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Critical factors influencing adolescents' active and social park use: A qualitative study using walk-along interviews

Elise Rivera¹, Anna Timperio, Venurs H. Y. Loh, Benedicte Deforche^{2, 3}, Jenny Veitch

¹ Deakin University, Geelong, Australia, Institute for Physical Activity and Nutrition (IPAN), School of Exercise and Nutrition Sciences

Elise Rivera: edriversa@deakin.edu.au

Anna Timperio: anna.timperio@deakin.edu.au

Venurs H. Y. Loh: venurs.loh@deakin.edu.au

Jenny Veitch: jenny.veitch@deakin.edu.au

² Department of Public Health and Primary Care, Faculty of Medicine and Health Sciences, Ghent University, C. Heymanslaan 10, 9000 Ghent, Belgium

³ Movement and Nutrition for Health and Performance Research Group, Department of Movement and Sport Sciences, Faculty of Physical Education and Physical Therapy, Vrije Universiteit Brussel, Pleinlaan 2, 1050 Brussels, Belgium

Benedicte Deforche: Benedicte.Deforche@UGent.be

Corresponding author:

Elise Rivera

Institute for Physical Activity and Nutrition (IPAN)

Deakin University

221 Burwood Highway

Burwood VIC 3125, Australia

Telephone: +61 3 9251 7723

Email: edriversa@deakin.edu.au

Abstract

Parks are important public resources that offer opportunities to be physically active and connect socially. However, parks are not well attended by adolescents, and limited research exists to inform optimal park design to increase adolescents' park visits and support active and social park use. This study aimed to gain in-depth insights into park characteristics that are important for influencing park visitation, park-based physical activity and social interaction among adolescents. Participants (n = 34, aged 13–18 years, 41.2 % female) were recruited from diverse neighbourhoods in Melbourne, Australia. Walk-along interviews were conducted in nine pre-selected parks, where researchers and participants walked together during the interview. The interviews were audio-taped, transcribed verbatim and analysed using content analysis. The most commonly mentioned characteristics for encouraging park visitation were: the presence of natural features; sports features (e.g., sports courts); playgrounds; aesthetics/condition; and location. The presence of sports features, fitness equipment, walking/cycling paths, playgrounds and green open space were the most frequently mentioned features for encouraging park-based physical activity. The most commonly mentioned features for encouraging socialising when at the park were: presence of barbecue/picnic areas; sports features; seating; organised events; and shade/ shelter. Female adolescents more commonly mentioned safety and the presence of playgrounds, and males more commonly noted sports features, size and location as being important for park visitation. Adolescents also considered social factors, such as accompaniment and peer influence, as being critical for encouraging them to visit the park. Many park features were important for all behaviours. For example, sports features were most commonly mentioned as being important for encouraging adolescents' park visitation and active and social park use. Stakeholders should consider these factors when (re)designing parks to ensure the parks appeal to this sub- population and encourage adolescents to visit and be active and social in this setting.

Keywords:

Adolescents, Parks, Park Characteristics, Park Visitation, Physical Activity, Social Interaction

Highlights:

- Both accompaniment and the influence of peers and family support park visitation
- Nature, sport features, playgrounds, aesthetics/upkeep and location foster park use
- Sport/fitness features, paths, playgrounds and open space foster physical activity
- Picnic areas, seating, sport features, events and shade promote social use of parks

Abbreviations:

PA: Physical Activity

MVPA: Moderate- to Vigorous-Physical Activity

SES: Socio-economic Status

AFL: Australian Football League

1. Introduction

Physical activity (PA) and social interaction are important for adolescent health and development. PA has been shown to support healthy growth and development and improve cognitive functioning and self-esteem among adolescents (Biddle and Asare, 2011). However, only 19 % of adolescents (11–17 years) in developed countries meet the recommended 60 min of daily moderate- to vigorous-intensity PA (MVPA), such as brisk walking and running, to attain these benefits (World Health Organization, 2018, 2019). Social connectedness and interaction can support adolescents' psychological development (Hendry and Reid, 2000), improve well-being (Jose et al., 2012) and facilitate health-promoting behaviours, such as PA (Mendonça et al., 2014). Increasing PA and promoting social interaction are therefore critical.

The neighbourhood environment, particularly the availability of parks and open spaces, is increasingly recognised as important for adolescents' PA (Ding et al., 2011). Parks are generally freely accessible and located in most communities, well-positioning them to offer opportunities to be active and connect socially. Parks can provide supportive infrastructure for PA (e.g., courts, trails) and opportunities for (non)organised recreational activities (Koohsari et al., 2015). Parks are also a destination to which adolescents may walk or cycle to/from home, which can contribute to additional PA (Veitch et al., 2014). Studies have shown that of all neighbourhood locations (e.g., sports facilities, school grounds, shopping centres, green space), adolescents accrue the most MVPA in playgrounds and green spaces (Klinker et al., 2014), and open spaces, parks, playgrounds and sports fields near home are among youth's favourite places (Jack, 2008). Altogether, this research further highlights the value of parks as a venue for active recreation. Evidence has also demonstrated positive associations between adolescents' interaction with nature and resilience, stress reduction, overall mental health and health-related quality of life (Tillmann et al., 2018). More-over, parks provide a meeting place to engage with others, and these social experiences may foster social connectedness (Hendry and Reid, 2000).

Research has shown that adolescents' visitation of parks and their level of PA while visiting parks are both low (Joseph and Maddock, 2016). An Australian observational study found that adolescents only constituted 7 % of park visitors, and 32 % were observed engaging in MVPA (Veitch et al., 2015). Another Australian study found that adolescents (n 99) most commonly engage in both active and passive activities during park visits (e.g., walking, PA,

socialising) (Veitch et al., 2016). It could be that certain park characteristics are particularly important for influencing adolescents' decision to visit a park and the types of activities they engage in during their park visit – active or social. However, limited research has examined important park characteristics for encouraging adolescents' park visitation, park-based PA and social interaction.

A review of quantitative and qualitative studies found that the following characteristics were important for influencing adolescents' park visitation and PA: the provision and maintenance of challenging, age-appropriate playgrounds; sports features (e.g., courts, fields); walking/cycling paths; supporting features (e.g., toilets, seating); natural features (e.g., trees); overall good park upkeep; aesthetics (e.g., scenery); and safety (Van Hecke et al., 2018). While there is some information on features linked to (active) park use, the evidence for park-based social interaction is very limited. Qualitative research has indicated that critical social factors for encouraging adolescents' (active) park use were: parental influences (e.g., habits, rules); modelling (e.g., active use by friends/family); and social networks (e.g., accompaniment, having peers to play with) (Van Hecke et al., 2016). Limited qualitative and quantitative studies have suggested that open park space, shade, recreational facilities and seating were important characteristics for supporting social park use (Holland et al., 2007; Kazmierczak, 2013; Peters et al., 2010). However, this requires further investigation as only one of these studies included adolescents. Moreover, while research has highlighted certain park characteristics as being important for park use, critical park features may differ among adolescent sub-groups (Mertens et al., 2019; Veitch et al., 2016).

This study aimed to gain an in-depth understanding of adolescents' perceptions of park characteristics that influence park visitation, park-based PA and social interaction. It is critical to identify important park characteristics for encouraging adolescents' visitation and active and social park use to inform policymakers, architects, landscapers and park planners regarding optimal park (re)design.

2. Methods

This research was the initial phase of a larger study, ProjectPARK, examining the relative importance of park characteristics for encouraging park visitation, park-based PA and social interaction among children, adolescents and older adults. Walk-along interviews were conducted with adolescents in nine parks located in diverse areas of Melbourne, Australia

between September 2017–February 2018. The interviews occurred whilst the participants and researchers walked together through the park. This “walking while talking” methodology allowed researchers to examine participants’ interpretations of the parks while they were actually experiencing its physical and social contexts, which may stimulate discussion (Carpiano, 2009). This paper adheres to the Consolidated Criteria for Reporting Qualitative Research (COREQ) checklist (Tong et al., 2007). Ethical approval was granted from the Deakin University Human Ethics Advisory Group (HEAG-H 94_2017).

2.1. Participants and setting

Three parks of varying amenity, size and condition were selected from within each of the low, middle and high socio-economic status (SES) areas of Melbourne (Australian Bureau of Statistics, 2018). Parks in varying locations with heterogeneous characteristics were chosen (e. g., maintenance, presence/absence of features, size) to elicit a range of potentially positive and negative views and a diversity of responses. The nine parks included the following characteristics: tree shade (n = 9); picnic tables (n = 9); paths (n = 9); playgrounds (n = 8); barbecues (n = 8); built shade/shelter (n = 7); bathrooms (n = 7); flying foxes (n = 7); landscaping (n = 6); basketball courts (n = 6); structures for climbing (n= 5); sports fields/ovals (n = 4); adventure playgrounds (n = 4); ropes course (n = 3); cricket nets (n = 3); skate ramps (n = 3); water play (n = 2); ponds (n = 2); table tennis tables (n = 1); and outdoor fitness equipment (n = 1). Parks ranged in size from 1-30 ha.

A total of 34 adolescents (13–18 years) were recruited through purposeful convenience sampling using multiple approaches including: in-park recruitment (n=22); flyer (n=4); referral by friends/family (n 3); recruitment at shopping strip near selected parks (n 2); social media (=2); and university website (n=1). Seven additional participants were recruited via shopping strips (n=66) and social media (n=1) but opted out due to lack of interest (n=2), parent unavailable to provide consent (n=2), no response when contacted to schedule an interview (n=2) and moving house (n=1). To obtain a variety of views, frequent (visit about once/week over the past three months) and infrequent (visit less than once/week) park visitors were sought and confirmed via pre-screening prior to the interview. Recruitment occurred until information was saturated.

For 13-15-year olds, enquiries to participate were directed to a guardian, and parental consent (written) for their child’s participation was sought. If aged 16–18 years, participants could provide their own consent, and parental consent was not sought. Adolescents were asked to

complete the interview alone to prevent the presence of others from biasing participants' responses. For in-park recruitment, interviews were immediately conducted in the parks in which the participants were recruited. For all other recruitment methods, participants could choose to complete the interview at any of the nine pre-selected parks, and a time to participate in an interview was scheduled. Participants received a \$25 voucher as compensation. Interviews were completed during the daytime under non-rainy conditions during the spring and summer.

2.2. Procedure and measurements

Firstly, participants completed a written self-report survey, which included demographic items, such as age, gender and number of days of participation in PA for at least 60 min in a usual week. Regarding park use in the previous three months, participants reported usual: frequency and duration of park visits; activities performed when visiting a park; PA intensity performed at a park; accompaniment to a park; mode of transport to park visited most often; and frequency of talking to new people, talking to known person(s) and participation in social events (e. g., celebration, picnic) when at a park. Survey completion took approximately 5 - 10 min.

Before commencing the semi-structured walk-along interview, researchers provided an overview of the interview procedure, encouraged participants to speak freely as they were considered the "expert", and reminded participants that the interviews were confidential. Nine research assistants performed the interviews (4 females; 62 % of interviews performed by three staff). Interviewers were trained in qualitative data collection and did not have existing relationships with participants, conflicts of interest or biases. Participants were asked to wear voice recorders to record the interview. To begin the interview, participants were asked whether they had previously been to the park in which the interview was taking place and if they had, were asked what encouraged them to visit that park. Those who had never visited the park, were asked to familiarise themselves with the park by briefly walking through it before the interview started. All participants were asked for common reasons why they visited or would want to visit the park in which the interview was conducted. Then, all participants were asked to discuss: characteristics they liked and disliked within the park; factors that would encourage them to visit, be active or "hang out" with other people within the park; changes for improvement to encourage them to visit, be active or "hang out" with people within the park; reasons for visiting other parks and favourite characteristics of those

parks; and to describe their “perfect park”. Additional social and PA-focused prompts were used when required, such as “what would make the park more or less fun, comfortable or interesting”? The interview prompt questions were previously piloted among three adolescents. All interviews were conducted in English and averaged 13 min in duration (ranging from 5–23 min). The staff member assisting the interviewer took field notes during the interview. Interviews were not repeated. Transcripts were not returned to participants for comments.

2.3 Data analysis

Descriptive statistics from the survey data were calculated using Stata/SE 15.0 (Stata Corp., College Station, TX, USA). The audio-recorded interviews were transcribed verbatim, coded and entered in to NVivo 12 (QSR International Pty Ltd, Melbourne, Australia). Data were analysed using content analysis, an appropriate method for our descriptive aims (Schreier, 2014), guided by a summative approach (Hsieh and Shannon, 2005). This type of analysis has been used in similar studies involving walk-along interviews with other age groups (Veitch et al., 2020a, b). Based on the interview questions (e.g., characteristics participants liked/disliked in the park; description of perfect park), a preliminary coding framework was created by two researchers, which included potential responses to these questions (e.g., playgrounds, open space, safety); the framework was iteratively adapted

throughout the coding process and analysis as new content emerged. Once transcripts were coded to derive frequently recurring categories and subcategories, two researchers (JV and research assistant) grouped and assigned the (sub)categories. The lead author analysed the data by counting the most frequently mentioned (sub)categories (once per participant) overall, followed by interpreting the content to comprehend the underlying significance (Hsieh and Shannon, 2005). Any disagreements were discussed to reach consensus. Participants did not provide feedback on the findings.

3. Results

Thirty-four interviews were conducted, with 2–8 interviews completed per park (8 interviews in parks in low SES areas, 14 in mid SES areas, 12 in high SES areas). The average age of participants was 16.2 years (SD 1.5), 41.2 % were female, 76.5 % were born in Australia, 29.4 % owned dogs, and most participants (79.4 %) had previously visited the park where the interview occurred (Table 1). Two-thirds (67.6 %) were frequent park visitors, 44.1 %

reported usually spending 1 h in the park, 41.2 % typically engaged in MVPA when at the park, 70.6 % usually visited parks accompanied by friends, and most (82.4 %) used active transport to get to the park they visited most often in the previous three months.

Table 1

N = 34

Demographic characteristics of participants

Age, mean (SD)	16.2 (1.5)
Sex, Female n(%)	14 (41.2%)
Dog owner, n(%)	10 (29.4%)
Country of birth, n(%)	
Australia	26 (76.5%)
Other	8 (23.5%)
Previously visited park where interview conducted, n(%)	
Yes	27 (79.4%)
Usual frequency of park visit, n(%)	
2-3 times/week	13 (38.2%)
About once/week	10 (29.4%)
2-3 times/month	6 (17.7%)
≤once/month	5 (14.7%)
Usual duration of park visit, n(%)	
< 30 minutes	8 (23.5%)
30-59 minutes	11 (32.4%)
≥ 60 minutes	15 (44.1%)
Usual activity levels during park visit, n(%) ^a	
Mostly sitting	3 (8.8%)
Mostly light activities	14 (41.2%)
Mostly moderate activities	9 (26.5%)
Mostly vigorous activities	5 (14.7%)
Usual accompaniment to the park, n(%) ^b	
Alone	12 (35.3%)
Parent or other adult	13 (38.2%)
Sibling(s)	13 (38.2%)
Friend(s)	24 (70.6%)

Dog(s)	4 (11.8%)
Frequency of talking to people in park never met previously, n(%)	
Never	11 (32.4%)
Once	7 (20.6%)
2-3 times	12 (35.3%)
≥4 times	4 (11.8%)
Frequency of talking to people in park that they already knew, n(%)	
Never	8 (23.5%)
Once	3 (8.8%)
2-3 times	13 (38.2%)
≥ 4 times	10 (29.4%)
Frequency of participating in a social event in park, n(%)	
Never	9 (26.5%)
Once	16 (47.1%)
2-3 times	6 (17.7%)
≥ 4 times	3 (8.8%)
Usual mode of transport to park visited most often, n(%) ^b	
Active (walk, jog, cycle)	28 (82.4%)
Public Transport	11 (32.4%)
Car	5 (14.7%)
Number of days of physical activity for at least 60 minutes per day in usual week, mean (SD)	4.4 (1.6)

^a Note: responses from two participants were omitted as multiple answers were provided for questions limited to a single response; one participant did not respond

^bNote: multiple responses allowed

3.1. *Reasons for visiting the park*

The most common reason why participants either visited or would want to visit the park where the interview was conducted was to “hang out” with friends. Some participants stated that their main motivation for visitation was to socialise without any mention of the features present. Further, when participants noted the use of certain park features as being a reason for visiting, there was often a social element attached to their appeal (e.g., use of playground to interact with peers).

That’s the only real reason I come down here already, to hang out with people. (male, age 16)

I come with my friends all the time. Because it’s better. Without them it’s just pretty boring. (male, age 14)

I like the playground, it’s got like the big swings and stuff, that we all like hang out. (female, age 17)

Reasons for visiting the park varied by sub-groups. The use of sports features to play sports was mentioned by more males than females as a reason for visiting the park. Frequent visitors predominantly noted a convenient location and playing sports/using sports features as main reasons for visiting the park; however, for infrequent visitors, the main reason for visiting was to socialise/meet others.

3.2. **Important characteristics for park visitation**

When asked to describe what they liked and disliked about the park and what could be changed to encourage their visitation, the park characteristics most commonly mentioned by participants were: natural features; sports features (e.g., sports courts, fields); playgrounds; aesthetics and condition (e.g., maintenance); and location.

3.2.1. *Natural Features*

Participants most commonly mentioned the presence of nature (e.g., trees, informal green open space, pond) as being important for positively influencing park visitation primarily due to its role in creating a pleasant environment. Conversely, participants frequently disliked the lack of sufficient trees and green space. Adding natural features was often suggested as a

potential park improvement to increase park visits. Further, many participants appreciated the presence of natural features as it provides opportunities to connect with nature.

So I like how they have the kind of nature coming in, they have all the really nice trees and flowers and so on, that's really nice...I like how much when you're walking through there you feel a little bit like you're with nature. (male, age 17)

Of the types of natural features, participants most commonly specified trees as being encouraging for park visitation for their aesthetic appeal and the natural shade/shelter they can provide.

Yeah, it [trees] creates a really nice circle of shade in the day and we just like hang in there. (female, age 18)

Many participants also mentioned that the presence of green open space was important because it offers space to sit and “hang out” and also a spacious environment that supports a variety of activities. Several participants stated that parks should be mostly comprised of green space.

I love the really open grass areas. (female, age 15)

I would say big, the more [open green] space the better; because there's more space to do things. (female, age 16)

Like 95 % of it should be green space. (male, age 16)

3.2.2. Sports features

The provision of sports features (e.g., sports courts, fields), especially catered to specific sports, was considered important for encouraging park visitation. Many participants disliked the lack of sufficient sports features, and the provision of additional sports facilities was often highlighted as a potential park improvement. Sports courts, particularly full-sized basketball and netball courts, were the most commonly mentioned sports features. Several adolescents also mentioned that sports fields/ovals (particularly for soccer and Australian Rules Football) were attractive due to their spacious environment, which can support several activities.

Well there's not like any basketball courts or anything. Like so they could put that there because then a lot of people would come. (male, age 14)

I do like that it has nice ovals, nice big ovals. We've got like heaps of space, you can go do whatever. (male, age 16)

3.2.3. Playgrounds

The majority of participants expressed that playgrounds were important for encouraging park visitation, provided they were age- appropriate, adventurous and challenging (e.g., large climbing structures, big slides, flying foxes). Several participants also noted that they disliked playground equipment that was too low/not big enough and unamusing and also expressed that these aspects of playgrounds could be addressed by park improvements.

You've also got flying foxes and stuff like that, that are even more amusing than your typical playground. I guess like a bigger playground. (female, age 15)

It's mostly the height problem like some of those platforms, the roof is a bit too low. I mean this one's alright but if it was more teenager friendly then they could include some equipment that's better for teenagers. (male, age 17)

3.2.4. Aesthetics and condition

Aesthetic characteristics (e.g., attractive scenery, art) were frequently mentioned as being important for adolescents' park visitation. The presence of nature and wildlife were also integral to creating an attractive atmosphere. Conversely, the presence of rubbish and graffiti was disliked by many participants. Changes to enhance scenery, such as adding art or more vegetation, and also improvements to maintenance (i.e., better upkeep) were often suggested to make the park more appealing.

I think it's really visually appealing, just in general. It's not a boring park. If you're alone, you still want things that look nice. (female, age 17)

Many participants stated that good maintenance of the park and its features was critical for a park's aesthetical appeal. Contrastingly, participants tended to perceive poor upkeep of the park and/or its features as unattractive and/or threatening due to perceived great risk of incivilities (e.g., vandalism, litter) or injury.

I would say that it's clean. Like being able to feel safe in the environment as well. Like so people can see where you are and it's like, yeah there's not too many like hazards. (female, age 18)

The main problem I have with this is that it's just not that clean. (male, age 17)

3.2.5. Location

Participants frequently expressed that a convenient park location in close proximity to various destinations, such as home, school, public transport, shops and friends' houses was important. In particular, participants most commonly mentioned that it was critical for parks to be located close to home, preferably within walking distance, to support visitation; conversely, a greater distance from home was often considered a deterrent. Several participants also stated that they would travel farther distances to reach parks with appealing characteristics.

If it was closer to where I lived, then it might motivate me to come more often. (male, age 16)

It's probably better if you can walk there because I guess going to a park is about being more physically active. (male, age 17)

Because it's like convenient. It's near the school, so I come after school. I can come and just hang out here. (male, age 16)

It's really open, and like it's close to like the shops and stuff. And it's just easy to like get to, and there's like public transport that goes like all around it. (female, age 17)

There's actually a park that's closer to my house than this one. But it's sort of smaller so I tend to come here more often. But if I don't want to walk all the way here then I just go to that one, even more convenient. (male, age 16)

3.3. Important characteristics for park-based physical activity

When asked about what park characteristics are important and that could be changed to encourage adolescents to engage in park-based PA, the most commonly mentioned features included: sports features (e.g., courts, fields); fitness equipment; walking/cycling paths; playgrounds; and green open space because they are types of infrastructure that support both organised and non-organised activities (e.g., sports, free play, running, walking). The provision of the aforementioned park features was frequently suggested as a way to encourage participants to be active in the park. In particular, sports ovals and green space were appealing as they provide an open area to do many activities, offering more options of activities to do. Some participants also noted that walking/cycling paths were important

because they provided opportunities to walk and/or cycle to, from and while in the park, and were also mentioned as a safe alternative to cycling on the streets.

I like the open areas. That's what I mean like about the park, how big it is. That mean's there's more space. You can bring heaps of activities to do. Heaps of things done in the park. (male age, 16)

Well like for me, I love just sometimes like those little stations, those workout stations, they're a bit of fun. (female, age 18)

Yeah and I prefer using paths because if I use the normal streets there could be cars around and if I'm riding my bike yeah definitely I prefer going through a park, it's less crowded and less cars everywhere. (male, age 17)

Well me and my friends would just come up here and muck around so sometimes we'll go on the swings or push each other down the slide and play on the swing things till you fall off because you get so dizzy. (female, age 14)

3.4. *Important characteristics for social interaction in the park*

When asked about what park characteristics are important and that could be changed to encourage adolescents to “hang out” with others in the park, the most commonly mentioned characteristics were: barbecue/ picnic areas; sports features (e.g., sports courts); seating (e.g., tables, chairs, benches); organised events; and shade/shelter. Participants stated that barbecue areas and seating, especially areas sheltered from the weather, were appealing as they can provide a supportive environment to congregate with friends and family. As previously identified, the presence and accompaniment of friends were critical for positively influencing adolescents’ park visitation. Sports features and organised events and programs (e.g., organised/structured sports, youth programs, concerts) were also perceived as favourable for social interaction as they are conducive to group activities and games.

Having a really good one, a really good shed to have a good picnic in, having a barbie [barbecue] going on. Yeah and having friends come over. (female, age 16)

Yeah again I think the basketball aspect 'cause we're a very basketball family. I think that kind of facility would definitely draw us to the park as a family. (male, age 17)

Just anything to do with like organised sport, it could just be walking groups, I know that they're quite popular in some places. (male, age 17)

I reckon if there was an activity going on like a fair sort of thing they'd come or if there's like a youth group or something. (female, age 14)

3.5. *Sub-group differences*

More males expressed the provision of sports features, a big size and a convenient location and more females noted the presence of playgrounds as being key for encouraging park visitation. Further, compared to males, more females stated that a sense of safety and personal security from undesirable visitors and/or incivilities (e.g., rubbish, syringes, graffiti) was important for encouraging them to visit the park.

If you don't know the ways to defend yourself that's when you can't come down here feeling safe. That's why I feel it's very empty. And there have been syringes around here. (female, age 16)

More frequent park visitors noted nature as being important for encouraging park visitation. For park-based PA, more males and frequent visitors mentioned the provision of sports features as being important compared to females and infrequent visitors. Additionally, more males than females mentioned organised activities as being supportive of active park use. In contrast to our results for park visitation and park-based PA, more females noted the provision of sports features as being critical for encouraging social interaction, while more males stated that the presence of barbecue/picnic areas was important.

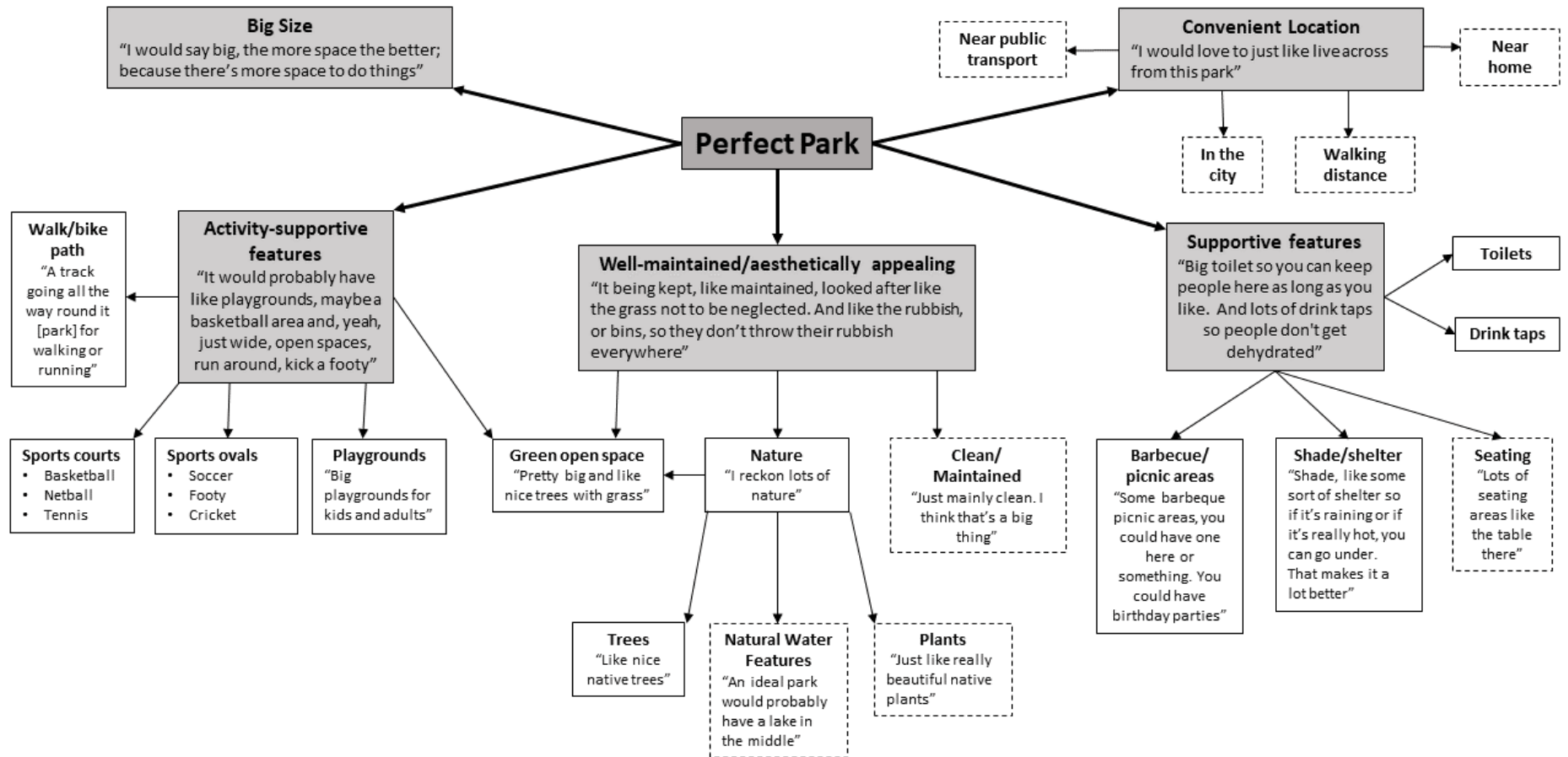
3.6. *Perfect park*

When asked to describe their vision of the “perfect park”, participants noted various park characteristics as being important for supporting park use in general (not specific to park visitation, PA or social interaction). The most common characteristics of a “perfect park”, mentioned by at least ten participants, were: playgrounds; convenient location; sports courts; large size; nature; green space; sports ovals; trees; paths; toilets; shade/shelter; barbecue areas; and drink taps (Fig. 1). Other features, mentioned by fewer than ten participants, are illustrated in Fig. 1 in dotted-outlined boxes. The importance of a composite of park characteristics was evident as the majority of participants' descriptions included a

diversity of features (e.g., activity-conducive facilities, supporting amenities, natural features), a convenient location and an attractive, well-maintained environment.

Perfect park: Maybe in the city, where people could enjoy it, because there aren't as many parks there anymore. Greenery, grass, paths, trees, that sort of thing. Benches, playground that's really good and useable. Maybe a pond and a bridge, just for the fun of it. Lights for night time that are strong and everything, so that people can see. The big ring thingies. (female, age 15)

Perfect park: Near my home, or near a public transport station or tram here and of course any soccer grounds, playgrounds, big playgrounds for kids or adults, and for the family. Like need some family area, like a barbeque. (male, age 16)



4. Discussion

This study provided an in-depth understanding of adolescents' perceptions of important park characteristics that influence park visitation, park-based PA and social interaction. The findings indicated that different physical environmental and social factors are critical for influencing visitation, PA and social interaction in parks; however, there was some overlap with certain features being most commonly mentioned as important for all behaviours.

The presence of sports features (e.g., courts, fields) was one of the most frequently mentioned important park characteristics for attracting participants to visit and for supporting active and social park use. This parallels previous evidence, which found that sports features were perceived to be important for facilitating adolescents' active and general park use (Van Hecke et al., 2018). In our study, full-sized courts for basketball and netball were most frequently mentioned, followed by fields/ovals. Similarly, a Danish study found that teenagers most commonly used facilities that supported games and play activities (e.g., soccer field, basketball court) rather than facilities tailored for individual usage (e.g., climbing frames) (Lindberg and Schipperijn, 2015). It may be that the importance and use of sports features is dependent upon the type(s) of sports they cater to and/or what types of activities they support (e.g., socialising, organised sport, non-organised PA). In our study, adolescents frequently mentioned soccer fields and Australian Football League (AFL) ovals as being particularly important sports features for all outcomes; while AFL is Australia-specific and a predominant sport in Melbourne, stakeholders should consider the provision of features that support popular sports in their respective areas. The presence of informal green open space (i.e., not a formal sports field) was also important for encouraging active park use. It may be that the multi-functionality of informal green space is appealing as it supports both organised and non-organised active and passive activities (e.g., socialising, relaxing, PA).

Playgrounds were considered an important characteristic for attracting adolescents to visit and were perceived positive for PA, provided they catered to all ages. A review of qualitative data found that most adolescents perceive traditional playgrounds to be better-suited for young children, which may thereby discourage use by adolescents unless they are adventurous, physically challenging and age-appropriate (Van Hecke et al., 2018). Recently, safety has become a priority of playground design (Brussoni et al., 2015), possibly leading to playgrounds becoming under-stimulating for youth and not used to their full capacity. It has been suggested that "adventure playgrounds" support risky play, which is important for youth

health and development (Brussoni et al., 2015, 2012). Park planners should consider the age-appropriateness and challenge of playground design if adolescents' visitation and PA in parks are to be increased. Further, a U.S. study found that a greater variety of play elements (e.g., climbing ladder, crawling tube, slides, swings) was associated with greater visitation and park-based MVPA (Cohen et al., 2020), suggesting that equipping playgrounds with a range of play features may be beneficial across the lifespan. Moreover, stakeholders should create parks with adventurous playgrounds that appeal to adolescents' preferences (e.g., large slides, swings), as this may be a critical strategy for counteracting the age-dependent declines in PA levels observed from childhood to adolescence (Guthold et al., 2020) and increasing visits by families with children of varying ages, thereby potentially also promoting social interaction.

Paralleling previous literature, the presence of walking/cycling paths was perceived important for encouraging park-based PA, as participants expressed that paths provide opportunities to walk and/or cycle within, through and to/from the park (Van Hecke et al., 2018). Similar to quantitative evidence, most participants reported using active transport to walk or cycle to/from the park (Veitch et al., 2014). Previous research also showed a positive association between active travel to parks (which may include walking and cycling) and park-based PA (Grow et al., 2008). Parks that include walking and cycling infrastructure may help to facilitate walking and cycling in the park and also for transport, as the paths can be used as a short-cut on travel routes (Chin et al., 2008) or offer safe, off-road infrastructure for reaching other destinations by bike (Reynolds et al., 2009).

Nature (e.g., trees, vegetation, ponds) was particularly important for encouraging park use and PA, paralleling previous qualitative research among adolescents (Van Hecke et al., 2018). Participants mentioned the multiple purposes that natural features can serve, such as creating nice scenery and trees providing shade/shelter. The presence of nature was often noted as being central to a park's attractiveness, possibly explaining why aesthetics was a top characteristic perceived to encourage park visitation. Park practitioners should carefully consider the value that adolescents place on natural features and aesthetics as these park characteristics may be especially important for encouraging this sub-population to visit parks, which in turn may facilitate active and social park use.

Good upkeep of the park and its features was important for supporting park visitation in terms of aesthetics and safety, which is congruent with the literature (Van Hecke et al., 2018). Participants expressed that a poorly maintained park and/or features would discourage

visitation, as they were not aesthetically pleasing, and were perceived as unsafe due to risk of injury and threats to personal safety. Participants' negative perceptions of a poor park condition in relation to safety may have been due to place attachment, which has been shown to be largely linked to perceived safety in neighbourhood settings (Dallago et al., 2009). Future studies should consider the role of place attachment when seeking to better understand adolescents' park use. A qualitative study in the U.S. also found that adolescents place a high value on the condition of parks and preferred well-maintained parks over more park space and/or a greater number of parks (Gearin and Kahle, 2006). Stakeholders should pay close attention to ensuring that parks and their features are well kept as a valuable strategy for creating an inviting setting for visitation, which may potentially minimise safety concerns (Van Hecke et al., 2018).

Findings also showed that a convenient location close to home, school, public transport, shops and/or friends' houses was critical for supporting park visitation, likely due to adolescents having limited in- dependent mobility in contrast to adults. While location is not an easily modifiable factor of the built environment, it should be noted that some participants were willing to commute a farther distance to visit the park if it had other appealing characteristics (e.g., large size, aesthetics). Similarly, a Belgian study found that adolescents perceived certain physical and social park characteristics (e.g., sports facilities, presence of peers) as encouraging for visitation to parks located farther way (Van Hecke et al., 2016). Stakeholders should consider the modifiable park factors that adolescents find critical for encouraging them to visit the park as this may increase adolescents' willingness to travel greater distances in order to visit parks well equipped with attractive park characteristics.

Social aspects of visitation (e.g., accompaniment, socialising with friends) provided opportunities to interact with others and were considered critical for encouraging park visitation, aligning with previous research (Makinen and Tyrvaenen, 2008). Most participants reported visiting the park accompanied by friends and family; many participants stated that they visited to socialise and would be unlikely to visit the park without the presence of peers, further demonstrating the importance of social aspects of visitation. Moreover, social factors may serve as a prerequisite for park visitation, perhaps regardless of physical park characteristics, as many participants stated that the main reasons for visitation were to socialise and peer influence (e.g., would go because their friends spent time there). Additionally, when adolescents specified certain physical park characteristics as being important (e.g., playground), the context or reason for its value was often intertwined with

social factors, highlighting an inextricable link between physical park characteristics and social elements for park use. Evidence suggests that adolescents may be willing to compromise for less appealing physical park features if their peers are present (Van Hecke et al., 2016). However, if the physical environment of parks is of high quality, this is likely to attract more adolescents, which will provide more opportunities for interaction with peers.

The provision of organised activities was also important for encouraging adolescents to socialise in the park. Organised activities may support a reciprocal relationship between PA and social interaction in parks. For example, organised activities may act as a source of social support, which has been shown to be positively associated with adolescents' PA. An American study showed that the provision of free classes was associated with park users of varying age groups being more active than park users who visited parks without classes (Han et al., 2015). It is also possible that organised activities may involve modelling of PA, which can foster social interaction and support (Pugliese and Tinsley, 2007). Moreover, evidence has suggested that park improvements without a social structure (e.g., exercise classes and recreational programs) may not be sufficient for attracting adolescents to visit parks (Cohen et al., 2009). This substantiates the need for park (re)development efforts to focus on both the social and physical aspects of parks, which may be central to not only encouraging adolescents to visit the park but also influencing how they use it.

This study identified some gender differences in adolescents' perceptions of important park characteristics. Research has shown that park use by males and females can vary (Baran et al., 2014). For example, female adolescents have been found to use parks less frequently and be less active in parks than males (Floyd et al., 2011; Kaczynski et al., 2013). This may explain why more males in our study frequently mentioned the presence of sports features as being supportive of park-based PA. Of note, however, our findings showed that more females than males mentioned sport features as being important for encouraging social interaction. Previous qualitative research has indicated that female adolescents place a high value on "popular" places that attract others (Llyod et al., 2008). Sports features may attract large groups and community sports participants; therefore, these features may have been perceived as providing opportunities for social interaction (Eime et al., 2010). Paralleling previous research, our results showed that females more frequently mentioned safety as being influential for park visitation (Mahdiar and Dali, 2016). Infrequent park visitation among females may be exacerbated by safety concerns due to undesirable users or incivilities, so providing facilities for all ages to attract other people (e.g., adults, families) may make

adolescents feel safer due to added surveillance and “safety in numbers”. Additionally, it was more common for females to state that the presence of playgrounds was important for supporting park visitation. An American study found that female adolescents used playgrounds more often than males, but males were more active on the playgrounds than females (Cohen et al., 2020). Park planners should ask for input from female and male adolescents when designing their equipment and deciding which equipment to place in parks.

Our results suggest that adolescents are attracted to parks equipped with a variety of features, such as nature, open space, activity- supportive features (e.g., playgrounds, sports courts, paths) and supportive amenities (e.g., picnic areas, shade, toilets); are well maintained and aesthetically appealing; and located close to home or other destinations. Previous research in Australia also suggested that a greater variety of “attractive” features (e.g., trees, walking paths, barbecues) in parks was associated with high active use among adolescents (Edwards et al., 2015). While our findings demonstrate specific needs of adolescents that may differ from those of other age groups, qualitative research, using similar methods, has indicated that some of the important features identified overlap with the needs of children (Veitch et al., 2020b) and older adults (Veitch et al., 2020a).

4.1. Strengths and limitations

This is the first study to explore park characteristics for encouraging adolescents’ social interaction in parks, providing preliminary insights into how to maximise social park use in addition to increasing visitation and park-based PA. The study also captured insights into how social and physical park factors interact to shape adolescents’ perceptions of key characteristics for influencing park use. The walk-along interview technique assisted in identifying context-specific information as participants discussed their opinions in situ while experiencing the park. This methodology reduces recall bias and may stimulate participants to think more deeply about park features (Carpiano, 2009). Conducting interviews in parks of varying size, amenity and condition, located in diverse areas, may have derived a greater variety of responses as opposed to conducting interviews in a single type of park. Obtaining views of both frequent and infrequent park users increased diversity by capturing responses from those with lived park experiences and individuals who use parks less often, providing insights that may help to maximise their use.

However, most participants were recruited in-park and were frequent park visitors. Only three participants had not visited a park in the past three months prior to the interview, and seven

participants had not previously visited the park in which their interview was conducted. Although these participants were asked to familiarise themselves with the park before the interview, the results may be biased toward frequent visitors though few differences in responses were noted. The results may not have fully captured crucial park characteristics among adolescents who never or infrequently visit. Future studies should consider the views of these individuals and also consider examining why adolescents do not visit parks. The interviews were conducted during the spring and summertime in metropolitan parks. It is possible that the park characteristics adolescents perceived as important may differ in other seasons (Roemmich and Johnson, 2014), which is an area for future studies to explore. Additionally, our findings may not be generalisable to regional and rural residents or applicable to other countries and cultures. Future research should include regional and rural parks to gain a more comprehensive understanding, especially since park visitation and park features may vary by urban form (Roemmich et al., 2018). Lastly, while providing rich information, the qualitative design does not allow the identification of characteristics that are most important for adolescents' park visitation and active and social use. Quantitative studies are required to confirm the results.

5. Conclusion

Parks can provide adolescents with a supportive environment for recreation, socialising and restoration in a natural setting. Our findings showed that a range of park characteristics and social factors are important for encouraging adolescents to visit and be active and social in the park, especially those related to accompaniment and peer influence. In addition to considering the needs of other sub-populations, to ensure parks are designed to appeal to this important target group, park planners, landscape architects and policymakers should consider the range of park characteristics identified in this study that adolescents find attractive for visiting, being active and socialising. This study provides a foundation for future quantitative studies to determine the relative importance of park characteristics and features that adolescents value the most to guide future optimal park (re)planning.

Author contributions

JV, AT, BD conceptualised the study and acquired funding. JV curated and performed preliminary data analysis. ER performed an in- depth analysis of the data and also drafted and edited the manuscript. All authors contributed feedback on drafts and approved the final version.

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Declaration of Competing Interest

The authors report no declarations of interest.

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