Perceptions of child-nature relationships in Wellington City

Rebecca K. Rolfe and Taciano L. Milfont
Victoria University of Wellington
February 2014
Table of Contents

Executive Summary .................................................................................................................................................. 2
About the Survey .................................................................................................................................................. 3
Development ...................................................................................................................................................... 4
Respondents ......................................................................................................................................................... 4
Results ................................................................................................................................................................. 5
  Child-nature relationships ................................................................................................................................. 5
    The perceived impacts of less time outdoors ................................................................................................. 5
  Child-nature connection in the city ..................................................................................................................... 8
  Nature Deficit Disorder for Wellington Kids .................................................................................................... 8
  Environmental Attitudes and Connection to nature ......................................................................................... 10
Park use: Benefits and Barriers .......................................................................................................................... 11
  Time spent, places visited ................................................................................................................................. 11
  Activities .......................................................................................................................................................... 14
  Benefits ........................................................................................................................................................... 15
  Barriers ........................................................................................................................................................... 16
  Suggestions for improvements .......................................................................................................................... 17
Conclusions .......................................................................................................................................................... 18
References ........................................................................................................................................................... 19
Appendix ............................................................................................................................................................. 20
Cover photo credit: Caitlin Cherry, 2013.
Executive Summary

We conducted an online survey to gauge public attitudes on child-nature relationships, environmental attitudes, and use of parks and other green-spaces in Wellington. The survey included behavioural questions to gather information on the outdoor places Wellingtonians like to visit, the barriers that prevent residents from using these spaces and what perceived benefits people gain when they get outdoors. Alongside this we included questions to assess attitudes toward child-nature relationships and what role residents feel nature has in an urban-based childhood. A set of questions asked residents to comment on Nature Deficit Disorder (or NDD), a term coined by US author Richard Louv (2005) to describe the negative impacts isolation from nature may cause for our physical and mental health.

The final sample comprised 167 Wellingtonians, with age ranging from 20 to 76 years ($M = 38.25$, $SD = 11.38$) and most female (75.2%). Below we outline the main findings.

- Most respondents, whether parents or not, often spend time outdoors and believe that nature plays an important role in the health and wellbeing of children.
- Wellingtonians make use of the parks and reserves often, with most respondents visiting these spaces at least 2-3 times a month. When asked their favourite place to visit, the coastlines, waterfront and the botanic gardens came in as the top three choices.
- Many residents perceive large benefits from spending time outside, including a chance to exercise, socialise, relax and teach kids about nature. Alongside this, on average, most respondents did not report any large barriers to getting outdoors; the top two barriers to spending time in nature were time pressure and weather.
- Residents believe that children spend less time in nature now than in the past, with 77.8% of residents agreeing that alienation from nature could have negative effects on our children’s wellbeing.
- Both parents and non-parents appear to value the role of nature as important in children’s upbringing, despite urbanization and technology lessening our contact with the outdoors. Only around a quarter of the respondents were familiar with NDD; of those who knew the term 73.7% believed it could be a problem for Wellington children. In contrast 36.9% of the respondents who were unfamiliar with the term believed it could be problematic.
- When asked to describe the term, many respondents stated NDD referred to problems stemming from not getting outside enough or an inability to connect with nature leading to stunted development, showing that despite not knowing the term, many can guess at what it intends to describe.

The frequent use of outdoor spaces, and support for attitudes that promote the role of nature as necessary for healthy child development suggest that the surveyed Wellingtonians engage in behaviour and hold attitudes that lessen the chance of children not getting enough hands on nature experience, and offer protection from NDD.
About the Survey

Four decades ago biologist Edward Wilson (1984) hypothesised humans have a biologically rooted desire to interact with other forms of life: he named this tendency *biophilia*. This hypothesis assumes that we are born ‘biophilic beings’ with an intrinsic drive to interact with the natural world; and that the desire and ability to build a connection with nature are not only essential for, but a hallmark of good health (Moore & Marcos, 2005). In line with Wilson’s observations many people have expressed concern over the growing disconnection between humans and nature that occurs as the world’s population becomes more urban, raising fears that this may have a negative impact on our physical and mental health (e.g. Kellert, 2005; Louv, 2005).

A growing body of interdisciplinary research lends support to the biophilic hypothesis. To illustrate, research has found that exposure to nature helps to: moderate our stress levels, increase our attentional capacities and cognitive functioning (Bratman, Hamilton and Daily, 2012); decrease stress hormones and blood pressure (Bowler, Buyung-Ali, Knight & Pullin, 2010), as well as improving our mood, general health and wellbeing (Blaschke, 2013; Mass, Verheij, Groenewegen, de Vries, & Spreeuwenberg, 2006).

Children, especially the very young, depend on others to nurture their connection with nature. Parents and whanau, schools and early childhood centres, as well as planning and development institutions (e.g., council, government and private firms) all have a direct influence on the type of natural environment children have access to (Moore & Marcos, 2005). Urban planning, hectic schedules, modern technology and a cultural context that does not promote the link between nature and wellbeing are all cited as reasons individuals and families spend less and less time outdoors (Louv, 2005). Concern for the growing distance our modern lifestyles place between children and nature led US author Richard Louv to coin the term *Nature Deficit Disorder* (hereafter referred to as NDD) to generate more research and discussion into the potential problems isolation from nature may cause. He states that “NDD describes the human costs of alienation from nature among them: diminished use of the senses, attentional difficulties, and higher rates of physical and emotional illnesses” (Louv, 2005, p. 36).

So far there is little New Zealand based research into the role nature plays in our children’s development, but this is changing. For example, Yolanda van Heezik of the University of Otago has begun to explore these connections (Y. van Heezik, personal communication, January 13, 2014). Data gathered from interviews with children in three New Zealand cities (Auckland, Wellington and Dunedin) will shed light on how children are independently using nature spaces and what their understanding of nature is. This work will help us to understand New Zealand specific child-nature relationships, and how interaction with natural environments impacts on children’s understandings of the natural world. Another research initiative between AUT and the University of Otago is exploring the role of play in the school environment. This research picks up on one of the themes discussed by Richard Louv in his book *Last Child in the Woods*; that children nowadays are too restricted by rules and safe play equipment which could impact on the development of good risk assessment as well as impact negatively on physical health. Researchers are conducting longitudinal research with 8 schools (Dunedin and Auckland) that have decided to reduce restrictions on
kids play time, allowing them to climb trees and play bull rush alongside introducing items like old tyres and wood that kids can use for play; while results for this research are still forthcoming AUT professor of public health Grant Schofield believes that risk taking is essential for healthy brain development in children stating that “the great paradox of cotton-woolling children is it's more dangerous in the long-run." (quoted in Hall, 2014, par 16). Both these pieces of New Zealand research will provide insight into the role nature plays in our children’s development.

The present research contributes to this growing literature by investigating public attitudes on child-nature relationships and other issues. Children are often not able to access outdoor spaces by themselves and thus need parents and/or caregivers to take them outside to foster nature connection. For this reason the present research focuses on perceptions of child-nature relationships by Wellingtonians. Wellington as a city is unique. Its compact design includes plenty of green-space allowing resident’s access to walking tracks, beaches, playgrounds and fields without the need to travel great distances from their homes. We surveyed Wellingtonians to find out how they are using the outdoors, beliefs and attitudes about the role of nature in child development, and whether residents believe that NDD could be a problem for Wellington kids.

Development

The Wellington City Council and Victoria University of Wellington funded the development, distribution and analysis of the survey as part of a summer scholarship project. The survey was comprised of several sections, including demographic questions, previously established scales designed to measure participant’s environmental attitudes and connection with nature, and lifestyle questions on how residents are using the outdoors in Wellington and what may prevent them from doing so. To investigate whether NDD could be a reality for Wellington kids we asked a series of questions, including a newly developed scale designed to measure how people feel about the changing role of nature in modern society. The new NDD scale includes 21 belief statements to which respondents indicate their level of agreement/disagreement. These belief statements were based on Louv’s book, and reflect the themes this author identifies as disrupting the child-nature connection.

Respondent characteristics

The survey was launched online in mid-December 2013: Using snowballing technique a link to the survey was posted on social media sites, to parent groups and through email lists, asking potential participants to complete the survey and then forward the link to others. Responses were accepted until January 2014. This yielded 252 initial responses. After excluding incomplete surveys, and replies from those outside the Wellington region, we were left with 167 complete questionnaires to run our analyses.

While the distribution of the survey was targeted at parents with younger children, (126 respondents, or 75% of the sample did have children under 14), all residents were able to respond. To make the survey relevant for all those who answered, we created two versions of the survey, tailoring questions to parents of young children in one version, and excluding questions about children’s activities in parks for those who answered they had no
children, or children over 14. For most of the report data from each group was analysed together, however questions relating to only one type of respondents will be indicated by a star (*) throughout the report.

Our respondents ranged in age from 20 to 76, with an average age of 38.25 (SD = 11.38). Most of the sample was female (75.2%), compared to only 24.8% male. Regarding ethnicity, the majority of respondents identified themselves as Pākeha/NZ European (85.6%), followed by Māori (4.8%), Asian (6%), Pacific Nations (1.8%), and 13.2% of respondents identified as another ethnicity (e.g., European, British, South or North American). A total of 72.5% of the respondents were born in New Zealand, over half (54.5%) grew up in a large town or city (30,000+ population) and only 16% spent their childhood in a rural area. Most of the sample had completed a post-school qualification (73.7%). Regarding income, 30.9% of participants earned below $10,000 a year, 17.3% earned between $20,000 and $40,000, with 16.7% earning between $41,000 and $60,000. Finally, 24% of people identified as belonging to an environmental organisation.

Only 27 respondents indicated not having any access to green space on their property; 84% of people had a small lawn, backyard or other combination of section type (e.g., ‘Yard backs onto a bush reserve’ and ‘paved section, not small but no grass. Ample gardens.’). Most of the respondents (65.3%) grew their own fruit or vegetables.

Before proceeding it is important to highlight that this is a small sample and non-representative of the Wellington population. Moreover, the socio-demographic characteristics presented above suggest that respondents do have a more pro-environmental orientation (e.g., number affiliated to an environmental organisation, and proportion with edible gardening). The results presented and discussed below should be considered in light of these sampling limitations.

Results

Child-nature relationships.

One of the main aims of this project was to find out whether NDD is, or could be, a reality for Wellington children. We investigated this by asking residents a series of questions about their views on child-nature relationships; focusing on beliefs and attitudes toward the role of nature in children’s development and how this is changing over time. We also asked residents if they have heard of the term ‘Nature Deficit Disorder’, and whether they believe NDD could be a problem for Wellington children. This information along with data gathered on outdoor use helps the council to better understand how families are using the outdoors, and whether negative impacts from not getting enough outside time could be a reality for the city’s kids.

The perceived impacts of spending less time outdoors

Time spent outdoors is one area of interest for many studying the role nature plays in childhood development. Some hypothesise that children and adults nowadays spend much less time outdoors than in previous generations (e.g., Kellert, 2005). We asked a series of questions about time spent outdoors and potential impacts on wellbeing.
Figure 1 shows that our respondents believed that they themselves, as well as children in general, spent more time outside in the past compared to nowadays. We also asked residents to rank the time they spent outdoors compared to an acquaintance and the general public (on a five point Likert scale anchored by 1=Very little time to 5=A lot of time). We compared mean ratings of outdoor time using a repeated measures ANOVA and found that both parents with young children as well as other residents believe they spend more time outdoors compared to others (for parents: $F(1.8,194) = 35.08, p > .001$, partial eta-squared = .27; for other residents: $F(1.8,116) = 9.20, p > .001$, partial eta-squared = .14). The mean estimates for time spent by group for both sets of respondents are given in Figure 2.

![Perception of time spent outdoors](image)

**Figure 1.** Mean respondents estimates of time spent outdoors in nature for themselves and others, on a 4-point Likert scale (1=No time at all, 2=Not much time, 3=Some time, 4=A lot of time).
Figure 2. Mean respondents estimates of time spent outdoors for themselves, an acquaintance and average Wellingtonian, on a 5-point Likert scale (1=Very little time to 5= A lot of time). Both groups believe they spend more time outdoors than their peers and other residents.

In conjunction with these questions we asked participants if they believed that spending less time outdoors could be having a negative impact on children’s wellbeing. Figure 3 depicts participants opinion on the changing child-nature relationships, showing that over three quarters (77.8%) of residents either agree or strongly agree that kids are becoming alienated from nature, with potential negative effects.

Figure 3. We asked respondents to indicate the degree to which they agreed or disagreed with the following statement: ‘Some people believe that children today are becoming alienated from nature and that this is impacting negatively on their health and wellbeing.’ Respondents answered on a 5-point Likert scale ranging from strongly disagree to strongly agree. The graph shows distribution of opinions expressed as a percentage.
**Child-nature connection in the city**

To find out how residents view child-nature relationships we designed a scale to measure attitudes toward the role of nature in child development. The scale contained 21 belief statements (e.g., ‘Now that most people live in cities, it is less important for children to feel connected with nature’, ‘Engaging with nature can teach us important lessons’, and ‘Parents wrap their kids in cotton wool these days, and as a result kids spend less time outdoors’). Participants were asked to indicate the degree to which they agree or disagree with each statement on a 5-point Likert scale (ranging from 1=strongly disagree to 5=strongly agree).

The scale was designed using themes from the book by Richard Louv (2005). Appendix A presents all items used and the average of participant’s responses to each item. The scale contained positively and negatively worded statements that measure similar concepts. For the purposes of analysis we reverse coded relevant items and averaged over all items so that the score indicate attitudes that, according to Louv (2005), work to increase the likelihood of NDD by diminishing the importance of nature in our lives and alienating kids from experiencing the outdoors.

Our results show that both groups score highly on the NDD scale indicating attitudes that give nature an important role in child development. To confirm that both our groups differed significantly from the mid-point of our scale 3 (anchored by ‘unsure’) and tended toward a pro nature orientation, we used one sample t-tests: Both group do sit significantly above the scale mean, with parents of young children scoring $t(102) = 30.15, p < .001 \ (M = 4.05, SD = .35)$ and those with no kids or older children $t(61) = 18.60, p < .001 \ (M = 3.86, SD = .36)$. This suggests that the residents who participated in our survey have attitudes that, if translated into behaviour, work to protect our children from the negative effects that may come from not building a relationship with nature.

**Nature Deficit Disorder in Wellington?**

The term ‘Nature Deficit Disorder’ is increasingly being used in the media as a way to create discussion around the potential costs humans, especially children, may be incurring as we urbanise our lives. To investigate local opinion of this issue we asked whether residents were familiar with the term, and whether they thought it could be a problem for Wellington kids. Just under a quarter of the sample who answered this question ($n = 149$) were familiar with the term, however 46.3% of people believed that NDD could be a problem for Wellington kids, while 53.7% believed it would not be. Table 1 presents the responses by splitting participants into groups depending on whether they had heard of NDD; from this we can see a higher proportion of residents familiar with NDD believed it could be problematic for Wellington children.
Table 1. Percentage of participants who have heard the term NDD, and of this, the percentage indicating NDD could be a problem for Wellington kids based on participant’s previous knowledge of the term.

<table>
<thead>
<tr>
<th>Have you heard of NDD?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>23.6%</td>
<td>76.4%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you think NDD could be a problem for Wellington kids?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>73.7%</td>
<td>26.3%</td>
</tr>
</tbody>
</table>

Participant’s descriptions of NDD

In addition, we asked participants tell us what they knew about NDD, or if they didn’t know the term, to have guess at what it may mean. Some of the participant descriptions of NDD are included below.

‘A condition whereby children are not accustomed to spending time outside and may be more cossetted and reliant on their parents and ‘things”

‘People becoming disassociated with the natural world through not spending enough time just being outside and immersed in the weather, hearing the sounds of nature and being a part of the natural world.’

‘Lack of outdoor activity’

‘Children are becoming disconnected with nature resulting in a range of problems concerning identity, health and wellbeing.’

‘The lack of contact with our wider ecology results in the stunted development of children - emotional, physical, and cognitive.’

‘I presume it means kids suffering from numerous psychological issues from that lack of interacting with their natural environment.’

‘Not really thinking about nature as a place to spend time over other more indoor things. Perhaps a lack of a sense of freedom or self-reliance. Perhaps a mild fear of all the stuff ‘out there’?’

‘Health issues arising from too much time indoors?’

‘Not enough time outdoors in natural environment. Too much indoors / screen time particularly.’

‘Behavioural problems stemming from not enough time in the quiet of nature.’

‘Being unconnected from the ability to free play outside/spending time outside and thus relying on external object/equipment to stimulate/occupy yourself. Also possibly feeling unconnected from nature and thus not seeing its relevance to yourself.’

‘Pathologising kids who like to be indoors.’

‘Lack of connection with and understanding for nature as part of our lives.’

‘Not accessing nature frequently enough which is having negative impact on mental health.’
Environmental Attitudes and Connection to Nature

In order to measure more broadly the respondent’s feelings and attitudes towards the natural environment we incorporated two well established scales within our survey. The New Environmental Paradigm scale (NEP; Dunlap, Van Liere, Mertig & Jones, 2000) contains 15 items designed to measure attitudes towards humans relationship to nature and the use of natural resources (e.g., ‘Humans have the right to modify the natural environment to suit their needs’ and ‘The balance of nature is very delicate and easily upset’). The Connectedness to Nature Scale (CNS; Mayer & Frantz, 2004) consists of 14 items designed to measure an individual’s emotional/personal connection to the natural world rather than tapping cognitive beliefs as the NEP scale does. Examples of items include: ‘I often feel a sense of oneness with the natural world around me’ and ‘Like a tree can be part of a forest, I feel embedded within the natural world’. Both scales ask respondent’s to indicate their opinion of each statement using a 5-point Likert scale from strongly agree to strongly disagree. Scores can range from 1 to 5 with higher mean scores indicating an ecological outlook and a stronger affective connection to nature.

Table 2 presents the descriptive statistics for each scale as well as their correlations. Mean scores for both the NEP and CNS scale and the newly designed NDD scale sit above the midpoint of the scale (3) suggesting our sample have a ‘greener’ pro-nature orientation. To confirm this we ran t-tests for the NEP scale scores \( t(156) = 21.29, p < .001 \) (\( M = 3.88, SD = .52 \)) and the CNS scores \( t(158) = 15.38, p < .001 \) (\( M = 3.74, SD = .60 \)). The results for the NDD scale confirming the pro nature orientation are found in the previous section. Results also indicate a strong relationship between the scales, suggesting that individuals who feel connected to nature also hold pro-environmental attitudes and feel that it is important for kids to build a personal connection with nature for healthy development.

### Table 2. Descriptive statistics and correlations between measures. All three means sit above the scale midpoint (3) indicating higher than average attitudes regarding NDD, affective connection to nature and endorsement of an ecological worldview. The correlations demonstrate a strong positive relationship between the measures.

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Cronbach’s alpha</th>
<th>M</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 NDD</td>
<td>165</td>
<td>.728/.715</td>
<td>3.97</td>
<td>.36</td>
<td>.409*</td>
<td>.368*</td>
<td></td>
</tr>
<tr>
<td>2 NEP</td>
<td>157</td>
<td>.838</td>
<td>3.88</td>
<td>.52</td>
<td>.409*</td>
<td>-</td>
<td>.476*</td>
</tr>
<tr>
<td>3 CNS</td>
<td>159</td>
<td>.866</td>
<td>3.74</td>
<td>.60</td>
<td>.368*</td>
<td>.476*</td>
<td></td>
</tr>
</tbody>
</table>

Note. NDD=Nature Deficit Disorder. NEP=New Environmental Paradigm. CNS= Connectedness to Nature Scale. * Correlations statistically significant at the 0.01 level. The two numbers given under Cronbach’s alpha refer to the reliability of the NDD scale for parents with young children, and those with no kids or older children respectively.
Park use: Benefits and Barriers.

Time spent and places visited

Local parks

Most (98% $n = 163$) of the respondents sampled knew of a park within walking distance of their house. While local parks are a popular place to visit, park use varied between the survey groups: 39.8% of the parents ($n = 103$) with kids under 14 visited their local park at least once a week, with 34% visiting this park 2-3 times a month, and only 26.2% visiting the park once a month or less. Overall, non-parents, or those without younger children ($n = 60$), use their local park less compared to parents: 40% of these respondents used their local park once a month or less. However, 41.7% still reported using it at least once a week, with another 18.3% using the local park 2-3 times a month.

Outdoors in the city

We also asked residents to indicate how often they visited other outdoor spaces in the city: 68% of the parents ($n = 103$) with young children visited other outdoor spaces in the city at least once a week, with a further 23.3% visiting this type of space 2-3 times a month, and 8.7% visiting outdoor spaces once a month or less. Non-parents, or those with older children ($n = 62$), also enjoy getting out and about: 59.7% of these residents use the outdoor city spaces on a weekly basis, with a further 24.2% visiting 2-3 times a month, again only a small percent (16.1) used the parks and reserves once a month or less. These findings suggest that Wellingtonians, whether they have young children or not, enjoy getting outdoors. Figure 4 provides these results in graph format.

![Frequency of outdoor use](image)

**Figure 4.** Percent of respondents using Wellington parks and reserves. Other = Respondents with no children or with children over 14.
Favourite places

We asked respondents which of the outdoor spaces in the city was their favourite place to visit; the town belt, beaches and the waterfront stood out as favourites (n=173). The blue spaces, including the waterfront and coastline in the city appear to be the most highly valued by Wellingtonians (see Figure 5). Many of the parents who responded listed the coastlines with playground facilities as their favourite spots (e.g., Lyall bay and Shorland Park in Island bay), indicating the combination of beach and play areas together are a great place for the family to visit.

Figure 5. Respondents (n = 173) favourite outdoor places to visit in Wellington.
Outdoor spaces most recently visited

We asked respondents to list the last place they visited within the city. Many of the responses were of local parks, beaches and playgrounds which we broke into several broad categories, play grounds, beaches and walking tracks were the 3 top last visited places. Of the playgrounds category; Shorland park, the play area at Central park and Ben Burn park stood out as top spots. The most commonly frequented beach was Lyall bay, followed by Island bay. The Skyline walk, Otari/Wiltons bush and Polhill Reserve tracks were the most popular spots to take walks. As with the favourite spaces question, the beach and coastlines are favoured places to visit, although this must be viewed in light of the survey taking place over summer; top spots information gathered at other times of the year may show a different picture, with the beaches becoming less popular. See Figure 6 for a graphical representation of the results.

Figure 6. Respondents (n = 173) last visited outdoor space in the city.
**Activities in the outdoors**

We asked respondents to rate the frequency of activities they liked to engage in while outside. To improve relevance, some of the questions were excluded from the version of the survey we used for non-parents and parents with older kids, these are marked with a star (*) in the figure below. Due to the exclusion of some questions from our entire sample, the number of respondents who answered each question varied from 86 to 157. As seen in Figure 7, parents with young children are often making time for their kids to be outside, playing either at a playground or in an unstructured way. Walking, tramping or going to the beach are popular activities for our respondents, while fewer people indicated pursuing organised sports, cycling or fishing.

![Figure 7](image.png)

**Figure 7.** Mean respondent’s estimate of time spent outdoors pursuing each activity, on a 4-point Likert scale (1=Never, 2=Rarely, 3=Sometimes, 4=Often). Questions marked with an (*) were not asked for respondents with no children or with children over 14.
Perceived benefits from getting outdoors

We wanted to investigate how residents perceive the benefits that come from being outdoors. Given a list of statements, we asked participants to rate on a 5 point Likert scale their opinion on how beneficial they thought each activity would be (from 1=strongly disagree this would be beneficial to 5=strongly agree this is beneficial). The results are graphed in Figure 8 below and indicate high levels of perceived benefits from all the activities listed.

![Figure 8. Mean respondent’s estimate of the perceived benefits stemming from outdoors use (Likert scale anchored by 1=Strongly disagree this is beneficial to 5=Strongly agree this is beneficial)](image)

We also included a space for residents to add any other potential benefits they could think of that stem from being outside in nature. 38% of the respondents gave us feedback on the benefits they perceive come from getting outside, yielding 63 open ended responses in total; below are some of these statements.

‘My kids can develop friendships with other positive-minded young people.’

‘Getting over cabin fever and dealing to the tantrums that come from too much time inside concentrating on books or electronic games or making stuff. When our son gets frustrated by something and tears threaten, we take him out for a walk and that always changes his mood completely. If he stays inside, the bad mood tends to go on and on, spoiling all that gets in its way.’

‘Lots of learning opportunities. Great questions come up.’

‘Family togetherness.’

‘More time interacting as a family than when we are inside. We get to see different parts of Wellington by visiting different parks.’
‘It’s fun to play outdoors and I think it’s good for our mental health. We’d go nuts staying in our little house all the time.’

**Barriers to use**

While many of our sample appear to be getting outside on a regular basis, we gave participants a list of barriers to getting out and about, asking them to rank on a five point scale how much of a barrier they considered each of the items below. We used a 5-point Likert scale from 1: Large barrier 3: Somewhat, 5: Not a barrier. Again some questions that were irrelevant to participants without young children were excluded from their questionnaire, these are marked with an (*).

The two barriers that ranked highest for participants were time and weather, however the mean for each of these sit only just above 3. As the scale had 3 as the midpoint representing ‘somewhat a barrier’ this suggests that most participants do not encounter too many large barriers to outdoor use. To confirm this, a one-sample *t*-test was run for these two variables: weather *t*(161) = .836, *p* = .40 (*M* = 3.09, *SD* = 1.32) and; time *t*(161) = .532, *p* = .60 (*M* = 3.06, *SD* = 1.33). Neither of these tests were significant, confirming that on average all the listed barriers were only perceived as a small barrier to outdoor use for themselves and/or their families. A space was given for respondents to record any other barriers they came up against when trying to get outside. A selection of responses are given below.

**Participant barriers to use**
‘Mostly time. Too much time doing organised activities. However many of these are outdoors such as sport. Sometimes now the kids are older it is harder to get them interested in going out.’

‘Long working days and Wellington wind/weather.’

‘Co-ordinating 3 kids and different activities makes it harder to everyone in one place - have been wanting to do Butterfly Creek for about 10 years…….’

‘Lack of money, cycling injuries, work commitments, family administrative commitments.’

**Suggested improvements**

We gave residents the opportunity to give us feedback on what they would like to see more of in the city’s parks, beaches and reserves, providing a checklist of options they could select. These options along with frequency with which they were selected are displayed in Table 3 below. We also provided space for participants to give open ended feedback for improvements and suggestions. A total of 57 or 34.1% of respondents chose to comment on ways they thought outdoors spaces could be improved, some of which are listed below the table.

**Table 3.** We asked participants what they would like to see more of in the city’s parks and reserves this table give the percent of people who wished to see more of each variable.

<table>
<thead>
<tr>
<th>Suggestions for improvement of outdoor spaces</th>
<th>Frequency</th>
<th>% of sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>More natural areas where kids can play safely</td>
<td>97</td>
<td>58.1</td>
</tr>
<tr>
<td>More seating and picnic areas</td>
<td>76</td>
<td>45.5</td>
</tr>
<tr>
<td>More playgrounds</td>
<td>50</td>
<td>29</td>
</tr>
<tr>
<td>More established gardens</td>
<td>41</td>
<td>24.6</td>
</tr>
<tr>
<td>Parks further removed from traffic hazards</td>
<td>41</td>
<td>24.6</td>
</tr>
<tr>
<td>More indoor play areas</td>
<td>29</td>
<td>17.4</td>
</tr>
<tr>
<td>Other</td>
<td>57</td>
<td>34.1</td>
</tr>
</tbody>
</table>

**Respondent’s suggestions for improvement**

People who indicated they had other suggestions for improvement were encouraged to give us their suggestions, below are some of the responses.

‘Low-gradient, easy/safe tracks’

‘Quality interpretation’

‘Toilets & taps for water bottles to be filled’

‘Sculptures as part of play areas, the one in front of the Dowse in Lower Hutt is a good example - it’s a seat and a sculpture and kids love to walk/run along inside it’

‘Better sheltered areas.’ – ‘Shelter from wind and rain but not enclosed spaces’
‘More fenced play areas and more areas with bush for kids to explore within these fenced areas, maybe with little tracks for them to follow. Think bush walk but downsized.’

‘Toilets! Every playground should have at least one toilet, especially playgrounds aimed for younger kids. At least one free indoor or wet weather space would be a huge boon to Welly.’

‘Water play areas for summer.’

‘Wilder parks - less structures’

‘Urban agriculture and associated learning areas.’

‘Every suburb should have a local area being restored so that it brings back a natural space that consists of indigenous vegetation. Such an activity draws the locals together and fosters a sense of community and the children learn about our own NZ flora and fauna.’

Conclusions

Wellington City council wishes to better understand the way families use the parks and reserves in the city, and also whether residents feel that NDD could be a problem for our younger residents. To investigate this, a survey was created to gauge opinions on child-nature relationships alongside resident’s use of the outdoors spaces Wellington city has to offer.

Our respondents believe that kids nowadays spend less time outdoors, expressing concern that alienation from nature could be having a negative impact on our children’s health. However, the residents surveyed display attitudes that place importance on the role of hands on nature experience in childhood, believing this to be important for children’s development. Our survey sample also uses the outdoors often: taken together these attitudes and behaviours suggest that the residents who participated in the survey believe outdoor experience is important for health and wellbeing, and seek ways to interact with nature within the urban environment. No large barriers to outdoors use are encountered by our respondents, alongside this, residents report high levels of perceived benefits stemming from time outdoors. Many people visit the city’s parks, beaches and reserves on a weekly basis, with most residents, whether they had young kids or not, visiting these places monthly. Overall, our research indicates that the residents surveyed use the outdoor spaces in the city frequently and hold pro-environmental attitudes that promote the role of nature as necessary for healthy child development. However, before generalising these results to the population of the city, the non-representative nature of the sample needs to be taken into account. The survey was distributed online making it possible that people who feel an affinity for nature chose to respond to the survey as the topic interests them, while other residents may have passed over the invitation to share their views. The results and conclusions of the study must be viewed with this limitation in mind.

The unique geography of Wellington, alongside the foresight of planners to set aside green belts within the city provide many green spaces for residents to enjoy the outdoors. The high use and value that the surveyed residents place on these natural areas indicate that the
city’s children have ample opportunity to interact and build a connection with the natural world—and offer protection from NDD.

References


Appendix A

<table>
<thead>
<tr>
<th>Items for child-nature scale</th>
<th>n</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 I feel a responsibility to build a connection between my child and nature. *</td>
<td>112</td>
<td>4.64</td>
<td>0.67</td>
</tr>
<tr>
<td>OR I think parents should feel a responsibility to build a connection between their child and nature.</td>
<td>45</td>
<td>4.36</td>
<td>0.83</td>
</tr>
<tr>
<td>2 Now that most people live in cities, it is less important for children to feel connected to nature.</td>
<td>112</td>
<td>1.45</td>
<td>0.92</td>
</tr>
<tr>
<td>OR I think parents should feel a responsibility to build a connection between their child and nature.</td>
<td>45</td>
<td>1.98</td>
<td>1.25</td>
</tr>
<tr>
<td>3 I prioritise spending time in nature with my kids. *</td>
<td>112</td>
<td>3.93</td>
<td>0.92</td>
</tr>
<tr>
<td>OR I think parents should prioritise spending time in nature with their kids.</td>
<td>45</td>
<td>4.27</td>
<td>1.01</td>
</tr>
<tr>
<td>4 Children these days are growing up with less exposure to nature, but I don’t think this is a problem.</td>
<td>112</td>
<td>1.71</td>
<td>0.82</td>
</tr>
<tr>
<td>OR I think parents should prioritise spending time in nature with their kids.</td>
<td>45</td>
<td>1.64</td>
<td>0.74</td>
</tr>
<tr>
<td>5 It is important to me to teach my children about the simple pleasures of nature, like watching the clouds go by. *</td>
<td>112</td>
<td>4.65</td>
<td>0.63</td>
</tr>
<tr>
<td>OR I think it is important for parents to teach their children about the simple pleasures of nature, like watching the clouds go by.</td>
<td>45</td>
<td>4.51</td>
<td>0.82</td>
</tr>
<tr>
<td>6 In the modern world, the opportunities offered by city life probably outweigh any potential benefits of bonding with nature.</td>
<td>112</td>
<td>1.95</td>
<td>0.89</td>
</tr>
<tr>
<td>OR I think it is important for parents to teach their children about the simple pleasures of nature, like watching the clouds go by.</td>
<td>45</td>
<td>2.07</td>
<td>1.14</td>
</tr>
<tr>
<td>7 In modern society, it is more important for children to learn to engage with technology than the natural world.</td>
<td>112</td>
<td>1.85</td>
<td>0.95</td>
</tr>
<tr>
<td>OR I think it is important for parents to teach their children about the simple pleasures of nature, like watching the clouds go by.</td>
<td>45</td>
<td>2.2</td>
<td>1.01</td>
</tr>
<tr>
<td>8 Engaging with nature can teach us important lessons.</td>
<td>112</td>
<td>4.73</td>
<td>0.47</td>
</tr>
<tr>
<td>OR I think it is important for parents to teach their children about the simple pleasures of nature, like watching the clouds go by.</td>
<td>45</td>
<td>4.6</td>
<td>0.75</td>
</tr>
<tr>
<td>9 Nowadays, extra-curricular activities are more important for children than spending time playing outdoors.</td>
<td>112</td>
<td>2.01</td>
<td>0.94</td>
</tr>
<tr>
<td>OR I think it is important for parents to teach their children about the simple pleasures of nature, like watching the clouds go by.</td>
<td>45</td>
<td>2.64</td>
<td>1.13</td>
</tr>
<tr>
<td>10 I notice that nature has a more calming effect on my child compared to watching TV. *</td>
<td>112</td>
<td>3.97</td>
<td>1.05</td>
</tr>
<tr>
<td>OR I believe that nature has a more calming effect on children compared to watching TV.</td>
<td>45</td>
<td>4.38</td>
<td>1.01</td>
</tr>
<tr>
<td>11 Children can learn a lot of what they need to know about nature from watching documentaries and the internet.</td>
<td>112</td>
<td>2.19</td>
<td>1.17</td>
</tr>
<tr>
<td>OR I believe that children can learn a lot of what they need to know about nature from watching documentaries and the internet.</td>
<td>45</td>
<td>2.33</td>
<td>1.09</td>
</tr>
<tr>
<td>12 It is easier to get my kids to engage with digital technology than it is to persuade them to play outside in nature. *</td>
<td>112</td>
<td>2.89</td>
<td>1.33</td>
</tr>
<tr>
<td>OR I think it is easier to get kids to engage with digital technology than it is to persuade them to play outside in nature.</td>
<td>45</td>
<td>3.42</td>
<td>1.08</td>
</tr>
<tr>
<td>13 Technology isn’t everything – there is still so much to learn from nature.</td>
<td>112</td>
<td>4.7</td>
<td>0.57</td>
</tr>
<tr>
<td>OR I believe that technology isn’t everything – there is still so much to learn from nature.</td>
<td>45</td>
<td>4.49</td>
<td>0.84</td>
</tr>
<tr>
<td>14 Nature engages our senses in a special way; I believe this is important for children’s development.</td>
<td>112</td>
<td>4.72</td>
<td>0.57</td>
</tr>
<tr>
<td>OR I believe that nature engages our senses in a special way; I believe this is important for children’s development.</td>
<td>45</td>
<td>4.58</td>
<td>0.84</td>
</tr>
<tr>
<td>15 Parents wrap their kids in cotton wool these days, and as a result kids spend less time playing in nature.</td>
<td>112</td>
<td>3.82</td>
<td>1.01</td>
</tr>
<tr>
<td>OR I believe that parents wrap their kids in cotton wool these days, and as a result kids spend less time playing in nature.</td>
<td>45</td>
<td>3.84</td>
<td>0.98</td>
</tr>
<tr>
<td>16 Health and safety restrictions on outdoor use have gone too far, and as a result kids tend to spend less time in nature.</td>
<td>112</td>
<td>3.35</td>
<td>1.03</td>
</tr>
<tr>
<td>OR I believe that health and safety restrictions on outdoor use have gone too far, and as a result kids tend to spend less time in nature.</td>
<td>45</td>
<td>3.56</td>
<td>0.99</td>
</tr>
<tr>
<td>17 I support current health and safety regulations changing the use of outdoor spaces by children.</td>
<td>112</td>
<td>2.85</td>
<td>0.84</td>
</tr>
<tr>
<td>OR I believe that current health and safety regulations changing the use of outdoor spaces by children.</td>
<td>45</td>
<td>2.73</td>
<td>0.84</td>
</tr>
<tr>
<td>18 Although restricting time in nature, health and safety restrictions keep our kids safe.</td>
<td>112</td>
<td>2.65</td>
<td>1.00</td>
</tr>
<tr>
<td>OR I support current health and safety regulations changing the use of outdoor spaces by children.</td>
<td>45</td>
<td>2.71</td>
<td>1.30</td>
</tr>
<tr>
<td>19 I feel safer when my kids play inside – there are more ways to get hurt outdoors in nature.</td>
<td>112</td>
<td>1.76</td>
<td>0.83</td>
</tr>
<tr>
<td>OR I support current health and safety regulations changing the use of outdoor spaces by children.</td>
<td>45</td>
<td>3.11</td>
<td>1.07</td>
</tr>
<tr>
<td>20 Getting hurt playing outdoors is a part of growing up.</td>
<td>112</td>
<td>4.31</td>
<td>0.78</td>
</tr>
<tr>
<td>OR I believe that getting hurt playing outdoors is a part of growing up.</td>
<td>45</td>
<td>4.53</td>
<td>0.79</td>
</tr>
<tr>
<td>21 I would love to let my children play unsupervised in outdoor nature spaces, but I don’t think it is safe anymore. *</td>
<td>112</td>
<td>2.84</td>
<td>1.15</td>
</tr>
<tr>
<td>OR I believe parents would love to let their children play unsupervised in outdoor nature spaces, but may not think it is safe anymore.</td>
<td>45</td>
<td>3.8</td>
<td>0.79</td>
</tr>
</tbody>
</table>

Participants were asked to rank their opinion of each statement ranging from 1: strongly disagree, 2: disagree, 3: unsure, 4: agree, 5: strongly agree. These are the raw scores, for analysis of mean scale scores we reverse coded items 2,4,6,7,8,11,12,17,18,19 & 21. Items marked with a star (*) were asked only of parents with young children, the statement listed below the starred item was asked if respondent indicated they had children older than 14 or no children.