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Finding your way: exploring urban park users' engagement with a wayfinding intervention through intercept go-along interviews

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ABSTRACT

This study explores urban park users' engagement with a wayfinding intervention from a natural experimental study- The Delapré Walk Project. A qualitative approach was taken, with 16 intercept go-along interviews conducted with 28 local park users while they engaged with the greenspace. Barriers to greenspace access included a lack of seating and unfamiliarity with distances and footpath terrains. The inclusion of a walking route distance on wayfinding signage was valued by visitors, enabling them to make capability decisions about distances to be walked. The greenspace offered an escape from the urban environment, with some respondents explicitly stating that they did not want to see urban infrastructure within the park. This carries an important implication for wayfinding design to ensure the materials used are in-keeping with the surrounding environment. Frequent park users positively received the wayfinding intervention and whilst the main values were seen for infrequent visitors, those familiar with the park also reported increased engagement with the greenspace due to the intervention. Our research shows the value of low-cost and effective community-informed wayfinding interventions, which are essential for increasing recreational walking activity and community health within urban greenspaces. Importantly, our findings highlight wide-reaching benefits, particularly for infrequent greenspace users, older adults and those with mobility impairments, demonstrating how such interventions can help ensure equitable access to greenspace for everyone.

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Greenspace; well-being; wayfinding; walking; natural experiment; urban park

Background

The potential benefits of urban greenspace for human well-being are increasingly being documented and include physical, psychological, and social benefits (Van Dillen *et al.* 2012, Richardson *et al.* 2013, Ma *et al.* 2019, Reyes-Riveros *et al.* 2021, Sudimac *et al.* 2022). Such spaces allow urban residents access to natural environments, which are may be typically inaccessible, with urban dwellers reporting having limited contact with 'natural ecosystems' (Wolch *et al.* 2014). This is germane because urban environment living, whilst beneficial, has long been highlighted as having unique mental health risk factors (Tost *et al.* 2015). For example, anxiety, mood disorders and major depression rates are suggested to be > 56% more common in urban areas compared to rural (Peen *et al.* 2007). Explanations for this include social risk factors, such as concentrations of low socio-economic status, low social capital and social segregation (Gruebner *et al.* 2017, Okkels *et al.* 2018), and physical risk factors such as noise and air pollution, or poor urban design (Buoli *et al.* 2018, Ma *et al.* 2018, Rautio *et al.* 2018). This becomes a contemporary public health concern in light of the major social trend since the 1800s of the increasing urbanisation of society, with now more than half of the world's population living in urban spaces, which is predicted to increase to 68% by 2050 (United Nations 2019).

With the growing evidence base for the health benefits of urban greenspaces, there is an increasing requirement to ensure there is equitable access to such spaces for all people. However, it has been acknowledged that a range of barriers to access exist which include personal and societal constraints to accessing greenspaces, such as distance from greenspace, physical barriers within, psychological (i.e. safety perceptions), socio-cultural, and financial barriers, as well as lack of route information and knowledge (Forest Research 2022). Therefore, both international and national government agencies have advised that local governments and practitioners need to understand community wants and needs, and local contexts, to ensure greenspaces are equitably designed to maximise access and use (Public Health England 2020, Natural England 2023, WHO 2023).

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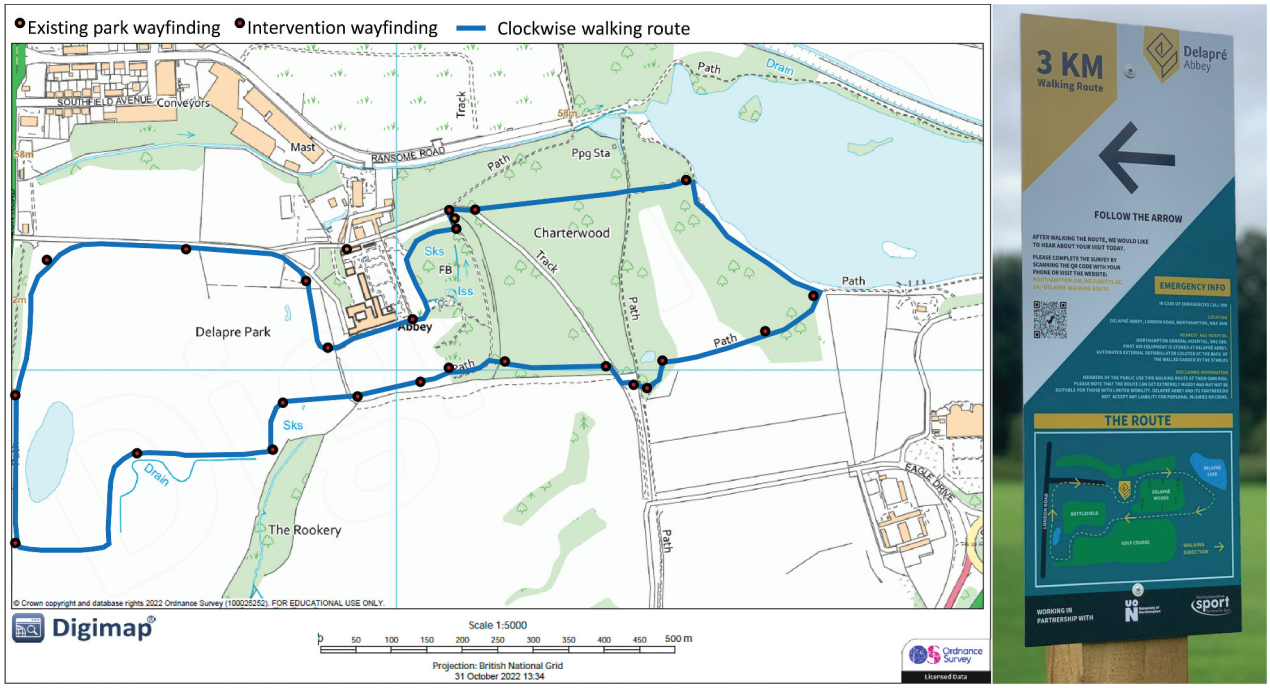

Figure 1. (Left) a map of Delapré Park with the locations of the newly installed wayfinding and walking route highlighted. (Right) An example of the wayfinding signs.

One such community need is for more provision of local walking route and mapping information, as a lack of knowledge about routes has been cited as a barrier to using greenspaces for recreational walking (Kelly *et al.* 2019). Limited route knowledge or navigation difficulties within unfamiliar spaces can be stressful for space users, inducing spatial anxiety, and can sometimes lead to avoidance of walking in a space (Vandenberg *et al.* 2016). Moreover, greenspace unfamiliarity and limited knowledge about available amenities can reduce confidence in using the space, increasing concerns over perceived safety, as well as seating, public toilet, gate and stile locations (Vandenberg *et al.* 2016, Kelly *et al.* 2019).

It has been suggested that small-scale wayfinding interventions in greenspaces, such as mapping and signage, may help alleviate such barriers through increasing local knowledge and confidence in space orientation (Sport England 2023). Additionally, small-scale interventions appear to encounter less implementation barriers in comparison to larger infrastructure changes (Aldred *et al.* 2019), but still hold potential to influence space engagement and behaviour change (Unt and Bell 2014, Rossini 2019, Ward Thompson *et al.* 2019). Whilst there is limited research on wayfinding signage in greenspaces more generally, some research from the USA suggests that local Park Authority investment in signage increases park usage and community physical activity levels (Cohen *et al.* 2013).

Taken together, evidence suggests small-scale wayfinding using signage and mapping may help alleviate some of the existing barriers to greenspace engagement, with potential for increasing use and health for greenspace areas. Therefore, we developed *The Delapré Walk Project*, which implemented wayfinding signage to establish a 3 km walking route within an urban greenspace in Northampton, England. The current article reports on the final study of the project and is part of a series of research studies investigating this area (see Ryan and Hill 2022, Ryan and Benton 2023, Ryan *et al.* 2023).

The Delapré Walk Project

The Delapré Walk Project is a natural experimental study whereby 24 directional wayfinding signs (the 'intervention') were installed within an urban park to create a clockwise 3 km signposted walking route (Figure 1). A local survey was issued at the outset of the project to gather public views about the proposed intervention and help inform the design of the wayfinding signs (Ryan and Hill 2022). The intervention data collection began in March 2021 with manual and bi-directional automated active infrared counts conducted at baseline and 12-month follow-up to record greenspace engagement through footfall, as well as a QR code accessed intercept survey utilised during the follow-up phases to capture user experiences, views, and attitudes toward the intervention. The aim of the project was to investigate the effect on visitors' physical activity behaviours and greenspace engagement by installing directional wayfinding, to create a clockwise looped walking route, within an existing urban park (Ryan *et al.* 2023).

Results from the manual and automated counts suggested the intervention had no significant effect on footfall between intervention and control parks or within the intervention park between baseline and follow-up, respectively (Ryan *et al.* 2023). However, during manual observations at 12-month follow-up, 23% of clockwise travelling route users reported following the signs. Furthermore, many intercept survey respondents appeared to be infrequent park users, with the new signs making them feel less anxious about exploring unfamiliar areas, motivating them to walk further than originally planned, and 'take notice' of the landscape (Ryan *et al.* 2023).

We identified the need for further qualitative research to understand the park visitors' contextual experiences of the Delapré Walk Project (Ryan *et al.* 2023). Moreover, there have been calls to utilise qualitative research in natural experimental studies to better understand user experiences with greenspace interventions (Craig *et al.* 2022). Therefore, the purpose of this study was to use qualitative intercept go-along interviews to understand urban park users' engagement with the wayfinding intervention and the urban greenspace. The research aims of the current study were to: 1) explore park users views and use of the wayfinding intervention, 2) gain greater contextual understanding of people's use of the park, and 3) understand the perceived benefits to health and well-being of using the greenspace. In achieving these research aims, we hoped to gather further contextual insights to help adapt future wayfinding interventions to maximise their effectiveness for the local community.

Methods

Study setting

This study took place in an urban greenspace within Northampton, Northamptonshire, United Kingdom (please see Ryan *et al.* (2023) for more details). In this area, 24 of the Lower-layer Super Output Areas (LSOAs) are amongst the top 10% most deprived in England and 38 are within Decile 2 nationally (Decile 1 is the most deprived and Decile 10 is the least deprived). Lower-layer Super Output Areas are a geographic hierarchy, which has a mean population of 1,500 people, designed to improve the reporting of small area statistics in England and Wales (NHS 2023). Northampton's residents have an average distance of 367.33 metres to the nearest park or playing field (ranked 164th out of 371 Local Authority Districts; Office for National Statistics 2020). The urban greenspace, Delapré Park, is 550 acres of open parklands, which includes a historical battlefield, an Abbey, woodlands, and a lake, that sits within the south of the town centre (Figure 2).

Study design

The study utilised qualitative, semi-structured intercept go-along interviews to understand park users' attitudes and experiences of the Delapré Walk wayfinding intervention, and greenspace engagement usage (Ryan *et al.* 2023). Semi-structured interviews provide the flexibility and opportunity to explore answers and ask follow-up questions (Gray 2014), important for the unpredictable nature of go-along interviews. This approach provided detailed insight to the meanings, experiences, and practices of urban park dwellers.

The use of 'go-along' interviews (also known as 'walking interviews and 'walk-along interviews') are useful for place-based research (Carpiano 2009). Specifically, for the potential for increased depth of data, as being in-situ allows places to function as a co-producer of dialogue (Brown and Durrheim 2009), better connecting place and self (Kuntz and Presnall 2012), and productively accessing a local community's connection and perceived value of their surrounding environment (Evans and Jones 2011). A key distinction, and novelty, in the current research study is that these were 'intercept' interviews, whereby participants were not pre-selected and were recruited based on an opportunity and pragmatic 'ask next' approach.

The interview schedule (See Supplementary File 1) was informed by relevant literature on greenspace use, as well as the logic model underpinning the Delapré Walk project (Ryan and Hill 2022; Supplementary File 1). Questions focused on park usage, wayfinding intervention engagement, as well as perceived space values and well-being aspects. Ethical approval for this research was granted by the Faculty Ethics Committee prior to any research taking place (Ethics Code: 202102).

Procedures

Data were collected over three days (two weekdays and one weekend day) throughout September 2022. On these days, researchers were positioned in a set location on the 3 km Delapré walking route for 3-hour periods during the morning. Weekends were prioritised as our previous work in the park and local knowledge demonstrated that these are the most common visit days for recreational walkers.

The footpath through Charterwood, Delapré Park was used as the study site because prior observations and Strava Heatmap (Strava Inc., San Francisco, USA) data had identified this footpath as the most frequently used for recreational walking within the park. An observation station was positioned at the opening of the Charterwood footpath (1) so not to impose on the footpath, (2) so park visitors could clearly see researchers, and (3) because it is viewed as an entrance

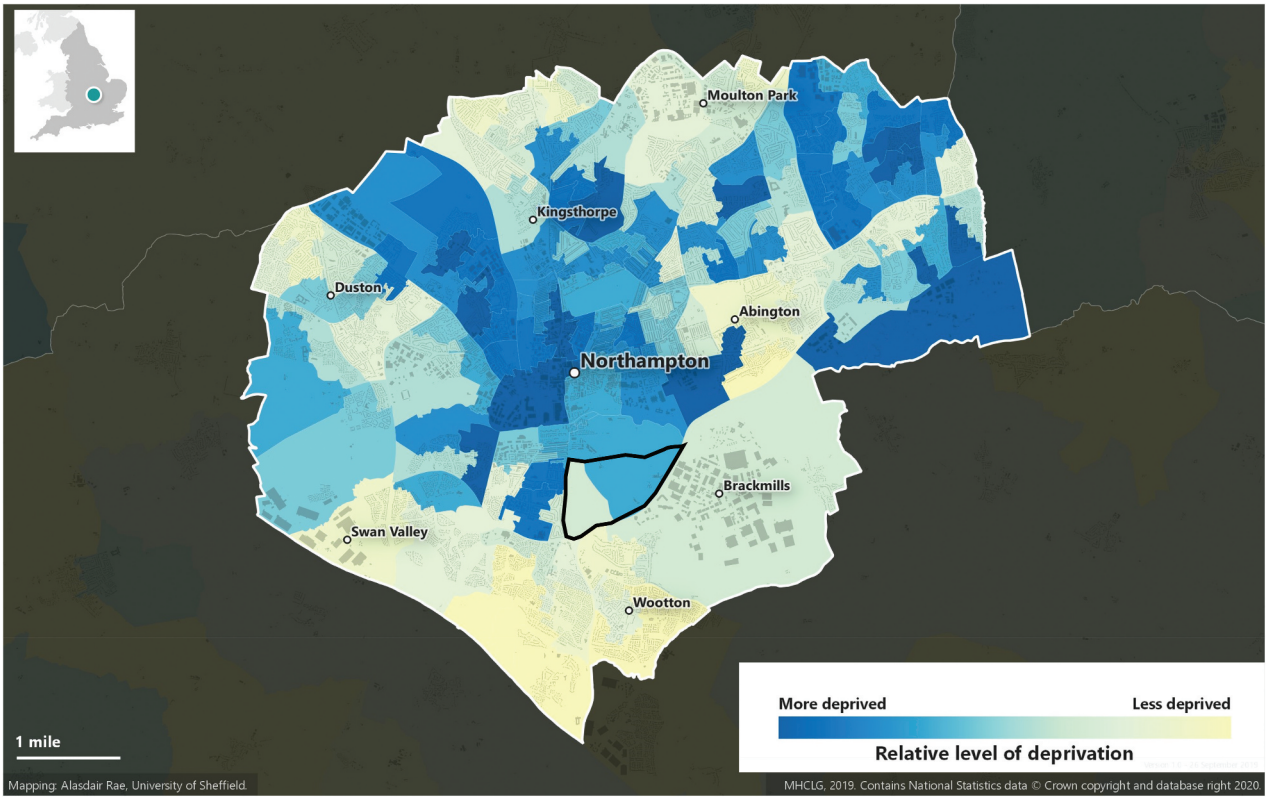

Figure 2. Heatmap of the English index of multiple deprivation 2019 within Northampton, England. Black outline shows the location of Delapré Park. Freely used from: https://research.mysociety.org/sites/imd2019/area/la-northampton-borough-council/lsoa/.

point into the park. At the observation station, we conducted manual observations and distributed participant information sheets and consent forms to visitors who were interested in the study. A mobile information sign was placed 20 metres away from the observation station, so visitors approaching the observation station knew that they may be approached to enquire about study participation. Supplementary File 1 provides contextual information on the research site, as well as pictures and audio of the location. This is because visual and auditory constructs are known to influence engagement with greenspaces and well-being outcomes (Fisher *et al.* 2021).

An opportunity sampling strategy was used, as previously highlighted as beneficial for this type of research (McCormack *et al.* 2013). The rationale for this was to reduce the self-selection bias inherent in much research of this nature, whereby participants are recruited through a prior interest or investment in the research area. Specifically, this approach was valuable for the current research study in increasing inclusion, participation and community voice, as any members of the public seemingly using the route and meeting the inclusion criteria were approached and invited to participate by a member of the research team. Inclusion criteria were: 1) over 18 years old, 2) appeared to have the mental capacity to provide informed consent, 3) using the identified greenspace location, 4) walking towards Delapré Lake through Charterwood. Exclusion criteria were:1) people on a phone call or wearing headphones 2) cyclists and E-scooter users 3) runners 4) parents with infants 5) groups (>4 people). Furthermore, we adopted a pragmatic approach i.e. if body language clearly indicated a person did not want to be approached then we would not do so.

Once an individual had been approached and agreed to participate, the research was explained in detail and informed consent was obtained via hand signed participant consent form, of which one copy was kept by the research team and one provided to participants. Researchers walked with the participants whilst working through the semi-structured interview schedule. Importantly, the route taken during the interviews were participant-led, and researchers did not influence the direction or pace of participant movement. Interviews were recorded using portable Dictaphone devices. No personal details were collected, individual identities were kept anonymous and quotes from our participants are presented under pseudonyms.

Manual observations were used to determine observer assumed demographic representation of park visitors and interview participants, to provide transparency on the demographic representation of interview participants and the response rates of park users approached and agreed to participate. The Method for Observing pHysical Activity and Well-being (MOHAWk) (Benton *et al.* 2022) manual observation tool was used to count the number of people

travelling from the park entrance, down the Charterwood footpath, towards Delapré Lake (Supp File 1). The MOHAWk provides researcher-assumed demographics for sex (female or male), age groups (infant, child, teen, adult, and older adult), ethnicity (ethnicity other than white, white), and size of groups. Activities were amended from MOHAWk to reflect the local context therefore, we recorded activities as walk, run, or cycle. Infants or children being carried or using a push-chair were not counted.

Park users were coded based on their responses to the intercept interview enquiry: 1) were not approached to enquire about participation (not asked), 2) were asked about participation but declined or withdrew (declined or withdrew), or 3) approached and chose to participate (participated). Supplementary File 1 details the total number of people observed in the space over the data collection dates. Briefly, 143 people were observed during the data collection period, of which 99 were not asked to participate as they either did not meet the inclusion and exclusion criteria, or the interviewer was already conducting an interview and was thus not available to enquire about participation. Twenty-eight people participated in the interviews while 15 either declined or withdrew (response rate 65%).

Participants

The above procedures resulted in 18 interviews being undertaken with 30 participants, with 2 participants withdrawing. The data discussed in this paper included 16 interviews, with 28 participants. Details on each interview and participant(s) are provided in Table 1. At the end of each data collection period, the researchers debriefed on the common themes and made notes from the interviews to assist later analysis. Theme saturation appeared after three days of conducting the interviews, which led to the agreement to end data collection.

Data analysis

Interviews ranged from 10 to 45 minutes (averaging 20 minutes) and were transcribed verbatim and analysed using reflexive thematic analysis (Braun and Clarke 2019). This qualitative approach to data analysis was selected due to its theoretical flexibility, grounding in data, and strength in providing rich, in-depth and contextual insights into park user experiences via the development of representative themes highlighting the patterns and stories within the transcribed interviews (Braun *et al.* 2016). By coding and structuring data, we attempted to understand and make sense of the subjective information about urban park user experiences, engagement with greenspace and the wayfinding intervention. An irritative approach to analysis was taken, with a constant back and forth between the data and existing literature on wayfinding and greenspaces. Themes were then refined through reflexive discussions between authors with the themes presented being a product of this cyclical process.

Table 1. Interview participants details.

Interview No.	Participant(s)	Sex	Age	Ethnicity	Additional contextual information
1	Gerald	Male	Adult	White	Couple walking together, visiting the park for last 6 months.
	Sophie	Female	Adult	White	
2	Jo	Female	Senior	White	Couple walking together, visiting the park for several years.
	Tom	Male	Senior	White	
3	Lucy	Female	Senior	White	Two friends walking together, first time visiting in over a year but are familiar with the park.
	Sarah	Female	Senior	White	
4	Tony	Male	Senior	White	Couple walking together, visiting the park together for 2 years, but Tony has been using it for 20-30 years.
	Lydia	Female	Senior	White	
5	Steve	Male	Adult	White	Walking alone with dogs, been using park for this purpose for over 10 years.
6	Emma	Female	Adult	White	Wheelchair user, visiting the park with her dog and uses the park daily.
7	Mairi	Female	Adult	White	Walking alone with her dog, visiting the park every day for the past 5 years.
8	Simon	Male	Senior	White	Two siblings who grew up in the area, used the space frequently as children, visiting on this occasion to catch up and reminisce.
	Sharon	Female	Senior	White	
9	Jim	Male	Senior	White	Couple walking together, visiting the park at least once a fortnight for the past 12 months.
	Kirsty	Female	Senior	White	
10	Karen	Female	Adult	White	Walking alone during a break from work, uses the space very regularly.
11	Laura	Female	Adult	White	Two friends using the park, visiting every day for the past 6 years.
	Katherine	Female	Adult	White	
12	Alison	Female	Adult	White	Walking dog in the park, regular park user.
13	Mandy	Female	Adult	White	Two friends walking together, first time visiting.
	Debbie	Female	Adult	White	
14	Susan	Female	Adult	White	A group on an organised mental health walk, with one facilitator and two participants. Susan was the walk facilitator. All of the group use the space on average once a week.
	Liz	Female	Adult	White	
	Margret	Female	Adult	White	
15	Brett	Male	Senior	White	A local visiting the park to walk dog, knows the area but only uses the park occasionally.
16	Luke	Male	Adult	White	A couple walking with their child, have been visiting the park roughly once a month for the past 8 years
	Chloe	Female	Adult	White	
	Louise	Female	Child	White	

A note on reflexivity

Reflexivity, the questioning of one's personal beliefs, values, and practices during the research process and how these may have an influence, is important during subjective and interpretive based qualitative research (May and Perry 2010). Whilst we are limited to a cursory discussion of this due to word limits, the current study was informed by a reflexive process throughout research design, data collection and analysis. We stressed the requirement to develop a reflexive attitude throughout the research process, considering our impact on the data and analysis, as well as personal interests in the field of study (Shaw 2010). Due to the methods and sampling strategy used it is important to note that all interviews were undertaken by the lead author (white, male and in his mid-20s) and second author (white, female and in her mid-30s). There is the potential that these social characteristics influenced participant recruitment and responses during the interviews, which we discuss in our limitations. The lead author lived locally to the study location and knew the area, whereas the second author was not familiar with the space providing variety to our prior experience of the urban park. The diverse academic backgrounds of the authors (sociology, psychology, public health, and epidemiology) allowed the opportunity for a diverse perspective on the analysis of the data and subsequent results presented. Furthermore, during data analysis there was continuous critical dialogue between authors and the presentation of alternative interpretations of the data. Reflexivity was encouraged through this process by the challenging of each authors construction of knowledge.

Results

A reflexive thematic analysis generated four main themes in relation to perspectives on the wayfinding intervention, greenspace attractions, engagement benefits and factors for increasing greenspace engagement, which can be viewed in Table 2. In this section we present each theme with supporting interview data before providing a discussion of the implications of these findings.

Wayfinding intervention perspectives

Participants provided in-depth considerations in relation to engagement with the Delapré Walk wayfinding intervention, including how such approaches had to be co-created and tailored for space users.

Positive responses to wayfinding intervention

Participants spoke positively of our wayfinding intervention and how this might increase recreational activity and engagement with greenspace, particularly for orientation with unfamiliar greenspaces:

> They [wayfinding signs] have today yes [influenced my behaviour] . . . because we're not really sure where we're going so we need a bit of direction. (Mandy and Debbie)

This was particularly important for those looking to increase their engagement, while increasing confidence in 'not getting lost':

> If you knew you weren't going off course and you knew the length of what you'd got to go so you don't overstretch yourself. When you are our age it's alright getting there, you've still got to get back. So you've got to think of the two ways. That would be brilliant, to have that, it would encourage me to go further, knowing where I was. (Lucy)

> . . . [The wayfinding signage] would save me getting lost. If we knew where we were I'd be more confident to do it. (Sarah)

Participants also mentioned the benefit of having key route information available on the signage (e.g. features/terrain) which increased confidence in navigating the space. Having distances and estimated times of walking routes was highlighted as beneficial for those using the space on lunch breaks from work, so exercise could be embedded into busy schedules:

> I know the route that I take today is going to take me 40 minutes and that fits in with my timetable. If I go off piste I've no idea how long I'm going. (Karen)

Tailoring interventions for space users

While responses to the intervention were positive ('definitely something I would use'; 'a great idea'), some participants lived locally to the greenspace intervention location and were thus familiar with the space leading to the suggestion that 'it's a great idea, just not a great idea for us'. However, many local participants

Table 2. Main and subordinate themes from analysis.

1. Wayfinding intervention perspectives	a. Positive responses to wayfinding intervention
	b. Tailoring interventions for space users
2. Increasing greenspace engagement	a. Facilities and management
	b. Community voice and ownership
	c. Perceived safety barriers
3. Greenspace attractions	a. Green versus urban spaces
4. Perceived benefits to greenspace use	a. Well-being and connectedness
	b. A mental health resource

had found new areas due to the intervention, highlighting the potential value of wayfinding even for those familiar with a space:

> It is beautiful. I've been in Northampton for about 30 years and it took me ages to discover it was even here [referring to a lake in the park that the walking route passed]. (Mairi)

In contrast, other non-local park visitors spoke at length of the value of such interventions, particularly in further ensuring disconnection from technology and full connection to the space and nature:

> I'm really rubbish at orientation unless I've got Google Maps open [it's] much easier to get lost in and not know my direction. Whereas I find this [wayfinding signage] is easier … I'd feel more confident about taking a completely different route and not getting lost. (Karen)

Participants also provided some important insights into improving recreational wayfinding signage, including improving the clarity of information, as well as how regular users preferred to explore/wander and get lost, further highlighting the importance of understanding local context and user experiences of greenspaces:

> We just wander all over the place. We got lost … I don't know how we'd got over there. Miles we seemed to have walked. (Jim and Kirsty)

Many varied the route based on 'how I am feeling', preferring variety:

> It's got wide open spaces and fields, it's got the woods, it's got the lake so you've got variety when it comes to walking. (Laura)

Taken together, it was clear that the wayfinding interventions influence on the local community was not homogenous and was contingent on a range of factors which highlight the need to tailor interventions to reflect local context and individual preferences.

Increasing greenspace engagement

Visitors suggested that the provision of appropriate facilities, space management, enhanced community voice and ownership, as well as understanding perceptions of safety were pragmatic approaches to increase engagement with the park.

Facilities and management

Greenspace facilities were important, with on-site cafés, toilets and staffing all providing key resources the park users valued and some amenities helped to increase feelings of social connection to the park:

> I get a coffee and the staff are always nice, pleasant. You meet lots of nice people. I've met some nice friends here. (Mairi)

> … it's nice to have somewhere where you can sit down, have a coffee when you've had a walk. And a toilet is always very handy to have. (Mandy)

> You can go to the café and the public areas … sit there and feel involved, see human life around you. Or … like that old chap there, with your dog sit there on your own. If you really want to get away from it there are places here where you can … not see anybody for an hour and a half … Or you can get involved. (Luke)

Further reinforcing the need for research to consider greenspace engagement *with* instead of *for* participants, functional space features such as accessible benches for those with mobility issues, or suitable terrain for different space users was also important. For example, this was particularly important in ensuring these spaces were accessible for all, as Simon and Sharon told us about their 'slight mobility issues' and how 'if it's slippery underfoot, no point us going there, it's not good for us'. (Simon and Sharon). Older adults, in particular, referred to accessibility of seating and benches which, if not available, would reduce their access and enjoyment of the park:

> Personally, I'd like to see more seats. This is one of the longer walks we're doing today and there is that seat there, there's not another chance now until we get all the way back to the walled garden. You are kind of committed to do that walk. (Tom)

> Yes, if I knew I could go to a bench, sit down and then come back again it would make me do it more, definitely. (Sarah)

> On a good day this is no problem. On a bad day when everything hurts, I think, I can't do this because I do need to sit down halfway. (Jo)

Community voice and ownership

A clear sense of community ownership over greenspaces were expressed by all participants. There was an understanding of the importance of inclusivity, strengthening community voices about space management, with this space being both owned and used by all. As a large park where multiple activities take place, an emphasis was placed on both individual and shared responsibility to keep each other (park users) safe (e.g. separate routes, dogs kept on lead, cyclists slowing down):

> Most of the people around here … said, "You are not getting rid of this space, this is our space; this is where we walk our dogs, this is history, this belongs to [us]" … that kind of reaction forced them [the council] to think again … community involvement, it's always been here … always saw it as a valuable resource. But it took the official recognition of the Council to actually start making things happen. (Liz)

This included preserving greenspaces for future generations within the community to use, for

example for well-being talks, organised or educational walks.

> There are two people that I know . . . volunteering . . . lived up the road and for years and years and years. They maintained footpaths, they cut stuff back, they helped police the area. . .still active . . . about this place because they love it. (Margaret)

Many of the participants enjoyed using the space to connect with family, friends and strangers and were happy to see the space promoted for wider use: 'Isn't it nice to see it being used? We're not the only people here' (Chloe). However, some participants also expressed a tension between increasing access and use, and protecting valued aspects of the park, including potential risks of over-commercialisation and/or over-popularising of the greenspace area, which could damage the space or impede user's enjoyment of the space:

> We don't want to attract any more people, we're quite happy as we are. (Tony)

> This is better . . . not overcrowded. You get [other] parks, too many people . . . got to be careful making people overly conscious of it, then you are going to draw the crowds. There's a balance. (Brett)

Perceived safety barriers

Despite safety barriers often being a concern for space users, most participants in our study felt safe and 'never in any danger' within the park. Having well-managed spaces, amenities and regular users increased these positive perceptions of safety:

> It feels quite safe here as well, it doesn't bother me to come over here on my own with the dogs whereas not everywhere is like that . . . .I think that there are always people here and because it is actually a thing, like there are café's open, not just an empty park that nobody really maintains. (Sophie)

> Any day you can come here and walk and it always feels safe. Lots of dog walkers, lots of mums walking toddlers, never feel in danger at all here, very safe environment. (Jo)

The layout of the park was also a feature that influenced perceptions of safety with Jo suggesting there were 'no nasty blind corners, nowhere for people to lurk'. However, these perceptions also appeared to be sex-based, with female participants more likely to report safety as a greenspace engagement barrier, providing an important intervention consideration:

> I used to come on my own, there are certain parts that I wouldn't walk on my own. Just different bits of woods if there's not anybody else about . . . it's very narrow there and there is lots of overgrowth and if you were down there on your own, nobody would hear you scream, basically. You wouldn't necessarily want to be there by yourself . . . as a single woman there are certain parts that I would go, 'Not today'. (Liz)

Greenspace attractions

Participants spoke at length about what attracted them to use Delapré park. Visitors were attracted to the park because they found it aesthetically pleasing, with frequent contrasts made to the surrounding unattractive urban spaces, connected them to nature, being accessible, and in close proximity to home.

Green versus urban spaces

It was clear across the interviewees that a main attraction to using the park were the natural aesthetics. Participants spoke positively about rich sensory features of engaging with peaceful greenspaces, relating sights and sounds of 'being outdoors' to both tranquility and peace:

> It's a lovely environment, lots of trees, grass, wildlife. We love watching and hearing the birds and the squirrels. (Jo)

> . . . you can see all sorts of creatures and whatever coming through. If you keep your eyes open. I don't know what we saw, I think it was a deer, over there last year and I thought, I'd love to be able to see more. (Lucy)

> How beautiful it is. It makes you feel good to be alive . . . .It's like an oasis . . . sometimes you just stop, when it's really quiet, and you hear the birds. (Karen)

During the go-along interviews, participants made sense of such attractions by contrasting them with urban spaces. The aesthetics and exposure to nature were a main pull factor to using the park, and this was framed in contrast to urban spaces and modern living associated with such spaces:

> When you come for a walk like this you want to get into the fresh air, trees, grass. You don't want to see that urban environment particularly. pylons . . . city and developed life - it's nice to be away from that. (Steve)

Steve also highlighted he would adjust his use of the space to avoid features associated with urban living:

> We're down near the lake now. If you were to circle around to the left and toward the top you come across the road. I'll always go here and through the grass meadow and do a circular route, just because I don't like the road noise and being near the road.

Participants regularly cited the location of the park being in such close proximity to the town centre yet offering contrasting experiences. Here, the park

generally provided an opportunity to escape urban living without having to travel too far:

> Feeling like I'm in the country when I'm not, which matters. Space to be outside that's really nice and not built up. Where I live . . . it's only residential so from a well-being perspective this [greenspace] feels much better. (Karen)

> And it's right in the centre of town, on the main road in and out, and you've got all this tranquillity. It's just so nice, somewhere to go. (Jo)

Perceived benefits to greenspace use

Participants discussed positive greenspace engagement benefits during recreational activities, but also the great value of these activities upon their wider lives. Participants positioned greenspaces as mental health resources, directly enhancing well-being, and providing richly embodied experiences and escapism opportunities.

Well-being and connectedness

Greenspace use appeared to have a profound impact on participants' physical well-being, through exercise, as well as their subjective health and well-being. For example, in visiting these spaces, many participants could momentarily escape busy working lives and feeling revitalised and renewed on their return:

> I think anyone who walks regularly, especially with dogs, it clears your head, allows you think, quiet, your own space. (Steve)

This also included how participants associated material aspects, views, sounds and other space elements to being able to mentally 'unwind' and experience full immersion, 'being mindful without really thinking', fully embodied within these symbolically meaningful spaces and yet temporarily detached from the stresses of everyday life:

> I don't think of anything . . . it just frees your mind up, all the little troubles you had, just forget them . . . It's just relaxing. (Jim)

Interestingly, while much greenspace work focuses on the physical well-being of recreational activities, for many participants, these were secondary to mental health or well-being benefits. Those with existing health issues focused on greenspace benefits for satisfaction and mental restoration:

> I suffer from AS, which is an arthritic disease, and exercise is always good for me, a nice walk at my own pace. If I don't, I seize up so I've got to walk. That's the main thing for me, just get out to walk, it's good for my whole body - especially up here [points to head]. (Jim)

Greenspace engagement was deeply tied to notions of embeddedness and connection, both socially and to nature. Engaging with greenspace facilitated social connection and disconnection from other restraints:

> No distractions. And that's lovely for people in these modern times when everything is a distraction at home. I think a television or radio or the computer whatever, it's all distraction whereas here we just sit and talk to each other. (Jo)

A mental health resource

Importantly, participants positioned their local greenspace as an accessible and open mental health resource, with embodied personal space connections used to manage their own mental health, in terms of 'something I do for me', while also looking out for the well-being of others:

> Because I'm here every day I even have people come and check in - one day my car had to go in for a service and so I was in late and, of course, people hadn't seen me and they were like, "Just making sure you are alright because we haven't seen your car" because I'm here every day . . . .So mental health-wise it's massive for me. This is my little sanctuary. (Emma)

For many, greenspaces were a vital resource to manage a range of mental health problems and promote positive subjective mental well-being:

> I have suffered with depression and this was my happy place then. I would come after work, have a walk round and just decompress from the day. It's very important to have those spaces. (Tom)

This further highlights the importance of greenspace accessibility for all:

> The government talk a good game about mental health being really important, but the resources simply aren't there and the money isn't there to put those resources in place. So this [greenspace] is something that you can use on your own, for your own well-being. (Jo)

Discussion

Our findings demonstrate how low-cost wayfinding interventions, like our own, appeared to be positively received by the local community in this study, particularly when they increase route knowledge, greenspace access and address perceived safety concerns. The benefits appeared to be particularly relevant for infrequent greenspace users, older adults and those with mobility impairments, demonstrating how such interventions can help ensure equitable access to greenspace for everyone. The perceived health and wellbeing benefits of greenspace use suggested by our participants

reinforce the necessity to ensure equal access to such spaces. From speaking with local park users we also show how community voice and ownership is essential as local greenspaces hold a central part in many peoples lives. Therefore, interventions within such spaces must be co-designed and tailored with local communities, rather than for them. We share some learnings from this project and implications for replication in other locations.

Designing wayfinding interventions

Firstly, our findings highlighted that a key engagement benefit to using the urban greenspace was its detachment from sensory aspects (sights and sounds) associated with urban environments. Important, here, is how small-scale wayfinding interventions to increase physical activity and space should not impinge on the 'natural' feel of the space. This was also explicitly stated by respondents from our first study, which sought to understand the local communities' perceptions of the wayfinding intervention before implementation (Ryan and Hill 2022).

Whilst there is guidance on inclusive public signage design (Natural England 2008, Barker and Fraser 2018) there has been limited discussion of how wayfinding signage should be physically built and implemented in urban greenspaces. Wayfinding that is in-keeping with the surrounding natural environment could be achieved by using recycled wood, multi-purpose signs such as a birdhouse or integrating wayfinding signage into existing information boards about the local habitats or heritage of a site. The need for wayfinding to be in-keeping with the natural environment speaks to the four properties of Attention Restoration Theory that are thought to be the mechanisms for improving mental fatigue and concentration by engaging with greenspace. For example, wayfinding that visually appears as urban infrastructure may distract from a person's sense of 'being away' as the presence of the wayfinding prevents that 'sense of escape from habitual activities' (Kaplan and Kaplan 1989, Kaplan 1995, Ohly *et al.* 2016). Therefore, we recommend that future wayfinding must engage with this nuance and balance the need for signage to promote accessibility and space usage, while not impinging on valued aspects of a greenspace that promotes feelings of 'escape' from urban environments.

Who benefits from wayfinding interventions?

Another important area to highlight is the understanding of the different experiences and relationships to spaces amongst community members. Our findings highlight key differences between frequent and infrequent park users' interactions with the wayfinding intervention. Important here is that with increasing health inequalities (Marmot 2020), such interventions to promote physical activity and access to greenspace should target infrequent park users, because this proportion of the population are likely to experience larger relative health improvements from exposure to greenspace, in comparison to frequent users, and ensure equitable access for all (Mitchell *et al.* 2015, Olsen *et al.* 2019, Lovell *et al.* 2020, Public Health England 2020, Marselle *et al.* 2020).

Distinguishing between 'regular walkers' and 'casual/non- walkers' was thought to facilitate intervention design and community engagement by tailoring interventions and communications to target different audiences' preferences (Davies *et al.* 2012, Elliott *et al.* 2021). Due to the methodological design of this study, we were able to distinguish between regular users and new users to attempt to identify the benefits of the interventions for those populations that were using the park less frequently (Aldred and Croft 2019, Craig *et al.* 2022). From the data we present, it can be suggested that small-scale wayfinding interventions may have the most impact on new park users and casual/non-walkers not familiar with the space or users with concerns over their physical and psychological capability to engage with the space (such as distance they can walk without stopping, or the terrain they can safely use, or their knowledge of local walking routes), in comparison to frequent park users.

The tension here for policy and decision makers to confront and consider when implementing such interventions is to balance the desire to increase access to new users and infrequent walkers without impacting on the perceived benefits that regular visitors value about a greenspace (such as being natural, not commercialized, and having freedom to 'wander'). Given the positive reception to the intervention amongst regular park users, despite not experiencing the value for themselves, we suggest these findings provide some confidence in the implementation of future wayfinding interventions, which can target infrequent park users to increase space use whilst preserving valued features for regular users-as long as appropriate community consultation and evaluation is undertaken concurrently during the phases of implementation. These findings also highlight the importance of a more nuanced consideration of the 'impact' and 'value' of such interventions, where evaluations must seek to differentiate between different users and the qualitative experiences of these users, rather than the over-reliance on singular quantitative measures that lack context, such as total footfall (Ryan *et al.* 2023, World Health Organisation 2023).

Community co-design and implementation

Our findings showed the strong sense of community ownership over local urban greenspaces. Delapré Park was viewed as a community resource, as many other greenspace areas are likely to be, and thus it is important to co-design interventions with the community. The Delapré Walk Project was informed by community views at the outset of the project to determine the acceptability of the proposed intervention and facilitate the design of the wayfinding signs (See Ryan and Hill 2022, Ryan *et al.* 2023). By gaining further feedback about the intervention from park visitors during (Ryan *et al.* 2023) and at the end of the project (the current study), the researchers and stakeholders identified that a more permanent wayfinding solution would be welcomed by park visitors and have gained further insight to help plan follow-up co-creation events with local residents to design a permanent wayfinding solution. Meanwhile, residents have been able to experience what a permanent wayfinding solution could look like, by implementing the Delapré Walk Project, and are therefore, more informed to provide advice and lived experiences to co-create the design of the upcoming permanent wayfinding solution at Delapré Park.

This work is against the backdrop of the increasing importance placed on genuine attempts to co-create public health interventions (Smith and McGannon 2018, Leask *et al.* 2019), with the emphasis on balancing power between residents and practitioners/researchers/stakeholders to provide locally relevant interventions that meet community needs and respond to contextual information. The findings from the current study support previous research by highlighting the importance of understanding community 'ownership' and community involvement in shaping local interventions (Cleland *et al.* 2014, Ryan and Hill 2022). Therefore, we recommend that researchers and practitioners allow residents to sample potential interventions and engage in a dialogue of resident input and feedback to explore potential permanent solutions to meet community wants and needs.

Implications for practice

Based on this research, there are some implications for practice we wish to share to help inform future small-scale wayfinding interventions:

- People often visit greenspaces to escape urban environments, so it is imperative that the materials used for wayfinding are in-keeping with the natural environment and do not give a sense of urbanism.
- Perceived safety was an important factor amongst participants and a practical application for future small-scale wayfinding interventions is to consult local users and gather contextual knowledge to ensure promoted routes do not use areas that are perceived as unsafe.
- Providing a variety of routes and choice was important, so signposted walking routes may benefit from offering multiple routes across different terrains and distances, including the ability for users to tailor to their needs.
- Route users want regular indications that they are on the designated route to increase confidence and engagement with the intervention.
- Displaying the distance of the walking route, seating locations and footpath surfaces along the route would increase confidence to engage with urban greenspaces for older adults and those with mobility impairments.
- Wayfinding interventions that are strategically designed to take in key amenities of an urban greenspace have the potential to increase local community knowledge and engagement with a space, even for regular users.
- Underpinning all the above, this research highlights the necessity to consult with the community, provide the opportunity for communities to trial and feedback on potential permanent installations, and place efforts into co-production when designing, implementing, and adapting small-scale wayfinding interventions in urban greenspaces.

Implications for future research

This paper also offers a novel contribution to knowledge through methodological advancements in the evaluation of natural experimental studies intended to increase physical activity in greenspaces. In answering the call for more qualitative research in natural experimental studies (Craig *et al.* 2022), we have highlighted the value of such approaches for evaluating the 'impact' and 'value' of interventions. For example, findings from our quantitative observations suggested no significant changes in total footfall from baseline to follow up of the intervention (Ryan *et al.* 2023). Yet, this does not tell us the full story and the findings presented in the current study highlight the important nuance that must be considered when evaluating such interventions (World Health Organisation 2023).

Furthermore, human behaviour change is a highly complex, on-going, and long-term social process. Thus, the evaluation of interventions hoping to achieve behaviour change must respond to this complexity with their methodological designs. Ongoing evaluation is required, rather than placing primary emphasis on implementation and then snapshot

evaluations, to truly understand the effectiveness of a given physical activity intervention. It is hoped the approach taken in the current study and wider project (Ryan and Hill 2022, Ryan *et al.* 2023) offers inspiration for future evaluations of similar interventions. Future directions for research include investigating the longer-term effects of wayfinding interventions on different user groups as well as in different geographic and greenspace contexts. Moreover, the intersections of technology, greenspace engagement and wayfinding would be a valuable addition to findings from this project.

Limitations

It is important to note the limitations associated with this study. Firstly, we acknowledge that the use of the MOHAWk relies on researcher assumed demographics and thus, a more detailed understanding of our participants' demographics was not possible. In particular, we were not able to gain information on participant socio-economic backgrounds as we deemed this too intrusive to ask in interview. As socio-economic background is identified as an influential factor on use of urban greenspace (Sathyakumar *et al.* 2019), and physical activity more broadly (Ball 2015), we suggest this is an area for future research to explore.

We also acknowledge that our social characteristics (noted in our methods) may have influenced participants response to the invitation to the research, as well as their responses to the questioning (Pezalla *et al.* 2012). Moreover, the data presented is also mostly from frequent park users, which would be expected with the intercept opportunity recruitment strategy, and thus further research is required to better understand experiences of infrequent users and non-users to build a better understanding of the findings presented in the current study.

Conclusions

This research suggests wayfinding signage may be a viable, low-cost, intervention to increase access and equity to recreational walking in urban greenspaces by reducing spatial anxiety and increasing confidence in orientation and space use. Installing wayfinding holds particular promise for addressing barriers experienced by infrequent park users, older adults and those with mobility impairments by addressing a lack of knowledge about route distances, amenities, and terrain. Urban greenspaces are community assets that many feel a sense of ownership over. Therefore, community involvement in intervention design is crucial. We have shown how people use urban greenspaces, the perceived benefits of engagement and how wayfinding interventions may be used to facilitate these benefits for more people. Moreover, we have also demonstrated the need for, and value of, qualitative research in evaluating natural experimental studies of physical activity interventions to gain greater contextual knowledge and a more complete understanding of any impact they may have.

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Data availability statement

All anonymised data underpinning this article are available upon request.

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