, so in a sense as you're walking....your thoughts can drift in and out without you having to force them to a pattern or force a concentration on them...

Such unforced thinking can be, as highlighted above, useful for problem solving, perhaps gaining insight into a work problem for instance. However, Jackie intimated that the usefulness of her urban walking for such thinking depended to some degree on whether the purpose of her journey added time pressure: during quick errand trips in the centre, over her lunch break, she was less likely to think deeply.

Jackie's quote above suggests some pleasure in the process of unforced thinking, describing it as 'mental relaxation', and Lucy and Rose confirmed that unforced thinking can also be a recreation. They talked about enjoying their daydreaming whilst walking, further substantiating the tentative evidence from Darker, Larking and French (2007) that daydreaming can be an important part of urban walking. Lucy mentioned it often during our interview:

Lucy (female 18-30)just walking, doesn't seem to be, by myself, doesn't seem to be that...much...of an interesting thing, though at the same time I quite enjoy listening to music or....you know, daydreaming about things, even if I have someone with me, I sometimes wish 'Oh I wish I was by myself' so I could be doing my usual, sort of....in my own little world rather, so....yeah....But I do I do sometimes though, the downside of that is I sometimes think, 'Oh actually should I really be paying more attention to the world around me and more appreciating where I am.'

In this quote Lucy implies that for her the opportunity to daydream is the most interesting

element of urban walking. Lucy contrasts daydreaming to paying attention to her surroundings. Daydreaming for Lucy is a type of thinking which carries her attention into her inner world and away from her surroundings. Lucy describes the opportunity to daydream in terms of enjoyment. Rose also enjoyed the chance to ‘dream’ while walking in the city. She expressed delight at having a butterfly brain and thoughts which continually go off on tangents. Thus, types of thinking facilitated such as daydreaming, and reflection might be one pathway by leading to the greater measurements of satisfaction for walked commutes than motorised modes, found by Olsson et al. (2013.)

The types of thinking discussed so far require a retreat into the inner world by the pedestrian. However, data suggested that these types of thinking can be vulnerable to the intrusive aspects of city life that demand attention.

Thoughts threatened by urban environments

The inner world of the pedestrian can be interrupted by the inconvenience of physically navigating the city (Taylor 2003). This interruption can take the form of other pedestrians. Participants related the effects of a range of different encounters with other pedestrians, some of which were welcome and some not. These ranged from being interrupted by charity fundraisers, or being insulted by a local homeless person, to meeting acquaintances and feeling obliged to stop and chat. Melanie related that the latter instance could be unwelcome in disrupting her reflection on her PhD work:

Melanie ...if you are for whatever reason really invested in whatever you’re thinking about, then, yeah you can take a different way or, avoid certain shops or whatever, and if you feel like ‘I just need a break’....yeah, then you can choose to be, social, which is why I don’t

really like running into people you know on the street, if you're not expecting it (Melanie laughs)

Melanie went on to describe the negative feelings she could have at seeing someone she knew approaching. As noted above, Taylor (2003) has intuited that motor traffic may also intrude negatively upon the awareness of the pedestrian. One reason for this intrusion evidenced in the present data is the noise of traffic. This was alluded to by Jess, supporting the experimental evidence from Hygge, Boman and Enmarker (2003) that traffic noise can disrupt people's ability to think:

Jess (female, 40s) ...yeah so um (coughs) I find it quite hard to concentrate....with the noise

Traffic, and particularly its potential to be dangerous, can require the pedestrian to be 'on guard'. Rose stated that because she has to guard against traffic she is not able to devote the attention to dreaming to the degree she otherwise would (although she still reported extensive daydreaming sessions):

Rose (female, 60s) ...and I think cars are a big problem walking in towns, so you have to stay on your guard in towns more, you can't dream as much...not quite! (Rose laughs)

Derek is similarly challenged by elements in urban surroundings: to enter a 'deeper peace' in his mind he needs surroundings that are non-intrusive.

Derek (male, 50s) It is feeling relaxed in yourself and I think the more we settle and feel comfortable with our environment, they're not intruding on us or making us you know frightened or staying aware, you find a deeper peace in your mind....

Intrusive elements make Derek stay 'aware' of his surroundings. As with Rose, for Derek the

presence of motor traffic is chief among these elements:

Derek ...like through meditation, it becomes refreshing and enriching. It is, it's relaxing the mind, there's continually a computer working out all these things and cataloguing, analysing things and...dealing with our lives, so it becomes a mini step in a balance as well as a...it makes the journey far more enjoyable. Makes it lovely, that's where the cars come in, that's the problem (interviewer laughs) The cars are the problem, they're the sharks in the swimming experience you see (said with humour) I want to dive into the pool but whoops, Oh my G__ there's these little black fins out there somewhere and they stop me relaxing.

Derek suggests an association between walking and a relaxed and pleasurable state of mind, likening it to meditation, but implies that the impairment of relaxation, by motor traffic, inhibits the cognitive processes he would otherwise enjoy. The intruding elements of urban surroundings, particularly motor traffic, can then hamper the various wellbeing benefits of the thinking pedestrian retreating into their inner world, as have been outlined above.

Thoughts triggered by city surroundings

City surroundings and trains of thought are not always in opposition. The surroundings can trigger thoughts, both positive and negative. Rose talked about the negative impact some particularly ugly railings that had been installed in her park had made on her:

Rose And for, for several, well probably a few weeks I found it really quite upsetting to go in because I'd be jarred and you know, your thought process can go down, into a negative spiral can't it, you know.

This comment suggests urban surroundings can inspire negative trains of thought in the pedestrian which can lead to negative affect: Ugliness, busyness and traffic can all have a negative impact on wellbeing in this way. Previous research had reported the negative affect of walking through deprived areas for low income mothers (Bostock 2001). But participants

including Rose also talked about the positive trains of thoughts inspired by things such as bluebells:

Rose But generally it can happen the other way and you...you see a whole load of bluebells in the wood in the park and you think 'Oh wonderful', it reminds you of where you've seen bluebells before...

Here triggers perceived in the environment are seen to lead to mood shifts, via the senses but also via thoughts. While Rose's quotes relate to urban green space, other examples of positive stimuli to thought included architecture, antiquated streets, fashion and other pedestrians of various ages. Rose for instance talked of encountering more 'human dramas' in urban rather than rural walks. So the urban environment is likely to offer the pedestrian prompts to thought that are different to those available in the countryside, but still valuable.

The triggering of memories was a particularly notable way in which the city environment prompted thoughts. James for example talked about certain locations bringing back affectionate memories for him:

James (male, 40s) you just look at a particular spot and you think 'Oh my goodness, two summers ago I was there with my Malaysian friend _____, and we drank wine and ate some chocolate teddy bears and chatted and happily, you know, wiled the night away, sort of thing' and 'wow that was amazing – stood right outside of that O2 building there' and ...yeah that sort of thing can come into your mind

For James and others memories were triggered by specific locations. This evidence adds to quantitative evidence from Quercia, Schifanella and Aiello (2014) suggesting that personal memories can influence perceptions of streets. The links found between memories and place also support the contention by Moles (2008) that repeated walking in a place, over time, can imbue

place with importance for the walker. In general participants seemed to find being reminded of their past pleasant, although perhaps unpleasant memories were less likely to be volunteered within the interview situation.

A further way in which city surroundings can trigger thought and feeling is through provoking the imagining of what a street may have been like in previous eras. City streets and features within them enabled participants to feel connected to a history beyond their own. This was often the case with older streets and street features. With a degree of imagination some participants felt they could almost contact history by walking in the street. Derek was the prime example of this. He talked particularly of walking in London:

Derek Strange mixtures because there were so many things historically interesting within London, the wonderful thing is that whatever footstep you take you walk in the footsteps of so many people from all elements of time, famous, rich/poor, whatever, and that's lovely, I feel that more than any other place in the world, but I, when I tread those streets, (I'm) stepping into that time frame or what were that person's thoughts in that moment in time....whoever it is, you're walking in the footsteps of Oscar Wilde if you're going up Shaftesbury Avenue, you could be any saint, sinner or whatever, great criminal. That's lovely, I love entering into that, you know, teleport time-space, you could just tap into their moments, their thoughts, their experiences: *that* (his emphasis) I like about London.

Derek describes the process of imagining London's past with positive words such as 'wonderful' and 'lovely', suggesting that the process enriched his wellbeing in terms of positive affect. The triggering of imagination in the way Derek describes may have a deepening effect on affective experiences of the city. Imagining social history in this way may also encourage feelings of belonging: an aspect of life referred to as affiliation, a component of positive psychology which Crust et al. (2011) have previously sought to apply to walking. The process of personal memories or fantasies of previous eras being inspired by features such as old streets and

buildings may be one by which walkers bond to the areas they walk through.

Conclusions

In answer to the paper's first question, on what types of thinking pedestrians can do in the urban environment, participants reported conducting a range of thinking whilst walking in cities, including problem solving, personal reflection, day dreaming and undirected creative thinking, as well as thinking about their surroundings. This was variously considered useful or enjoyable by the walkers. Thus the evidence complements studies on rural walking, (including Maddrell 2011; Wylie 2005; Crust et al. 2011) and experimental settings (Berman, Jonides and Kaplan 2008; Netz et al. 2007; Oppezzo and Schwartz 2014) to suggest that actual urban settings can facilitate useful thinking whilst walking. It questions the view, reported by Edensor (2000), that urban pedestrian settings can't be good places for reflection.

The benefits of urban walking for these types of thinking may have relevance in the business sphere and mental health spheres. The participant interviews support Oppezzo and Schwartz's (2014) contention that walking could be encouraged by companies as a good aid to thinking about work problems. For instance group brainstorming sessions could take place outdoors and on the move. Combinations of walking and thinking tasks could also be recommended for those with mental and emotional problems. Further research would be needed to see whether there are ways in which the combination of walking and thinking can be beneficial to mental health.

In answer to the study's second question, on the role the urban environment can play in pedestrian thought life, this seems to vary a great deal. Much of the data suggests that a 'good' urban environment, for the pedestrian thinker, is one that stays out of the pedestrian's way. Thus it may be that well-designed pedestrian environments should be unobtrusive. The interviews also

included many explicit references to thinking being disturbed or interrupted by elements in the pedestrians' surroundings. Examples of intrusions that have been given include motor traffic and other pedestrians. With regard to the former, the evidence adds empirical evidence to Taylor's (2003) intuitive writing about the disrupting and inhibiting effect of motor traffic for the urban pedestrian. Cars, and other pedestrians, can necessitate a 'coming to' and a sudden awareness of surroundings, which can interrupt contemplation.

However, urban environments do not only act to prevent thinking. They can also inspire trains of thought, positive or negative in affect. Inspiring features within urban settings can include architecture, old streets, people and their activities and green features. The potential such environments hold in this respect may be undervalued, with more attention previously given to the aesthetics of pedestrian places, than their ability to inspire thoughts and cognition, which in turn can inspire positive affect. Further study could thus explore whether the influence of urban surroundings on pedestrian thinking has practical implications for creating beneficial and pleasing urban walking environments. The ways that urban environments can interact positively and negatively with pedestrians' thoughts has implications that as yet have been neglected in policy and academic summaries of walkability.

In answer to the study's third question, on implications for wellbeing, participant comments suggest the opportunity to think may constitute one of the advantages of urban walking for wellbeing compared to other transport modes, informing Martin, Goryakin and Suhrcke's (2014), and Ollsen et al.'s (2013) quantitative findings of psychological benefits relating to walking for transport.

The ability to solve problems whilst walking can have positive implications for emotional state

and hedonic wellbeing. This has been illustrated in the relief of Melanie's frustration when walking, and the reduced negativity Ben suffers from contemplating his problems when walking compared to being indoors. This may be partly due to expression of negative emotion through the physicality of walking. Daydreaming had enjoyment for Lucy and Rose, suggesting an enrichment of hedonic wellbeing. Thus, effects of thinking on hedonic wellbeing included both amelioration of negative states and increasing of positive states.

Participants generally attributed negative affect to instances where they are jogged out of reverie by intrusive elements such as motor traffic or other pedestrians. As was particularly the case with Derek, negativity was particularly associated with a spoiling of what otherwise would have been a deepened and enriching state of mind whilst walking.

Thoughts, triggered and inspired by elements within urban surroundings, can have either positive or negative impacts for hedonic wellbeing. The inspiration of personal memories and imaginations of historical eras was a particularly positive source of affect for the participants. The potential of activities exploring personally known streets could be further researched as could the potential of encouraging the imagining of bygone eras whilst walking in cities.

The study was situated in UK pedestrian conditions, with many of our participants based in affluent neighbourhoods. Pedestrian experiences in different settings can include more frequent instances of crime or sexual harassment (see Seedat, MacKenzie and Mohan's 2006 study of female pedestrians in Dehli and Johannesburg). These experiences were not frequently referred to by our participants. However, other experiences recorded by Seedat, MacKenzie and Mohan, such as crowding, dominant motor traffic, congestion and noise pollution were mirrored in our

participants' experience. Thus it can be supposed such experiences are replicated, and relevant, in varying forms, internationally.

In conclusion, the discussion has identified mechanisms by which urban environments can influence pedestrians' thoughts. In turn, hedonic benefits of thinking whilst walking in cities may be one pathway by which, as previously quantified, urban walking can benefit psychological wellbeing.

References

- Baird, Benjamin, Jonathan Smallwood, Michael D. Mrazek, Julia Kam, Michael Franklin and Jonathan Schooler. 2012. "Inspired by Distraction: Mind Wandering Facilitates Creative Incubation." *Psychological Science* 23(10): 1117-1122. doi: 10.1177/0956797612446024.
- Bean, Catherine, Robin Kearns and Damian Collins. 2008. "Exploring Social Mobilities: Narratives of Walking and Driving in Auckland, New Zealand." *Urban studies* 45 (13): 2829-2848. doi: 10.1177/0042098008098208.
- Berman, M.G., J. Jonides and S. Kaplan. 2008. "The Cognitive Benefits of Interacting with Nature." *Psychological Science* 19 (12): 1207-1212.
- Blumen, Orna. 2000. "Dissonance in women's commuting? The experience of exurban employed mothers in Israel." *Urban Studies* 37 (4): 731-748. doi:10.1080/00420980050003991
- Bornioli, Anna, Graham Parkhurst, and Phillip Morgan. 2018. "Psychological Wellbeing Benefits of Simulated Exposure to Five Urban Settings: an Experimental Study From the Pedestrian's Perspective." *Journal of Transport & Health* 9: 105-116. doi:10.1016/j.jth.2018.02.003
- Bostock, Lisa. 2001. "Pathways of Disadvantage? Walking as a Mode of Transport among Low-income Mothers." *Health and Social Care in the Community* 9 (1): 11-18. doi: 10.1046/j.1365-2524.2001.00275.x
- Braun, Virginia, and Victoria Clark. 2006. "Using Thematic Analysis in Psychology." *Qualitative Research in Psychology* 3 (2): 77-101. doi :10.1191/1478088706qp063oa.

- Calvert, T. 2014. An exploration of the urban pedestrian experience, including how it is affected by the presence of motor traffic. PhD, University of the West of England. Available from: <http://eprints.uwe.ac.uk/24489>
- Choy, Looi Theam. 2014. The strengths and weaknesses of research methodology: Comparison and complimentary between qualitative and quantitative approaches. *IOSR Journal of Humanities and Social Science* 19 (4): 99-104. doi:10.9790/0837-194399104
- Cook, Simon, Jon Shaw, and Paul Simpson. 2016. "Jography: Exploring Meanings, Experiences and Spatialities of Recreational Road-Running." *Mobilities*, 11 (5): 744-769.doi: 10.1080/17450101.2015.1034455.
- Crotty, Michael. 1996. *Phenomenology and Nursing Research*. Australia: Churchill Livingstone
- Crust, Lee, Richard Keegan, David Piggot, and Christian Swann. 2011. "Walking the Walk: A Phenomenological Study of Long Distance Walking." *Journal of Applied Sport Psychology*. 23 (3): 243-262. doi :10.1080/10413200.2010.548848
- Darker, Catherine, Michael Larking and David French. 2007. "An Exploration of Walking Behaviour-An Interpretative Phenomenological Approach." *Social Science & Medicine* 65 (10): 2172-2183. doi : 10.1016/j.socscimed.2007.06.029
- Davis, Adrian. 2014. *Claiming the Health Dividend: A Summary and Discussion of Value for Money Estimates from Studies of Investment in Walking and Cycling*. Report for Department for Transport. UK.
- DfT. 2004a. *Local Transport Note (LTN) 1/04. Policy, Planning and Design for Walking and Cycling*. Report for the Department of Finance. London: The Stationery Office.
- Dft. 2004b. *Walking and Cycling: An Action Plan*. London: The Stationery Office.
- DfT. 2007. *Manual for Streets*. London: Thomas Telford Ltd
- Dft. 2010. *Cycling, Safety and Sharing the Road: Qualitative Research with Cyclists and Other Road Users. Road Safety Web Publication No.17*. London: Department for Transport.
- DfT. 2015. *Investing in Cycling and Walking. The Economic Case for Action*. London: Department for Transport.
- DfT. 2017a. *Cycling and walking investment strategy*. London: The Stationary Office.
- DfT. 2017b. *Local cycling and walking infrastructure plans. Technical guidance for local authorities*. London: The Stationary Office.

- Ding, Ding, Kenny Lawson, Tracy Kolbe-Alexander, Eric Finkelstein, Peter Katzmarzyk, Willem Van Mechelen, Michael Pratt, and Lancet Physical Activity Series 2 Executive Committee. 2016. "The economic burden of physical inactivity: a global analysis of major non-communicable diseases." *The Lancet* 388 (10051): 1311-1324. doi: 10.1016/S0140-6736(16)30383-X
- Edensor, Tim. 2000. "Walking in the British Countryside: Reflexivity, Embodied Practices and Ways to Escape." *Body & Society* 6 (3-4): 81-106. doi : 10.1177/1357034X00006003005.
- Ettema, Dick, and Ifeta Smajic. 2014. "Walking, Places and Wellbeing." *The Geographical Journal* 181(2): 102-109. Doi : 10.1111/geoj.12065.
- Fan, Peilei, Guanghua Wan, Lihua Xu, Hogeun Park, Yaowen Xie, Yong Liu, WenzeYue. and Jiquan Chen. 2018. "Walkability in urban landscapes: a comparative study of four large cities in China." *Landscape Ecology*. 33 (2):323-340 doi:10.1007/s10980-017-0602-z
- Forsyth, Ann. 2015. "What is a walkable place? The walkability debate in urban design." *Urban design international*, 20(4), 274-292. doi: 10.1057/udi.2015.22
- Gatrell, Anthony. 2013. "Therapeutic Mobilities: Walking and 'Steps' to Wellbeing and Health." *Health & Place*. 22: 98-106. doi : 10.1016/j.healthplace.2013.04.002.
- Hamilton-Baillie, Ben. 2008. "Towards Shared Space." *Urban Design* 13 (2): 130-138. doi : 10.1057/udi.2008.13.
- Hayes, Nicky. 1997. *Doing Qualitative Analysis in Psychology*. England: Taylor & Francis.
- Higgins, Paul, and Millicent Higgins. 2005. "A Healthy Reduction in Oil Consumption and Carbon Emissions." *Energy Policy* 33(1): 1-4. doi : 10.1016/S0301-4215(03)00201-5.
- Hygge, Staffan, Eva Boman, and Ingela Enmarker. 2003. "The Effects of Road Traffic Noise and Meaningful Irrelevant Speech on Different Memory Systems." *Scandinavian Journal of Psychology*. 44 (1): 13-21. doi : 10.1111/1467-9450.00316.
- Jacobs Jane. 1992. *The Death and Life of Great American Cities*. 1st Vintage Books ed. U.S: Vintage Books.
- Jain, Juliet, and Glenn Lyons. 2008. "The gift of travel time." *Journal of transport geography* 16 (2): 81-89. doi:10.1016/j.jtrangeo.2007.05.001
- Jones, Phil. 2005. "Performing the City: a Body and a Bicycle Take on Birmingham, U.K." *Social & Cultural Geography*. 6 (6): 813-830. doi : <https://doi.org/10.1080/14649360500353046>.

- Koska, Thorsten, and Frederick Rudolph. 2017. *The Role of Walking and Cycling in Reducing Congestion: a Portfolio of Measures*. Brussels: European Union.
- Lee, I-Min, and David Buchner. 2008. "The importance of walking to public health." *Medicine and science in sports and exercise* 40 (7): 512-518: doi: 10.1249/MSS.0b013e31817c65d0
- Litman, Todd. 2017. *Economic value of walkability*. Canada: Victoria Transport Policy Institute.
- Maddrell, A. 2011. "'Praying the Keeills'. Rhythm, Meaning and Experience on Pilgrimage Journeys in the Isle of Man." *Landabréfið* 25: 15-29. Available at : http://centaur.reading.ac.uk/72576/1/Landabrefid_2011_AM.pdf
- Martin, Adam, Yevgeniy Goryakin and Marc Suhrcke. 2014. "Does Active Commuting Improve Psychological Wellbeing? Longitudinal Evidence from Eighteen Waves of the British Household Panel Survey." *Preventive Medicine* 69: 296-303. doi : 10.1016/j.ypmed.2014.08.023.
- Mental Health. 2018. Cognitive behavioural therapy. Available at: <https://www.mentalhealth.org.uk/a-to-z/c/cognitive-behavioural-therapy-cbt> (Accessed, 10th October 2018)
- Middleton, Jennie. 2010. "Sense and the City: Exploring the Embodied Geographies of Urban Walking." *Social & Cultural Geography* 11 (6): 575-596. doi : 10.1080/14649365.2010.497913.
- Mobily, Kenneth, Linda Rubenstein, Jon Lemke, Michael O'Hara, and Robert Wallace. 1996. "Walking and Depression in a Cohort of Older Adults: The Iowa 65+Rural Health Study." *Journal of Aging and Physical Activity*. 4 (2): 119-135. doi : 10.1123/japa.4.2.119.
- Moles, Kate. 2008. "A Walk in Thirdspace: Place, Methods and Walking." *Sociological Research Online* 13 (4): 2 doi : 10.5153/sro.1745.
- Morris, Jeremy N.1994. "Exercise in the Prevention of Coronary Heart Disease: Today's Best Buy in Public Health." *Medicine and Science in Sports and Exercise* 26(7): 807-814.
- Netz, Y, R. Tomer, S. Axelrad, E. Argov, and O. Inbar. 2007. "The Effect of a Single Aerobic Training Session on Cognitive Flexibility in Late Middle-aged Adults." *International Journal of Sports Medicine*. 28 (1): 82-87. Doi : 10.1055/s-2006-924027.

- NHS. 2018. How it works. Cognitive behavioural therapy. Available at:
<https://www.nhs.uk/conditions/cognitive-behavioural-therapy-cbt/how-it-works/>
 (Accessed 10th October 2018.)
- Olsson, Lars, Tommy Gärling, Dick Ettema, Margareta Friman, and Satoshi Fujii. 2013.
 “Happiness and Satisfaction with Work Commute.” *Social Indicators Research*, 111 (1):
 255-263. doi :10.1007/s11205-012-0003-2.
- Oppezzo, Marily, and Daniel Schwartz. 2014. “Give your Ideas Some Legs: The Positive Effect
 of Walking on Creative Thinking.” *Journal of Experimental Psychology: Learning,
 Memory and Cognition*. 40 (4): 1142-1152. doi : 10.1037/a0036577.
- Pattern, Michael Quinn. 2002. *Qualitative Research and Evaluation Methods*. 3rd Ed. U.S: Sage.
- Quercia D, Schifanella R. and Aiello LM. 2014. “The Shortest Path to Happiness:
 Recommending Beautiful, Quiet, and Happy Routes in the City.” In: *Proceedings of the
 25th ACM Conference on Hypertext and Social Media*. 1st to 4th September, 2014, 945-
 955. Santiago, Chile: ACM.
- Redmond, Lothlorien and Patricia Mokhtarian. 2001. "The positive utility of the commute:
 modeling ideal commute time and relative desired commute amount." *Transportation* 28,
 (2): 179-205. doi:10.1023/a:1010366321778
- Richardson Caroline, Guy Faulkner, Judith McDevitt, Gary Skrinar, Dori Hutchinson and John
 Piette. 2005. “Integrating Physical Activity into Mental Health Services for Persons with
 Serious Mental Illness.” *Psychiatric Services* 56 (3): 324-331. doi:
 10.1176/appi.ps.56.3.324.
- Robertson, Roma, Ann Robertson, Ruth Jepson, and Margaret Maxwell, 2012. “Walking for
 Depression or Depressive Symptoms: a Systematic Review and Meta-analysis.” *Mental
 Health and Physical Activity* 5 (1): 66-75. doi : 10.1016/j.mhpa.2012.03.002.
- Ryan, Richard, and Edward Deci. 2001. “On Happiness and Human Potentials: A Review of
 Research on Hedonic and Eudaimonic Well-being.” *Annual Review of Psychology* 52 (1):
 141-166. Doi : 10.1146/annurev.psych.52.1.141.
- Seedat, Mohamed, Sarah MacKenzie and Dinesh Mohan. 2006. “The Phenomenology of Being a
 Female Pedestrian in an African and an Asian City: A Qualitative Investigation.”
Transportation Research Part F. 9 (2): 139-153. <https://doi.org/10.1016/j.trf.2005.09.005>.

- Smith, Robin, and Tom Hall. 2016. "Mobilities at Work: Care, Repair, Movement and a Fourfold Typology." *Applied Mobilities* 1 (2): 147-60 doi : 10.1080/23800127.2016.1246897.
- Solnit, Rebecca. 2001. *Wanderlust*. Uk: Verso.
- Taylor, Nigel. 2003. "The Aesthetic Experience of Traffic in the Modern City." *Urban Studies* 40 (8): 1609-1625 doi : 10.1080/0042098032000094450.
- Tilley, Sara, Chris Neale, Agnes Patuano, and Steve Cinderby. 2017. "Older people's experiences of mobility and mood in an urban environment: a mixed methods approach using electroencephalography (EEG) and interviews." *International journal of environmental research and public health* 14 (2): 151 doi: 10.3390/ijerph14020151
- TfL. 2004 *Making London a Walkable City: The Walking Plan for London*. London: Mayor of London.
- UN. 2018 *Goal 3: Ensure Healthy Lives and Promote Well-being for All at All Ages*. Available at: <http://www.un.org/sustainabledevelopment/health/> (accessed 19 February 2018)
- Urry, John. 2007. *Mobilities*. UK: Polity press.
- WHO 2018 *Mental Health*. Available at: http://www.who.int/mental_health/SDGs/en/ (Accessed 19th February 2018.)
- Wylie, John. 2005. "A Single Day's Walking: Narrating Self and Landscape on the South West Coast Path." *Transactions of the Institute of British Geographers* 30 (2): 234-247. doi : 10.1111/j.1475-5661.2005.00163.x.