

Article

# Fostering Social Sustainability through Intergenerational Engagement in Australian Neighborhood Parks

Tracy L. Washington <sup>1,2,\*</sup> , Debra Flanders Cushing <sup>3,4</sup>, Janelle Mackenzie <sup>3,4</sup>, Laurie Buys <sup>3,4</sup> and Stewart Trost <sup>2,5</sup>

<sup>1</sup> School of Civil Engineering and Built Environment, Queensland University of Technology, 2 George Street, Brisbane 4001, Australia

<sup>2</sup> Institute for Health and Biomedical Innovation, Queensland University of Technology, Victoria Park Road, Brisbane 4059, Australia

<sup>3</sup> Institute for Future Environments, Queensland University of Technology, 2 George Street, Brisbane 4001, Australia

<sup>4</sup> School of Design, Queensland University of Technology, 2 George Street, Brisbane 4001, Australia

<sup>5</sup> School of Exercise and Nutrition Sciences, Queensland University of Technology, Victoria Park Road, Brisbane 4059, Australia

\* Correspondence: tracy.washington@qut.edu.au; Tel.: +617-3138-5131

Received: 4 June 2019; Accepted: 13 August 2019; Published: 16 August 2019



**Abstract:** Social sustainability includes aspects of equity and is associated with two of the United Nations Sustainable Development goals focused on promoting good health and well-being for all ages. Yet, this pillar of sustainability is considered the least understood, as compared to economic and environmental components. To address this, our study focused on intergenerational engagement within residential neighborhood parks to foster social sustainability and encourage healthy and active living. This study included an intercept survey with open-ended questions of 386 adult park users within 12 parks in South-East Queensland, one of Australia's fastest-growing areas. Approximately two-thirds (68%) of adult participants visited the park with one or more children, primarily to use the playground. Further thematic analysis shows that intergenerational interactions predominantly include adults playing with or teaching children. However, intergenerational interactions were limited in numerous situations, such as when adults accompany older children. This paper concludes with a discussion on potential ways to increase intergenerational interactions in parks to promote health and well-being for all ages, thus increasing social sustainability within residential developments.

**Keywords:** intergenerational engagement; parks; residential neighborhood parks; social sustainability; wellbeing

---

## 1. Introduction

### 1.1. Social Sustainability

Social sustainability, which is the process of promoting, supporting, and maintaining positive relationships between people, is essential for building relationships, mutual learning, and improving well-being [1]. It is also associated with the United Nations Sustainable Development goals focused on promoting good health and well-being for all ages. Although it is an important component of sustainability more broadly, social sustainability is often discussed in terms of social capital, social cohesion, social inclusion, and social exclusion [2]. People also develop relationships with others through belongingness and proximity, such as through shared activities, goals, experiences, and

culture [3,4]. These relationships are important building blocks for sustainable neighborhoods and places. Further, social sustainability promotes wellbeing within communities, “by understanding what people need from the places they live and work” and “combines the design of the physical realm with design of the social world—infrastructure to support social and cultural life, social amenities, systems for citizen engagement, and space for people and places to evolve” [5].

Within a social sustainability framework, we focused on intergenerational relationships. As opposed to multigenerational approaches that consider each age group separately [6], intergenerational approaches seek to foster meaningful engagement between different generations [7]. Intergenerational practice often involves three aspects: people of different generations participate; participation involves activities with goals that benefit everyone, and the participants maintain relations based on sharing those experiences [8]. This engagement is particularly important for child and adolescent development. The older person (e.g., parent, caregiver, teacher, mentor, etc.) can provide support, guidance, and mentorship to the younger generations by drawing on their experiences. Several studies demonstrate that strong intergenerational relationships are not only at the root of healthy and productive aging; they are also important for child and youth development and are a critical component for sustainable societies [9–11]. For example, a study of social interactions found that adolescents who worked with an older person on a difficult life problem exhibited more pro-social behavior than adolescents who worked with a peer on a similar problem [12].

Intergenerational shared spaces can offer multiple generations the opportunity to co-participate in and interact with each other through sedentary (e.g., picnicking, observing nature) and active activities (e.g., playing sports). Interactions may be informal due to the proximity of usable areas within one large space [13] or formalized within the context of programmed activities, which have been shown to result in higher park use and physical activity [14,15]. However, despite the apparent value of these types of shared spaces, most research on intergenerational activities has been limited to institutional settings and does not focus on parks [16].

### *1.2. Encouraging Socialization and Physical Activity through Public Parks*

In residential areas, neighborhood public parks and leisure spaces can encourage socialization and physical activity [17–19]. Such parks are located in accessible, prominent areas which promote active transport and provide for the recreational needs of a local community for informal passive and active recreation and leisure opportunities, they also provide an important focal point for social interaction [20]. Regarding intergenerational interactions, researchers in Europe and North America found that children are often accompanied by adults (e.g., parents/caregivers) at public parks and leisure spaces [21,22]. Fathers have shown to be more physically involved with their children at parks than mothers [23]. Upkeep, availability of outdoor equipment and amenities, and friendly community were associated with increased neighborhood park use. However, these studies fail to examine how the parent/caregiver and child benefit from intergenerational park activities. One study in Canada used an intergenerational physical activity intervention program at school, the researchers found socially engaging activities, and an energetic atmosphere helped facilitate social interaction between students and adults [1]. This finding suggests having enjoyable and interesting activities in a friendly atmosphere helps facilitate the development of positive social interactions. Interactions achieved within public neighborhood parks in residential neighborhoods may provide parents/caregivers and children valuable opportunities to socially engage with each other and in turn, build social sustainability. These studies lead us to consider the interactions, shared activities, and intergenerational experiences that occur in parks between children and parents/caregivers.

The benefits of having a strong social support system may influence the use of parks, as parental and peer support can increase the level of young people’s activity in parks [24]. Outley and Floyd [25] suggest making use of kinship networks and neighborhood organizations to encourage park use and allow children to participate in available leisure activities, regardless of crime and violence levels in urban neighborhoods. Yet, it is important to recognize that intergenerational park use might not

happen naturally. For example, Ries et al. [26] determined park use by urban youth was associated with their friends' park use, but not with park use by their family.

There is a need to connect and not divide generations. When people of different generations are divided, they become susceptible to relying on media portrayals to understand younger and older people [27]. Consequently, those media portrayals lead to misunderstandings, prejudices, stereotyping, and overall worsening of social connections between people of different generations [27]. Families and communities will struggle if people negatively perceive those who are different from themselves. To thrive, societies need to engage and value the assets each generation has to offer. Furthermore, when people of different generations recognize their mutual concerns and interests, they are in a better position to develop comprehensive plans that engage and support all people [27]. Policymakers in many countries are giving renewed attention to intergenerational practice as a method of counteracting stereotypical negative perceptions of aging and overcoming the physical and social segregation of generations [28,29]. Public parks offer a potential setting where people of all ages can be valued and engaged.

### 1.3. Theory

This study used affordance theory as a framework to understand what opportunities for action were present in the parks that foster intergenerational engagement. Affordance theory, as first conceived by J. J. Gibson (1986), provides a way to understand how we perceive the actionable properties of our environment [30,31]. Heft (1989) further explained that using a phenomenological lens, environmental features or spaces are often experienced with respect to their function and how we interact with them [32]. Affordances are important in determining how the environment can be designed or manipulated to support (or discourage) various activities and experiences [33]. These experiences and perceived affordances depend on the characteristics of an individual [34]. Yet, affordances do not cause behavior, but rather constrain it or create a possibility for it [32]. Thus, it is important to recognize that the physical environment can facilitate behavior, such as intergenerational interactions, but not shape it completely [35]. In addition, affordances that are designed into a specific place, such as a park, also interact with other factors, such as programmed activities, cultural norms, weather and seasonal differences, and user characteristics. Within this framework, it stands to reason that parks would include visual cues to indicate which actions are possible within a park. The intergenerational interactions we identified are considered actualized affordances within each setting.

### 1.4. Setting

In Australia, as in other parts of the world, the suburban landscape is shifting. With rapid population growth due to births and international migration, as well as longer life spans, residential areas are also expanding to accommodate these numbers. From 2016 to 2017, Queensland, Australia experienced the third-largest population increase (79,580 people) of all the Australian states or territories [11]. This study took place in the Moreton Bay region in South East Queensland.

Within Queensland, the Moreton Bay region is one of the fastest-growing areas. According to the 2016 census, 88% of housing in Moreton Bay comprised single-family homes, with another 10% as medium density [36]. A single family home comprises 1 to 2 stories and covers 50% of the lot, with a traditional lot being approximately 18 × 25 m. The area remains predominantly low to medium density with a high-quality of life. Medium density comprises multiple 1 to 3 story dwellings on narrow lots (7.5 × 25 m) with decreased private outdoor space, which is dependent on the lot size and building height [36]. This growth puts increased demands on critical infrastructure, including parks and open space. In addition, a critical factor impacting intergenerational interactions is that the suburbs may lack specific opportunities for residents to socialize due to increasingly busy lifestyles and a lack of public space designed specifically for community gatherings, as compared to urban areas. Suburban neighborhoods are characterized by low density, low rise housing with detached dwellings as the predominant form of housing, whereas urban neighborhoods are characterized by the

densest (attached medium density) forms of housing within the region. They are generally located within easy walking distance of a large range of services and activities and/or frequent public transport services [36].

### 1.5. Aims and Objectives

To better understand if and how public parks in residential neighborhoods can foster social sustainability, this study employed an intercept survey approach with key open-ended questions of park users. To elicit clearer responses from the park users, we selected a specific activity for them to consider an activity that could allow for shared experiences. We chose to focus on physical activity, as partaking in this behavior provides clear health benefits, in addition to the well-being benefits provided by fostering relationships. Flora and Faulkner [37] suggested that the “examination of physical activity serving as a contextual experience for enhancing communication between generations” is in its infancy and remains an untapped area of research to promote intergenerational active living.

Currently, many public parks in residential neighborhoods within the study area do not incorporate features that encourage intergenerational interactions (or social sustainability more broadly). Extant research has demonstrated how and why different generations utilize parks. For example, greater park use for adults has been linked to good access, the provision of quality signage, seating, and toilet facilities [38]. For children, wide pathways connecting activity areas and open areas are important for park use, especially vigorous physical activity [39]. For adolescents, challenging environments which afford adventurous activities may be attractive [33].

These generational differences highlight the critical importance of understanding which park features are most utilized and enable intergenerational interactions within a neighborhood park setting. These findings are relevant to park design and can inform future best practice. Therefore, two research questions were posed to focus this investigation:

**Research Question 1.** *What intergenerational interactions occur within the parks?*

**Research Question 2.** *Which park areas and features are most utilized, particularly by adults accompanying children?*

The next sections describe the methodology, methods, and findings. The paper concludes with a reflection on designing for intergenerational interactions within public parks to promote social sustainability in residential neighborhoods.

## 2. Materials and Methods

We used brief intercept surveys with adult park users visiting 12 pre-determined parks within a Regional Council area in South-East Queensland, Australia. The parks were selected to ensure a cross-section of park users was reached, based on three criteria: geographical area (five areas across the Region), park classification (local, district, or regional), and age of park equipment (old, new, or combination), all parks had at least one playground and field area. A mixed-methods approach of park audits and systematic observation of park users' physical activity levels were undertaken and recorded as part of a broader study but is reported elsewhere. The data presented within this paper was obtained via intercept surveys with questions aimed at identifying adults' motivations for visiting the park, their perceptions of the park design and physical activity opportunities, and intergenerational interactions within the park setting. Four trained research assistants conducted the face-to-face intercept surveys over a four-month period during the Australian summer months (i.e., December 2017–March 2018). Each park was visited on four days (two weekdays and two weekend days), between 7:00 a.m. and 6:30 p.m., except for one park that was visited on three days.

### 2.1. Materials

The multi-disciplinary research team, comprising social scientists, landscape architecture and planning researchers, and health researchers, developed the intercept survey. During the development

process, the research team discussed the survey questions to ensure suitability, clarity, and relevance. An iterative review process was undertaken by the research team, which resulted in minor changes and additions to the survey questions. Furthermore, during the review process, consultation was held with key stakeholders with historical knowledge about design concepts of the parks (i.e., urban planners and landscape architects working within the Council), and the park users.

The intercept survey comprised five sections; the park users were asked questions about their park visitation, perceptions of the park design, physical activity opportunities (affordances) at the park, intergenerational interaction at the park, and demographics. The park visitation section comprised nine closed-ended questions to gauge the reasons for visiting the park, and with whom they were visiting the park, particularly whether they were at the park with children or not. Further, a subjective measure of their perceptions of park design comprised closed and open-ended questions, including two items ascertaining satisfaction with the design of the park and amenities present within the park using a five-point Likert scale (1-very dissatisfied, through 3-neutral, to 5-very satisfied). The perceptions of physical activity section enquired about the areas in the park the respondent felt they were most active, as well as the areas their children were most active (if visiting with children), and they were asked to explain the factors that allowed for these activities (open-ended question). The intergenerational interaction section was only administered to those parents/caregivers visiting the park with a child/ren. This section comprised three open-ended questions aimed to uncover the type of interactions that typically occurred across generations when at the park. Demographics collected included age category, gender, and the number of girls and boys visiting the park with them in three age categories (i.e., 0–5 years, 6–12 years, and 13–18 years).

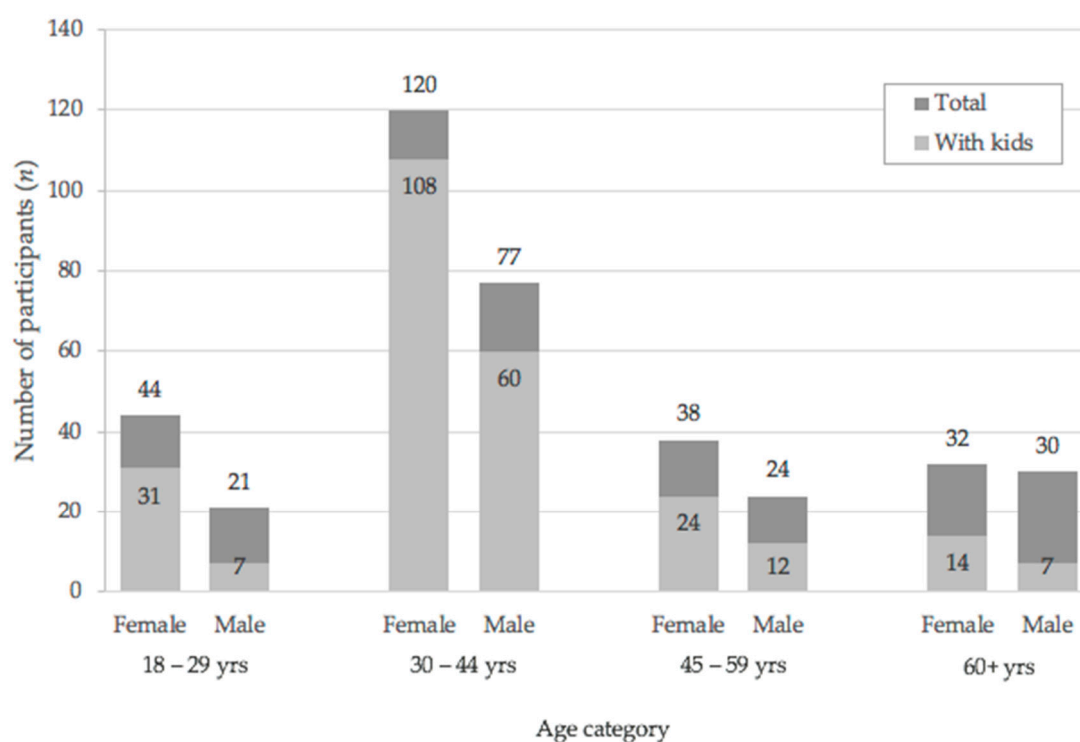
The questions were uploaded to an online software program (Key Survey) and administered by research assistants using an iPad. The surveys were also audio recorded to capture verbal responses to open-ended questions and allow transcription of these responses.

## 2.2. Recruitment

During the park visits, the research assistants approached adult park users and provided a brief description of the purpose and nature of the survey and asked them if they would like to participate. If the park user was interested in participating, they were provided with a paper-based “Participant Information Sheet” and those still interested in participating provided verbal consent to the research assistant. The research assistant then confirmed whether the participant was willing to have their responses audio-recorded, and if so, commenced with the audio-recording.

## 2.3. Participants

A total of 417 adult park users participated in the survey. However, 31 (7%) of the respondents did not agree to have their responses recorded, and thus, their survey responses could not be included in the qualitative analysis. The final sample comprised 386 adult park users who completed the survey and agreed to have their responses audio-recorded. The majority were female ( $n = 234$ ; 61%), and between 25 and 44 years old (63%). A large proportion were visiting the park with a child or children ( $n = 263$ , 68%). Figure 1 provides the data on the total number of participants by age category as well as the number of adults at the park with a child/children, broken down by gender.



**Figure 1.** Total number of participants visiting the park overlaid by number of participants with child/ren, by age category and gender.

#### 2.4. Data Treatment

All recorded responses were transcribed verbatim and uploaded into Nvivo for data analysis. The analysis was conducted in line with Braun and Clarke’s (2006) phases of thematic analysis [15].

For Phase 1: Familiarization with the data; a sample of 20 transcripts were reviewed by three members of the research team, and initial ideas for coding were proposed and discussed.

Phase 2: Generation of initial codes; researchers used an inductive approach as no pre-existing codes were identified, a priori. After the generation of initial codes (based on a sample of 40 transcribed surveys), a research assistant was then trained to code the remaining transcripts. The surveys were coded with the relevant codes, thus resulting in some extracts with numerous codes assigned. Throughout the coding process, a small number of new codes emerged. Survey transcripts analyzed prior were reread to allow for the new codes to be applied. Thus, an iterative coding process was employed. To enhance the reliability of the analysis, 65 (17%) of the survey transcripts were independently coded by two members of the research team. Subsequently, the transcripts were subjected to inter-rater reliability analysis using Cohen’s  $k$  statistic to determine if there was moderate agreement between the independent coders ( $k = .58$ ).

Phase 3: Searching for themes; following the coding of the dataset, analysis was performed to identify the themes within two streams of interest (in line with the research questions posed). The two streams of interest included: (1) Descriptions of adult-child interactions, and (2) Descriptions of park areas utilized.

Phase 4: Reviewing themes, the extracts coded with the potential themes in Phase 3 were reread to ensure they formed a cohesive theme. The biggest adjustment made was with the ‘adult-child interactions’ stream, after it was identified that the potential theme “assisting” was not providing valuable unique information as the extracts were often also coded with either “playing” or “teaching”, both of which typically captured the meaning of the extract better.

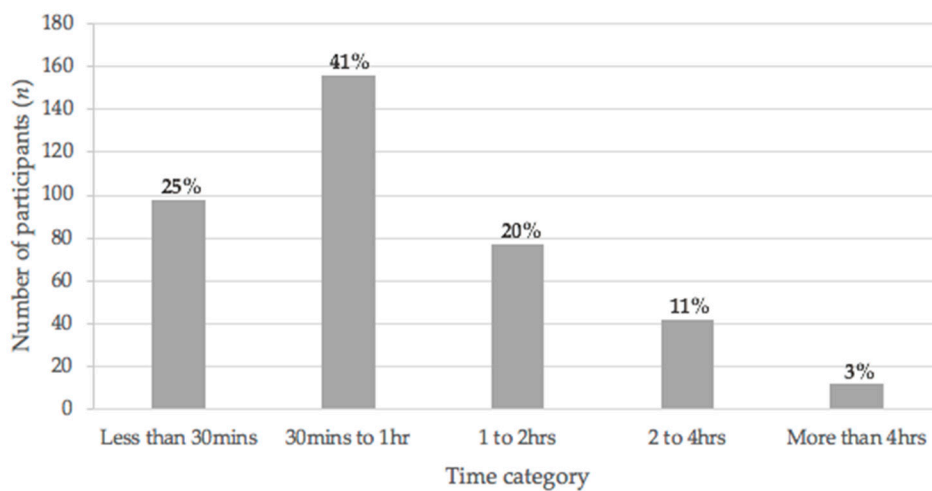
Phase 5: Defining and naming themes was undertaken for both streams of interest. The three key themes within the ‘adult-child interactions’ stream were: (1) observing, (2) playing, and (3) teaching.



Three themes were identified within the ‘park areas’ stream, these were: (1) playgrounds, (2) open fields, and (3) pathways.

**3. Results**

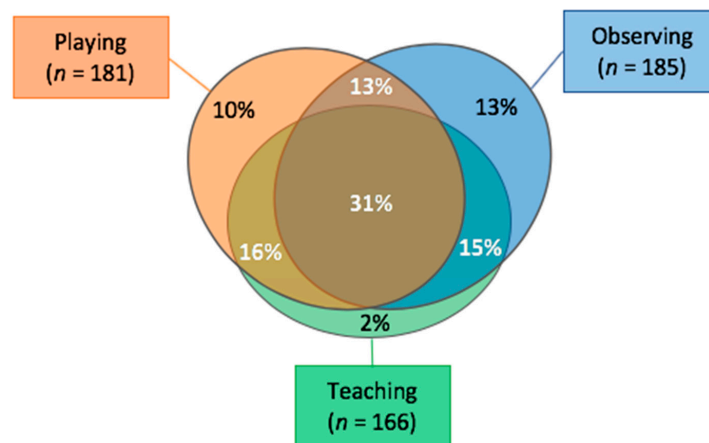
The participants were asked to indicate the main reason/s they were visiting the park. The top reasons identified were: for children to play (47.7%), dog exercise/recreation (22.5%), and walking (10.6%), followed by meeting friends (3.9%), and basketball (3.4%). The participants were also asked to indicate the expected duration of their visit to the park. Figure 2 indicates that 41% of the participants intended to visit the park for between 30 min and 1 hour, and one-quarter intended to stay for less than 30 min.



**Figure 2.** Number of participants, and percentages, by time category of expected duration of park visit.

*3.1. What Intergenerational Interactions Occur in the Park?*

Three key themes were identified within the thematic analysis: playing, observing, and teaching. Since the respondents were adults, we describe these actions from the perspective of adults, rather than children. Figure 3 shows the relative proportions of these three activities, and the proportion of overlap. Of note, 31% of the responses were coded with all three themes suggesting that the type of interaction that occurs at the park varies across the duration of the visit. The key themes will be discussed in turn.



**Figure 3.** How are adults and children interacting?

### 3.1.1. Playing

A large number of caregivers indicated that they almost always played with the children when at the park, with typical responses such as: “We play together” (R232), and “No, we play together. Never just sit and watch” (R174). This most often occurred on the playground equipment and within the playground area, “I do play. He was asking me to play with him before . . . Just on the playground equipment” (R226). The playgrounds appear to provide affordances for the children, as well as the adults, to interact through play at the child’s level, such as being silly: “We’re not really a sporting family, but we’ll come to the playground. The little fellas just love to get on it, and especially take some friends as well and kids. I’ll be a bit silly on the playgrounds as well” (R344). For many of these caregivers the act of going to the park, with the assumption that the adult and child/ren would play together, demonstrates a unique social dynamic occurring in outdoor space that may not occur during other times of the day or week: “(We) Play together... you go to the park to interact, don’t you?” (R328).

Of note, caregivers with younger children (i.e., typically those under 5 years of age) were ‘always’ playing, with comments such as, “(We) Play together because they’re so tiny” (R180; Boy 0–5 years, Girl 0–5 years), and “We play. We interact with her because she’s so little” (R211; Boy 13–18 years, Girl 0–5 years). One explanation was that the children needed their assistance physically: “Generally, when I take them to the park, especially if you’ve got a younger one, you’re helping them to climb stuff and push them on the swing, and things like that” (R306; Boys 5–12 years and 13–18 years, Girl 0–5 years). It is also likely that these preverbal children (2-year-olds and younger) lacked social skills to engage in interactive play with other children or initiate games with peers. The parents/caregivers were likely also playing with the younger children for safety reasons, due to the children’s lack of understanding of risks and limited assessment of their physical capabilities, as explained by one caregiver: “Because he’s little, I like to be there, especially the climbing things, just in case he falls or whatever” (R123; Boy 0–5 years). For these caregivers choosing to visit the park with younger children, there appears to be an acceptance or understanding that they will be interacting with the children through play:

“We play together. We always play with her. We can’t let her just run off by herself. She’s a bit young.” (R405; Girl 0–5 years)

“Play together, I don’t really get to sit and supervise. We’ve got a few more years before that.” (R380; Boy 0–5 years, Girl 0–5 years)

As suggested by R380 (above), this expectation of interacting with children through play at the park appears to dissipate as the children get older. Furthermore, interestingly, some caregivers who indicated they engaged in a combination of playing and observing also indicated that they were reducing their playing time as the children got older and needed them less, which will be further discussed in Section 3.2.2.

### 3.1.2. Observing

Similar to the playing theme, within the observing theme many parents/caregivers indicated that they mainly observe, which was also described as watching or supervising the children whilst at the park: “I mostly watch when they come down here, now that they’re a bit older,” (R099; Boy 0–5 years, Girl 6–12 years). A key subtheme that emerged, as alluded to in the prior excerpt, was that older children (i.e., typically those over 5 years of age) were observed more than younger children. Conversely to within the playing theme, it was suggested that the older children did not need their caregivers for entertainment or physical assistance as much as the younger children, “Most times, I sit back and let them play, only because of their ages. Sometimes, I get in and play, but I don’t find I need to” (R077; Boy 0–5 years, 2 Girls 6–12 years). This shift from playing to observing as the children got older was clearly identified by some caregivers: “25, 75: 25% play, 75% watch. Now they’re older, when they were little, it was more like the opposite way” (R016; Boy 0–5 years). There was also a suggestion that in addition to the older children or teenagers not requiring adult assistance (physically



or socially), that they would prefer to do their own thing, as suggested by these caregivers: “I watch them. He’s more a teenager, so it’s a bit different” (R070; Boy 13–18 years), and “They’re a bit old. They don’t want to play with me. Walk the dog. I usually don’t come. The kids will do it themselves. They’re kind of old enough to do their own thing. They’ll ride there on their BMX on their own” (R296; 2 Boys 6–12 years).

As illustrated in Figure 3, there was notable crossover between caregivers’ descriptions of interactions at the park being coded with observing as well as playing, for example: “Probably three-quarters of the time I play with him, then a quarter of the time I let him play by himself, too” (R123). One explanation for observing at times was to allow the children to demonstrate or develop their skills without direct input from the caregiver, “We play, but sometimes I take the time to just sit down and watch them, see what they’re doing. I like being able to sit down and watch them play. That’s nice to see as well” (R177). As children are constantly developing their social and physical skills, taking time to observe the children can be a passive yet insightful way to determine some potentially new ways to engage with the children in future interactions. In addition, observing rather than contributing towards children interacting can provide great opportunities for the development of their social skills with their peers. Some caregivers explained that they play but often sit back and observe the children when they had other children to play with, for example, “Well, they’ve brought some school friends, so we mostly watch them play” (R288), and “It depends how busy it is. If it’s quiet, I’ll play with them, but if it’s busy, I’ll sit and watch” (R107). Even though this observation is not typically facilitating social interaction between the adult and child, it is allowing social interaction between the children while at the park.

One interesting subtheme that emerged was that people with lower physical capacity (e.g., has an injury, of retirement age) were observing the children rather than playing. For example, one caregiver who currently has an injury said, “It depends. As I’m busted up at the moment, I’m not skateboarding. I normally skateboard with them, which is how I did this, incidentally” (R153). A caregiver of retirement age said: “I supervise. I, unfortunately, cannot play much, I’ve got problems with hips and knees and all that” (R138, Age category: 75+ years). It is positive that these adults were still coming to the park with children to allow them to get out into nature and potentially be physically active. However, it would be beneficial to identify ways in which these people could still socially engage with the children, if they wish, and are not designated to simply observe.

There were caregivers who suggested that they use their time at the park to allow the children to have fun and entertain themselves, while the caregivers stole some moments for themselves. These moments were for individuals, “I mostly just supervise. I mean, he’ll come and sort of check in, but yeah, mostly I’m just watching him play and reading my book” (R386), as well as for couples or groups, “They do their own thing which sort of gives us our time” (R260). This could have a positive impact on the well-being and mental health of caregivers, particularly as these moments are occurring within the natural environment. In addition, being able to observe the children whilst interacting with other adults can be a great method of social engagement for the adults, “Yeah, it’s often a good time for my husband and I to have a talk as well, because the kids are happy and sorted—and they’re getting a bit older now, so we can sit down and catch up ourselves” (R418).

### 3.1.3. Teaching

The caregivers were directly asked if they had taught the children any skills while at the park. Although these interactions involved both teaching and learning, we have focused primarily on the adults “teaching” children, based on the responses that we analyzed. The examples provided were predominantly physical skills, however, amongst these were a few references to social skills as well. In terms of social skills, the parks afforded opportunities for children to interact with other children and learn about prosocial behaviors. These descriptions typically focused on the playground equipment and the need to learn to take turns and not push in, and show respect to others:

“I think one of the best things in the park is like developing their social skills, so they will meet with other kids and they learn to share toys and play together.” (R414)

“I’ve probably been more like trying to instruct him to be careful and sort of watching out for little kids, more than anything else.” (R386)

These opportunities arise when there are multiple people wishing to use limited resources, such as when there is only one slide or swing available, “Yeah, just trying in an open and safe environment you know teach him about other kids come, we take turns on the swing . . . ” (R019). Learning patience, respect, and cooperation are invaluable social skills for the duration of a person’s life, and it was valuable for caregivers to identify these learning opportunities for children while at the park.

The main physical skills taught that emerged from the data were bike riding, ball skills, swinging, and climbing skills. The caregivers’ responses suggest that the parks afforded these teaching and learning opportunities through the provision of facilities not often available in their backyards. Teaching and learning how to ride a bike occurred on pathways: “I think we brought them here when they were new at learning to ride their bike, because it’s got the concrete path all around” (R240). Teaching and learning ball skills (football and cricket) often occurred in open grassy spaces: “Yeah. Kick the football around. How to kick the ball around and how to catch the ball actually” (R072). Teaching and learning climbing skills and swinging oneself occurred on playground equipment: “The rope climbing, teaching them just to look up and hold something higher when they’re going up, just the basic stuff, and just yeah, maneuvering around ropes and telling them to look and place their hands, just the basics,” (R388), and “(Taught) How to push themselves on the swing” (R175). It was valuable to identify that these were the main skills being taught at the park, as these facilities were also identified as the areas of the park that were most utilized for physical activity, as will be discussed in the following Section.

### 3.2. What Park Areas Are Being Utilized?

As the focus behavior of the study was the engagement in physical activity at the park, the respondents were asked to indicate the areas of the park in which they felt they were more physically active, and where their child/ren were physically active (for those accompanying children). The results from the participants accompanying children are presented in Table 1. A follow-up question posed to all participants enquired about why these areas allowed for greater physical activity. The key themes identified within the thematic analysis will be discussed in turn.

**Table 1.** Park areas perceived to have the greatest levels of physical activity for caregivers and child/ren ( $n = 263$ ).

Park Area	Adults <i>n</i>	%	Park Area	Child/ren <i>n</i>	%
Playground	114	(43.3%)	Playground	216	(82.1%)
Pathway	54	(20.5%)	Open fields	45	(17.1%)
Open fields	52	(19.8%)	Pathway	36	(13.7%)
Not active	38	(14.4%)	Basketball court	19	(7.2%)

Note: Participants were able to select up to three options for this survey question.

#### 3.2.1. Playground

As indicated in Table 1, the playground area was the top selected park area for physical activity for both caregivers and children. As adults typically do not utilize the playground unless they are accompanying children, it is likely their engagement with this area of the park is dictated by their child/ren’s engagement. The caregivers suggested that the variety of playing opportunities was an important element for their child/rens engagement and physical activity levels at the playground, “I don’t know, just getting the options, different climbing things to do, slides, swings, you know running around, spinning things. There’s a lot more options here.” (R416). Some caregivers explained that the

variety of equipment helped maintain their children's attention and interest, which helped prevent the children from getting bored:

"The main thing is if you've got different variety of different types of play equipment because I know that we've taken them to playground parks before when there's only been two or three different things to play on. He gets bored in half an hour, whereas here he's quite content just roaming around, different activities, different swings, climbing apparatus, and different colors is always a good thing as well." (R351)

Some parents/caregivers also suggested that the variety of equipment allowed the children to try out a range of physical skills, which is another method of maintaining engagement, for example: "Maybe the scope of the equipment that is there. There's climbing, there's balance activities, and there's lots of different stuff to do, to keep him engaged" (R123). In addition, some playground areas provided an ideal space for the children to run around, move and exert some energy among the equipment they are typically drawn towards, "I think because it is spread out it gives the kids a chance to run between the spaces" (R299). Overall, the presence of a variety of playground equipment that provides numerous options for use, which include the need to use a range of physical skills, is more likely to engage children for a longer amount of time as perceived by their caregivers.

### 3.2.2. Open Fields

A key factor for engagement within the open fields appeared to be the provision of a grass lawn area that provided sufficient space to play ball games, kick, throw, and hit balls around. The parents/caregivers also suggested that the open area provided more room to run around, and that is what they did, "Our backyard is quite small, and the open area is only minimal, so you have more space to have a decent run (here)" (R087). Even though the only 'facility' provided was well maintained grass and at times a cricket pitch, it was suggested that this was sufficient due to their ability to bring props to utilize within the spaces, as indicated from this caregiver: "They can just bring everything down, and they can do whatever they want. It's a decent size" (R152). For this community, it appeared that having access to balls and other sporting equipment was common, they just needed the space to use their equipment: "The grassy space is great because they can either bring equipment, or two of my daughters are cheerleaders so they'll often run and do flips because it's such a nice big space" (R404). Open and empty fields (e.g., without goalposts or a cricket pitch) typically do not provide many affordances for use, however, when the potential use of ball games is identified and utilized, the potential for social interaction and social engagement is high due to the reciprocal nature of these games.

### 3.2.3. Pathways

Of the 123 participants who were visiting the park without children, 46% indicated that they were active on the pathways (which was the most selected park area for this subsample). Thus, the pathways were utilized by both park users accompanying children (as indicated in Table 1), as well as those who were not with children but typically with another adult, their dog, or on their own. The key positive descriptors to explain their engagement with the pathways were long, wide, and smooth, for example: "Because of the nice footpath they can have a long walk" (R285), and "I saw lots of people cycling on it, so, obviously the smooth surface of the pathway," (R345), as well as, "It's nice and wide, and it's nice and smooth" (R252).

The pathways were ideal for park users across all ages because they allowed for a safe environment for walking, bike riding, and scootering, in particular. Wide pathways were described as ideal to allow safe passing by others on the path. Smooth pathways were important for older people with mobility issues who were concerned about tripping while walking:

“Well, they’re wide, and they’re fairly recently done, so there’s no tripping traps . . . Yeah, it’s very evenly—it’s all very nicely done, very smooth walking.” (R274, Age Category: 70 to 74 years)

“Well, you’ve got a path to follow, and at this stage, it’s kept up. [ . . . ] There’s not many things you can slip over on. It’s pretty safe. When you get a bit older, you need to have something that’s—and they’re wide.” (R253, Age Category: 65 to 69 years)

Moreover, smooth pathways were important to allow young children to safely ride their bikes or scooters while their caregiver walked, as explained here: “This is a great pathway for me to walk, and then for the girls to come on their scooters as well,” (R249). A long pathway within the parks, in conjunction with constant visibility of the pathway, was also viewed as a positive safety aspect, “It’s fantastic, because my daughter can go around on the scooter, I can visually see her,” (R418). These long pathways afforded opportunities for children to ride longer distances off the roads and within their caregiver’s line of sight, providing an optimal space for these physical activities: “Obviously the ability to ride their bikes safely off the roads” (R417). Overall, long, wide, and smooth pathways that are perceived to be ‘safe’ appear to provide affordances for a range of activities that can be undertaken by multiple generations simultaneously. Therefore, engagement with well-designed and maintained pathways within parks can facilitate intergenerational social interactions.

#### 4. Discussion

In this study, we investigated the type of intergenerational interactions that currently occur within public suburban parks, as well as the park areas that afford these interactions. We identified that playgrounds, open spaces, and pathways were important park features that afford playing, observing, and teaching opportunities for caregivers and their children. This is in alignment with Moore and Cosco’s findings, where they found generous pathways linking different elements and areas within a neighborhood playground supported easy and active use by children and their carers [39]. This indicates that, when these park features are designed to promote these affordances, public parks within residential neighborhoods can provide valuable opportunities for intergenerational engagement to contribute to social sustainability. As an important component of residential landscapes, which may lack community engagement opportunities often seen in urban areas, designing these spaces to accommodate and attract intergenerational users is one way to promote general health and well-being.

Within our study, we observed a large proportion (70%) of caregivers playing with their children, particularly within the playground. Our findings suggested that this area of the parks provided affordances for play for children, which was not surprising, but also affordances for adults to interact through play. We also identified that children were perceived to remain engaged with the playground for longer when there was a variety of equipment that afforded numerous options for play (for both interest and physical challenge). This is in line with previous findings that challenging environments are attractive to adolescents [33] and adds to the knowledge regarding the design of parks to enhance longer engagement.

The caregivers within our study were commonly playing with young children while at the park, especially when the children needed physical and social assistance or guidance. However, interacting through play appeared to diminish as the children got older, and assistance was no longer required. Even though older children do not necessarily need physical or social assistance when at the park, it may be a missed opportunity for social interaction between caregivers and older children. Particularly so when the “older children” age range starts at 5 years of age, which is when children in Australia typically start attending school. As found by Kessler [12], teenagers who work through life lessons with older adults tend to exhibit more pro-social behaviors than those working with peers. Thus, suggesting that children and teenagers can learn important social skills with the guidance of older people and adults. For those attending school and spending a large amount of time with peers, going

to a park with an adult could provide a valuable opportunity for positive intergenerational interactions, if these interactions occur.

As the caregivers in our study reported interacting less with older children, it may be beneficial to include affordances for adults to “play” and interact with these age groups. For example, playground designs could include equipment for older children that requires or encourages assistance from caregivers, which would promote adult-(older) child interactions. As found in an intergenerational intervention program in a Canadian school, enhanced social interactions can occur through socially engaging activities and an energetic atmosphere [1]. It would be valuable to identify if this can be translated to parks. In addition, placing seating within playground areas rather than in surrounding areas, may facilitate greater interactions between caregivers and children. This could accommodate adults and older adults with mobility issues who suggested they were relegated to only ‘observe’, but may enjoy the opportunity for greater interaction with the children when at the park.

Approximately two-thirds (68%) of adult participants visited the park with one or more children. This suggests that park visitation can enable social interaction between adults and children. Our study also found that children are able to build social skills at the parks since it is often a place where different families can come together -“I think one of the best things in the park is developing their social skills, so they will meet with other kids and they learn to share toys and play together.” (R414). The park, and predominantly playground environment, assisted the children to learn the prosocial behaviors of taking turns, not pushing in, and showing respect to others. While variety within playgrounds appears important to maintain interest and challenge, having limited numbers of specific popular equipment appears to be valuable for children to learn important social skills and the concept of taking turns.

Within our study, 75% of the participants planned to visit the park for 30 min or longer. In addition, 75% of the caregivers reported interacting with their child/ren in more than one way when at the park (e.g., playing and observing). Taken together, these results suggest that the amount of intergenerational interaction that occurs at the park varies across the visit. Thus, even though caregivers observing children are not directly interacting with the children, it appears to be an opportunity for adults to interact with each other. For example, adult family members could ‘take the time to catch up’, or caregivers could forge social connections with other caregivers. However, our results did not provide insight into whether it was a good social space for adults to meet other adults. Past research indicates that this may vary in different cultural settings. A study comparing six public park playgrounds in the United States and Denmark, and the cultural similarities and differences, found the Danish respondents considered it most important to be together with their families, while the American respondents thought it was most essential that their children were physically active while being at the park [23]. Despite the differences, all respondents stayed at the park longer and visited more often if they liked the social atmosphere of the playground. This suggests that ensuring there are spaces and seating in and around playgrounds to facilitate social interactions between those observing the playground is an important design element to promote social sustainability.

Even though our study primarily investigated intergenerational interactions that involved children, it is important to acknowledge the potential intergenerational utilization of public parks with generations other than children (e.g., adults and older adults). We found that almost half of the participants who visited the park without children indicated they used pathways. Older adults like long, wide, and smooth pathways for walking, and children need these same attributes for learning to ride and practicing on their scooters and bikes. Ensuring pathways are designed with these considerations can encourage utilization by the individual generations. In addition, as suggested by caregivers within our study, adults, as well as older adults, could walk while children ride bikes or scooters. This could allow for conversations and explorations together, and in turn, enhance the social connections between the generations.

The teaching and learning of physical skills can provide a great opportunity for adults and older adults to give back to the younger generation, and for children to appreciate the knowledge and skills of their elders. This is a chance for the generations to engage in mutual interests as well as value the assets



of other generations [27], an important step in promoting social sustainability. A public residential park can provide unique opportunities for this social interaction. Within our study, we identified several affordances for physical skills taught and learned at the park, including bike riding, ball skills, swinging, and climbing skills, and which occurred on the pathways, open fields, and playgrounds. The inclusion of these park features is commonplace. However, their value for intergenerational social connection may not be fully appreciated to date. The continued inclusion of these park features appears important to allow the teaching and learning of valuable physical skills, particularly in light of the smaller backyards typical of new suburban neighborhoods. To further enhance this unique intergenerational social interaction at parks, the provision of cues that encourage the teaching of these skills could add value.

The results reported here only include surveys conducted with people already accessing the public parks in residential neighborhoods. A limitation is that it does not provide information from the perspective of people who do not access the included parks. Additional phases of this research will include a survey of non-park users to better understand the barriers they may face for accessing the parks.

## 5. Conclusions

This study contributes to the knowledge on the use of public parks in residential neighborhoods and the intergenerational interactions that occur within the Australian suburban context. Key results show that intergenerational interactions occur when caregivers/parents are teaching, playing, or observing the children. These results demonstrate the importance of park design and its influences on teaching and learning opportunities. Playgrounds with pathways allow for teaching and learning of bike riding and handling skills, and grassy field areas encourage gross motor skill development and hand-eye coordination, through ball sports. Playground equipment allows for risk-taking and independent learning while under observation by the caregiver/parent. These teaching and learning opportunities allow for intergenerational and social interactions that may not otherwise occur within the respondents' residential setting.

With playgrounds that are more appealing to accompanying adults in a number of ways, there is a chance that children will come more often and stay longer. Time spent in public parks has the potential to increase social sustainability within residential suburban areas. Current trends in society often separate the generations and keep people indoors. Yet, connecting different generations within neighborhood community parks may be an option to ensure social sustainability in the suburbs.

Public parks in residential neighborhoods have demonstrated specific areas for intergenerational physical activity and segue for social engagement, hence social sustainability. This type of social engagement within parks may be affording unique opportunities for caregivers to allow and witness their child/ren making decisions and taking risks and foster valuable parenting/caregiving opportunities as well as learning opportunities for the children. The provision of these opportunities could encourage different and potentially greater social engagement than those opportunities provided at home. In addition, these interactions can be complementary to developing the foundation of solid social engagement within families, rather than just simply existing within the presence of one's family that may occur in today's busy lifestyles.

**Author Contributions:** "conceptualization, D.F.C., L.B., S.T. and T.W.; methodology, D.F.C., J.M., L.B., S.T. and T.W.; software, n/a.; validation, J.M.; formal analysis, D.F.C. and J.M.; investigation, J.M.; resources, n/a; data curation, J.M.; writing—original draft preparation, D.F.C., J.M., L.B., S.T. and T.W.; writing—review and editing, D.F.C., J.M., and T.W.; visualization, n/a; supervision, J.M.; project administration, D.F.C. and J.M.; funding acquisition, D.F.C., L.B., S.T. and T.W."

**Funding:** This work was supported by an Australian Research Council Linkage LP160101341. "All subjects gave their informed consent for inclusion before they participated in the study. The study was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Human Research Ethics Committee of Queensland University of Technology 140000899."



**Acknowledgments:** The authors wish to thank the respondents for their participation in the survey. Thank you to the Australian Research Council Linkage partners; Moreton Bay Regional Council, Conrad Gargett, Playscapes Creations, 7 Senses Foundation, National Wellness Institute of Australia, The National Heart Foundation of Australia.

**Conflicts of Interest:** The authors declare no conflict of interest.

## References

1. McConnell, J.; Naylor, P.-J. Feasibility of an Intergenerational-Physical-Activity Leadership Intervention. *J. Intergener. Relatsh.* **2016**, *14*, 220–241. [CrossRef]
2. Dempsey, N.; Bramley, G.; Power, S.; Brown, C. The social dimension of sustainable development: Defining urban social sustainability. *Sustain. Dev.* **2011**, *19*, 289–300. [CrossRef]
3. United Nations DoEaSA. United Nations, Inclusive Social Development, 2015. Available online: [Un.org/development/desa/dspd/2030agenda-sdgs.html](http://un.org/development/desa/dspd/2030agenda-sdgs.html) (accessed on 1 March 2019).
4. VanderVen, K. Intergenerational theory in society: Building on the past, questions for the future. *J. Intergener. Relatsh.* **2004**, *2*, 75–94. [CrossRef]
5. Woodcraft, S.B.N.; Caistar-Arendar, L.; Hackett, T. *Design for Social Sustainability: A Framework for Creating Thriving New Communities*; Social-Life: Walworth, London, UK, 2012; Available online: [http://www.social-life.co/media/files/DESIGN\\_FOR\\_SOCIAL\\_SUSTAINABILITY\\_3.pdf](http://www.social-life.co/media/files/DESIGN_FOR_SOCIAL_SUSTAINABILITY_3.pdf) (accessed on 1 July 2019).
6. MacCallum, J.; Palmer, D.; Wright, P.; Cumming-Potvin, W.; Brooker, M.; Tero, C. Australian Perspectives: Community Building Through Intergenerational Exchange Programs. *J. Intergener. Relatsh.* **2010**, *8*, 113–127. [CrossRef]
7. Kaplan, M.; Haider, J.; Cohen, U.; Turner, D. Environmental Design Perspectives on Intergenerational Programs and Practices. *J. Intergener. Relatsh.* **2007**, *5*, 81–110. [CrossRef]
8. Buffel, T.; De Backer, F.; Peeters, J.; Phillipson, C.; Reina, V.R.; Kindekens, A.; Donder, L.D.; Lombaerts, K. Promoting sustainable communities through intergenerational practice. *Procedia Soc. Behav. Sci.* **2014**, *116*, 1785–1791. [CrossRef]
9. Zeldin, S.; Larson, R.; Camino, L.; O'Connor, C. Intergenerational relationships and partnerships in community programs: Purpose, practice, and directions for research. *J. Community Psychol.* **2005**, *33*, 1–10. [CrossRef]
10. Davidson Knight, A. Funding intergenerational initiatives to strengthen local communities. *Qual. Ageing Older Adults* **2012**, *13*, 307–316. [CrossRef]
11. Young, T.L.; Janke, M.C.; Sharpe, C.; Carthron, D. Evaluating the feasibility of a community intergenerational physical activity intervention for kinship families: Professional stakeholders' perspectives. *Eval. Program Plan.* **2019**, *72*, 136–144. [CrossRef]
12. Kessler, E.M.; Staudinger, U.M. Intergenerational potential: Effects of social interaction between older adults and adolescents. *Psychol. Aging* **2007**, *22*, 690–704. [CrossRef]
13. Foundation, M. *Generations United Present Awards to America's Best Intergenerational Communities: Today, 8.4 Million People Live in Age-Friendly Communities, Where All Ages Engage in Decision-Making, Problem-Solving and Relationship-Building*; PR Newswire Association LLC: New York, NY, USA, 2015; Available online: <http://search.proquest.com/docview/1657605164/> (accessed on 1 July 2019).
14. Cohen, D.A.; Golinelli, D.; Williamson, S.; Sehgal, A.; Marsh, T.; McKenzie, T.L. Effects of park improvements on park use and physical activity: Policy and programming implications. *Am. J. Prev. Med.* **2009**, *37*, 475–480. [CrossRef] [PubMed]
15. Cohen, D.A.; Marsh, T.; Williamson, S.; Derosé, K.P.; Martinez, H.; Setodji, C.; McKenzie, T.L. Parks and physical activity: Why are some parks used more than others? *Prev. Med.* **2010**, *50*, S9–S12. [CrossRef] [PubMed]
16. Solomon, S.G. *The Science of Play: How to Build Playgrounds That Enhance Children's Development*; University Press of New England: Lebanon, NH, USA, 2014.
17. Joseph, R.P.; Maddock, J.E. Observational park-based physical activity studies: A systematic review of the literature. *Prev. Med.* **2016**, *89*, 257–277. [CrossRef] [PubMed]
18. Salvo, D.; Banda, J.A.; Sheats, J.L.; Winter, S.J.; Dos Santos, D.L.; King, A.C. Impacts of a temporary urban pop-up park on physical activity and other individual-and community-level outcomes. *J. Urban Health* **2017**, *94*, 470–481. [CrossRef] [PubMed]

19. Townsend, M.; Henderson-Wilson, C.; Warner, E.; Weiss, L.J.D.U. Healthy Parks Healthy People: The State of the Evidence, 2015. Available online: [Parkweb.vic.gov.au/\\_\\_data/assets/pdf\\_file/0003/672582/HPHP\\_state-of-the-evidence\\_2015.pdf](http://Parkweb.vic.gov.au/__data/assets/pdf_file/0003/672582/HPHP_state-of-the-evidence_2015.pdf) (accessed on 1 March 2019).
20. Council, M.B.R. Open Space Strategy 2012–2031. Available online: <https://www.moretonbay.qld.gov.au/files/assets/public/services/publications/planning-strategies/open-space-strategy.pdf> (accessed on 15 July 2019).
21. Van Hecke, L.; Ghekiere, A.; Van Cauwenberg, J.; Veitch, J.; De Bourdeaudhuij, I.; Van Dyck, D.; Clarys, P.; Weghe, N.V.D.; Deforche, B. Park characteristics preferred for adolescent park visitation and physical activity: A choice-based conjoint analysis using manipulated photographs. *Landsc. Urban Plan.* **2018**, *178*, 144–155. [[CrossRef](#)]
22. Vaughan, C.A.; Colabianchi, N.; Hunter, G.P.; Beckman, R.; Dubowitz, T. Park Use in Low-Income Urban Neighborhoods: Who Uses the Parks and Why? *J. Urban Health* **2018**, *95*, 222–231. [[CrossRef](#)] [[PubMed](#)]
23. Refshauge, A.D.; Stigsdotter, U.K.; Cosco, N.G. Adults’ motivation for bringing their children to park playgrounds. *Urban For. Urban Green.* **2012**, *11*, 396–405. [[CrossRef](#)]
24. Qazi, H.A. Childhood obesity and parks and playgrounds: A review of issues of equality, gender and social support. *J. Res. Med. Sci.* **2011**, *16*, 553–558.
25. Outley, C.W.; Floyd, M.F. The Home They Live In: Inner City Children’s Views on the Influence of Parenting Strategies on Their Leisure Behavior. *Leis. Sci.* **2002**, *24*, 161–179. [[CrossRef](#)]
26. Ries, A.V.; Voorhees, C.C.; Roche, K.M.; Gittelsohn, J.; Yan, A.F.; Astone, N.M. A Quantitative Examination of Park Characteristics Related to Park Use and Physical Activity Among Urban Youth. *J. Adolesc. Health* **2009**, *45*, S64–S70. [[CrossRef](#)]
27. Kaplan, M.; Sanchez, M.; Hoffman, J. *Intergenerational. Pathways to a Sustainable Society*; Ding, M., Ed.; Gewerbestrasse 11, 6330; Springer: Cham, Switzerland, 2017.
28. Jarrott, S.E. Where have we been and where are we going? Content analysis of evaluation research of intergenerational programs. *J. Intergener. Relatsh.* **2011**, *9*, 37–52. [[CrossRef](#)]
29. Hatton-Yeo, A. An introduction to intergenerational practice. *Work. Older People* **2010**, *14*, 4–11. [[CrossRef](#)]
30. Gibson, J. The Ecological Approach to Visual Perception of Pictures. *Leonardo.* **1978**, *11*, 227–235. [[CrossRef](#)]
31. Norman, D. Affordance, conventions, and design. *Interactions* **1999**, *6*, 38–43. [[CrossRef](#)]
32. Heft, H. Affordances and the body: An intentional analysis of Gibson’s ecological approach to visual perception. *J. Theory Soc. Behav.* **1989**, *19*, 1–30. [[CrossRef](#)]
33. Thompson, C.W. Activity, exercise and the planning and design of outdoor spaces. *J. Environ. Psychol.* **2013**, *34*, 79–96. [[CrossRef](#)]
34. Heft, H. *Affordances and the Perception of Landscape: An Inquiry into Environmental Perception and Aesthetics*; Taylor & Francis Publishing: London, UK; Routledge: Oxon, UK, 2010; pp. 9–32.
35. Vojnovic, I.; Jackson-Elmoore, C.; Holtrop, J.; Bruch, S. The renewed interest in urban form and public health: Promoting increased physical activity in Michigan. *Cities* **2006**, *23*, 1–17. [[CrossRef](#)]
36. Council, M.B.R. Planning Scheme Policy Residential Design 2015. Available online: [https://www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/psp/v3/residential\\_design.pdf](https://www.moretonbay.qld.gov.au/files/assets/public/services/building-development/mbrc-plan/psp/v3/residential_design.pdf) (accessed on 12 July 2019).
37. Flora, P.K.; Faulkner, G.E. Physical Activity: An Innovative Context for Intergenerational Programming. *J. Intergener. Relatsh.* **2007**, *4*, 63–74. [[CrossRef](#)]
38. Brown, W.J.; Burton, N.W.; Rowan, P.J. Updating the evidence on physical activity and health in women. *Am. J. Prev. Med.* **2007**, *33*, 404–411. [[CrossRef](#)]
39. Moore, R.C.; Cosco, N.G. *What Makes a Park Inclusive and Universally Designed?: A Multi-Method Approach*; Taylor & Francis: New York, NY, USA, 2007; pp. 105–130.

