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## SUPPORTING CHILD AND FAMILY WELLBEING THROUGH NATURE DURING THE PANDEMIC

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**Abstract:** The global pandemic of COVID-19 poses many unprecedented challenges on our way of life. Since the introduction of social distancing measures as one of our biggest weapons in slowing the spread of disease and mitigating the effects on the health services, other challenges have been introduced. One of these is the challenge of supporting and maintaining wellbeing in children and families. A way to achieve this is through maintaining our contact and connection with the non-human natural world. Regular contact with the natural world has been found to have benefits for our mental and physical health. The aim of this paper is to identify how families can gain the benefits of nature engagement, in the instances where the access might be limited or non-existent. Whilst we are able to identify a number of opportunities and mechanisms for nature contact and connection to promoting family wellbeing there are some methodological challenges remaining, given that a significant number of research papers exploring the affective influence of nature contact and connection focuses on adults. We also identify areas where research would be beneficial to better understand the mediating influences on wellbeing from nature contact and connection.

**Keywords:** Children, COVID-19, Family, Nature, Social distancing, Wellbeing

### INTRODUCTION

Severe Acute Respiratory Syndrome - Coronavirus - 2 (SARS-COV-2) is a highly infectious, pathogenic disease that is rapidly spread through airborne transmission and close contact, with viral particles exhibiting stability on untreated surfaces (Hu et al., 2020; van Doremalen et al.,

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2020; World Health Organisation, 2020a). With the evidence of asymptomatic carriers and so called “super-spreaders” (Al-Tawfig & Rogriguez-Morales, 2020; Liu, Eggo, & Kucharski, 2020; Lu et al., 2020), the virus has spread through human populations with the World Health Organisation (WHO) declaring Coronavirus Disease 2019 (COVID-19) a pandemic on March 11th, 2020. The WHO (2020b) additionally provided guidance that personal hygiene, avoiding crowded places and maintaining a distance of at least one metre as simple precautions to prevent the spread, with widespread adoption.

The response by many countries across the world, in order to slow the spread of the virus, has come in various permutations of social distancing. Banning travel, closing non-essential businesses, restricting public interaction, and cancelling large events has been enacted by several countries. In most of Europe and the US these restrictions included conditions of ‘lockdown’ where people were encouraged to stay indoors, self-isolate in several instances, and curtail all non-essential activity (Deutsche Welle, 2020). In most countries part of the response has been the closing of schools. This has had a profound impact on daily routines, posing a risk to mental health across the population (Pfefferbaum & North, 2020). Children and adolescents are at risk too (Loades, 2020). Contact and connection to nature could present a possible solution to maintaining wellbeing and supporting mental health. This perspective article aims to draw upon the current state of the environmental psychology literature to identify ways to access benefits from exposure to the natural world and maintaining a meaningful relationship with it, taking into account current and changing limitations on social contact, and access to public green spaces.

### ***COVID-19 measures and family wellbeing***

During the COVID-19 pandemic measures taken by governments typically restrict movement and impose social distancing, at variant levels, in cases for indefinite periods. Effects of these measures and conditions are documented at different levels, including the psychological and the social. How these effects are manifested change as a function of age, vulnerability, experience, existing mental health and many other such variables (Pfefferbaum & North, 2020). In this instance we focus on the effects of the pandemic on family and child wellbeing, and later present ways to mitigate this effect.

We recognise the challenge of defining wellbeing (Dodge et al., 2012), however we will employ the World Health Organisation’s definition of health: “a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity” (WHO, 2000, p. 1). In addition, we will primarily be following the focus of most previous research cited within this article, which is the hedonic aspect of wellbeing.

Children of ages above 2-3 years have been called to sustain the objective disruptions in their daily schedules including school attendance, interacting with regular care givers such as grandparents, interacting with peers outside school, as well as all the loss of a host of “educational opportunities, recreations, freedoms and supports” (see Holmes et al., 2020, p. 5). The closure of schools and the possible social isolation and loneliness that may accompany it can have a marked effect on children’s mental health outcomes (Loades, 2020).

Importantly, children have a tendency to absorb and attune to adults’ states, which in the case of the pandemic likely includes anxiety, stress, depression, negative feelings and concerns about finances following the pandemic (Dalton, Rapa, & Stein, 2020). In some unfortunate cases children face the loss of loved ones, or separation from parents (see, for example, Liu et al., 2020); in other cases, they face collateral negative consequences such as episodes of domestic violence typically associated with home confinement (End Violence Against Children, 2020). Opportunities for face-to-face support or other forms of interventions are either not available or not appropriate, given the circumstances. Therefore, the question now stands as to how to support children’s mental health and wellbeing at this period, and how to promote healthy adaptation to this new reality.

### ***The role of nature contact in enhancing wellbeing***

As stated previously, whilst we are focusing on the hedonic qualities of nature contact and connection, we also need to identify how we are framing the literature in the materialism of their impacts. It is important to highlight the engagement (Berleant, 2013) and arousal (Carroll, 1993) perspectives of environmental aesthetics, focusing on when the sensory presence of natural spaces, materials and/or qualities in turn elicit emotional responses from the participants (Neill & Arbuthnott, 2019). Additionally, this provides an important context for recognising the subjective nature of aesthetic appreciation, meaning that not all the natural properties need to be present to then elicit the responses for individuals.

Nature contact and nature connection offer two research-based pathways to improved wellbeing and mental health. Nature contact, namely spending time in natural environments, has been found to have physical and psychological benefits, both in the short and long term. A recent review of previous research suggests that as little as ten minutes in a natural environment, such as an urban park, is enough to have a measurable impact on participants’ mental health (Meredith et al., 2020). The review looked at extensive evidence from Japan (e.g., Lee et al., 2011; Park et al., 2008) where the term *Shinrin-yoku* or forest bathing was coined in 1982 by the Ministry of Agriculture, Forestry, and Fisheries to describe the popular leisure time activity of being immersed in the atmosphere of the forest (Park et al., 2010).

Research on forest bathing has consistently evidenced marked changes in physiological arousal states, with a distinct relaxation effect noted, as well as improvement of various mental health conditions, including depression and anxiety (Kotera, Richardson, & Sheffield, 2020). In other studies, physiological measures included a variety of biomarkers, such as heart rate, salivary cortisol, blood pressure and heart rate variability (e.g., Park et al., 2007; Park et al., 2010) as well as subjective measures of relaxation measured by self-report (Takayama et al., 2014). Research in other countries has found similar effects, both directly physiological, as well as an impact on the subjective experience of participants (Beil & Hanes, 2013; Hunter, Gillespie, & Chen, 2019). Affective states also tend to improve during and after contact with natural spaces, and positive emotions increase (Bratman et al., 2015; Mayer et al., 2009).

Research on children has been less frequent, yet studies that have been conducted with this age group also support the restorative effects of direct contact with nature (Bagot, Allen, & Toukhsati, 2015; Taylor, Kuo, & Salivan, 2001; Touloumakos & Barrable, 2020) and affective benefits (Collado, Staats, & Corraliza, 2013). It is reasonable to conclude that nature contact has a measurable impact on our physical and psychological wellbeing.

Nature connection goes beyond simply contact and describes a positive human-nature relationship. It broadly refers to the extent to which a person considers themselves to be part of nature (Schultz, 2002). It is often seen as a multidimensional construct, with affective, cognitive and behavioural dimensions (Nisbet, Zelenski, & Murphy, 2009). Although it is often seen as a trait (Nisbet et al., 2009) there is also evidence to suggest that it is a state and it can be actively nurtured (Mayer et al., 2009). In fact, there are several studies that show changes in the state levels of nature connection in participants who undertake certain activities (e.g., Passmore & Holder, 2017; Richardson et al., 2016b). Although many of these studies have mainly looked at adults, there have also been those that look at enhancing nature connection in children (Barrable & Booth, 2020a).

Feeling connected to the natural world has consistently been found to have positive associations with wellbeing in people of all ages (Howell et al., 2011; Mayer & Frantz, 2004; Nisbet & Zelenski, 2013; Capaldi et al., 2014; RSPB, 2015; Zelenski & Nisbet, 2014). In children, in particular, nature connection is positively associated with life satisfaction (Richardson et al., 2016b). A significant influence on children's connection to the natural world has been found to be parental nature connection (Barrable & Booth, 2020b; Passmore et al., 2020) and the value that the natural world is given within the family (Cheng & Monroe, 2012). It is, therefore, important to approach the challenge of supporting nature connection with the family as the unit of analysis, rather than just the child.

### ***Access to nature during the COVID-19 pandemic***

In the current situation, and as physical distancing has been deemed necessary in order to slow the spread of the disease, access to nature has been found to be heterogeneous depending on proximity, quality and quantity of green spaces. Datasets and their associated tools such as the CORINE Land Cover database (Bossard et al., 2000), the EnviroAtlas (Pickard et al., 2015), Urban Atlas (EEA, 2010) and Urban green infrastructure (EEA, 2017) show general overall trends of access, quality and quantity increasing with distance from centre of urban area. In Europe, cities can be clustered into types with these ranging from green-grey sealed and hotspot cities, which have low shares in green infrastructure and low proportion of green areas, through to forest and natural blue cities, which have high proportion, access and share of natural spaces (EEA, 2017). Temporal anonymous data published by Google (Google, 2020) likewise indicate key changes in the behaviour of phone users who provide location data, and stark differences between countries and states. A reduction in visits to food providers and pharmacies, workplaces, transit stations and retail and recreation has been observed in many countries, and it is conspicuous that visits to parks, gardens and marinas are heterogenous. At one extreme, countries like Italy, Spain and the United Kingdom have a trend of increased residential visits, with reduced visits to nature spaces since lockdown. On the opposite side of the continuum, the Netherlands and Sweden, have the increase in residential visits with an associated increase in park usage (see Figures 1 & 2). Given the variability of access and the fact that it is context-dependent we endeavor in this article to give some general advice that can be used by most, in as many urban and suburban contexts as possible.

### ***The potential of urban green spaces***

Studies of nature contact and connection have primarily focused on direct experience and immersion in a natural environment, such as a forest or an urban park. These experiences may still be accessible to many, although with limitations (time and accessibility issues). There are, however, countries and locations where children's access to these natural spaces has been drastically curtailed.

Previous research has highlighted the association of urban green spaces, including both private and public, to children's resilience and emotional health (Flouri, Midouhas, & Joshi, 2014). Accessing urban green spaces can further help children to regulate their

emotional responses, as well as other benefits of being exposed to the natural elements explored below (Richardson, 2019). Moreover, greater biodiversity may be linked to more positive emotional responses, so seeking out ‘wilder’ spaces could be beneficial (Cameron et al., 2020).

Research has found robust associations between access to private spaces, like gardens, as well as public green spaces, like parks and playgrounds, and children’s emotional wellbeing. There is indeed a buffering effect of green spaces on both life stress (Wells & Evans, 2003) as well as poverty (Flouri et al., 2014). During lockdown, and whenever possible given local restriction, regular access to such spaces could provide a valuable buffer for the current stress-inducing situation. It should be noted that nature contact does not have to be lengthy to produce benefits, and there is great potential for urban and semi-urban populations to reduce stress through micro-interactions (> 5 mins) as a moderating self-orientation practice (Ibes, Hiram, & Schuyler, 2018). Two hours of contact with the natural environment per week has been found to create some of the positive impacts, irrespective of how that period was applied, e.g., many short visits or fewer, longer periods (White et al., 2019).

### ***The potential of private green spaces***

For those lucky enough to have access to private green spaces, like gardens, or even balconies, gardening would be a great way to access some of the benefits of both nature contact and connection. Previous studies have highlighted the potential for using gardening to benefit mental health (Clatworthy, Hinds, & Camic, 2013), while a systematic review found some support for the positive effects of gardening on children’s wellbeing (Ohly et al., 2016).

Gardening is an ideal activity that can happen indoors for children who have limited or no access to outdoor spaces. Caring for plants could potentially also boost children’s nature connection, through two possible pathways, that of engaging with nature beauty and, also, that of empathy (Lumber, Richardson, & Sheffield, 2017). Such more personal, empathy-based relationships between humans, plants, and animals can bring similar benefits in respect to promoting nature connection (Vining, 2003). A study that looked at affective relationships between children and salamanders, in the context of an environmental stewardship project found that this empathy-based relationship that developed between children and animals enhanced concern for nature as a whole. Interestingly these effects persisted on follow-up two years later (Barthel et al., 2018). It is possible to develop such relationships with local fauna, such as birds or insects by putting out bird feeders, offering bird-nesting materials or building an insect hotel in a garden or even in a communal green space.

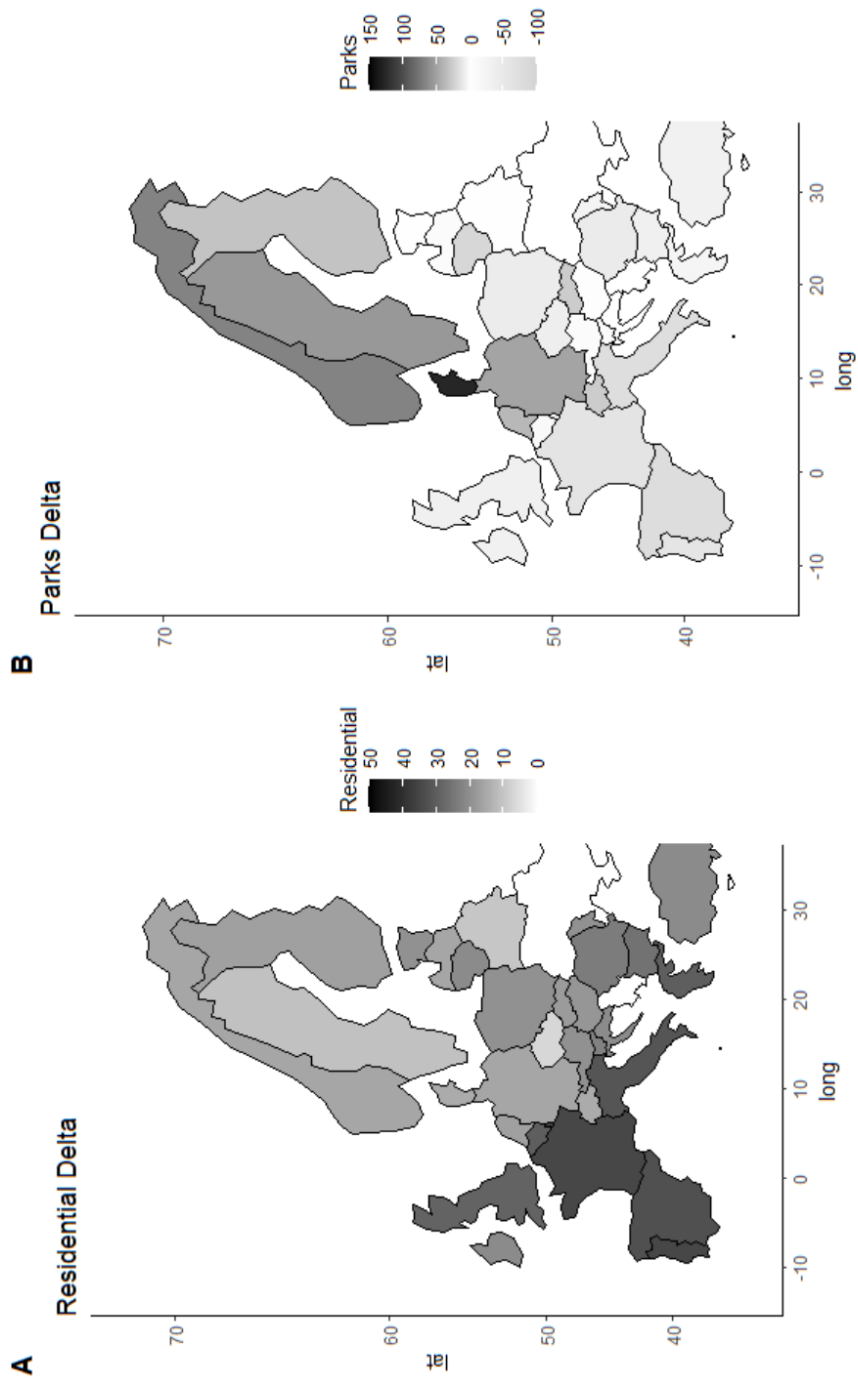
### ***The potential of indoor spaces***

The evidence for the beneficial effect of experiencing nature in indoor environments is mixed, with some studies suggesting that the effect of indoor nature exposure on wellbeing is very small or non-existent (e.g., Korpela et al., 2017) while others suggest that there are benefits to be had through viewing natural images throughout a range of media, both physical and digital (Valtchanov, Barton, & Ellard, 2010). Interestingly, a review found that environments that are devoid of natural elements can have a negative effect on wellbeing, which can be mitigated by the addition of natural views, or potted plants (Grinde & Patil, 2009).

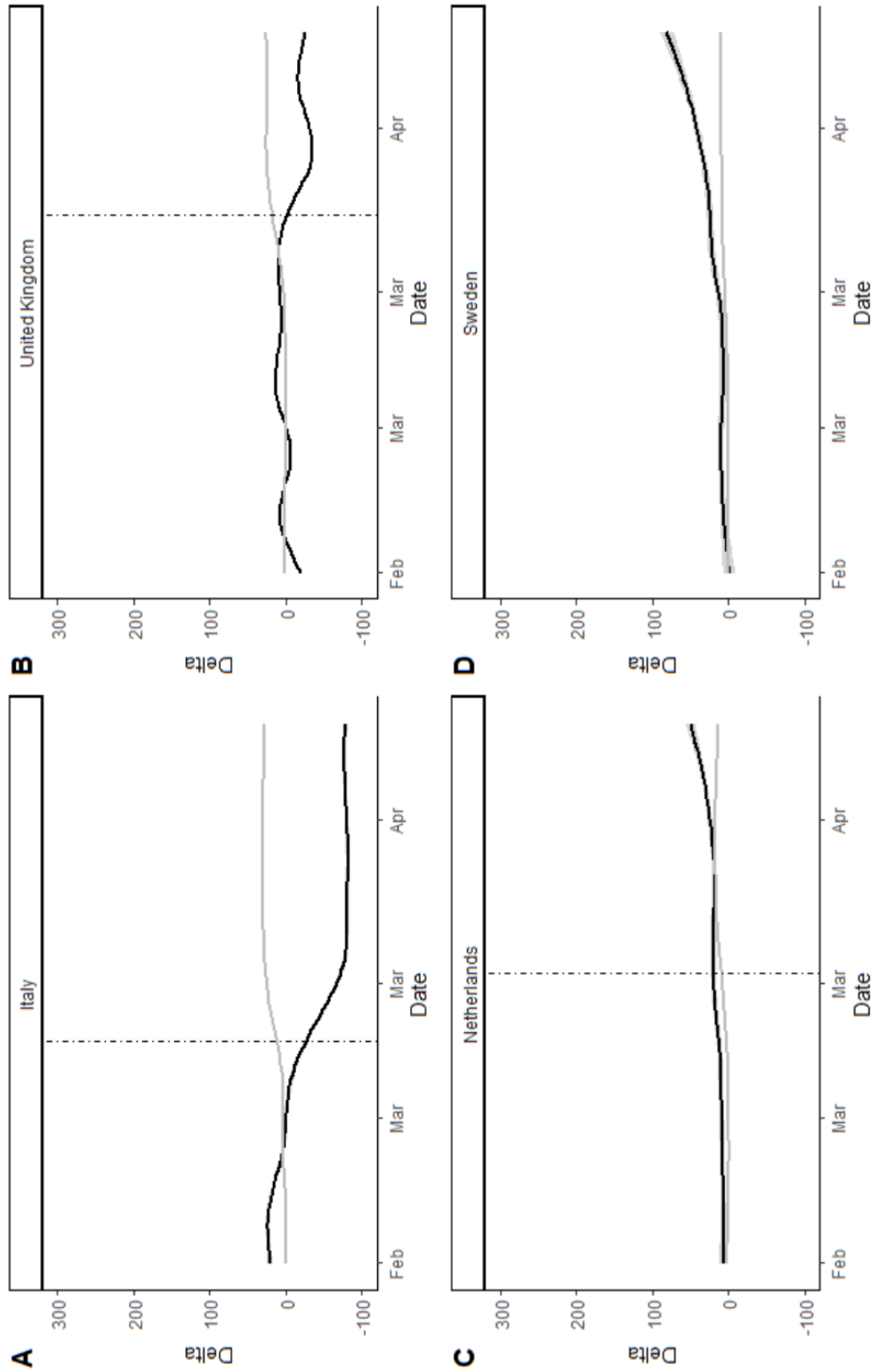
The preference of humans for images of nature landscapes can be described through properties such as harmony, visual diversity and sublimity (Subiza-Pérez et al., 2019), even eliciting emotional responses when in grayscale photography (Codispoti, De Cesarei, & Ferrari, 2012), suggesting that the impact of natural imagery is potentially both deeply ingrained and more concerned with shape and place than purely aesthetically qualities such as colour. The recognition that eye movement and attention is significantly different in such landscapes has been suggested (Valtchanov & Ellard, 2015). Viewing images of this nature can help with a decrease in blood pressure, lowering heightened emotional states and an increase in attention resources (Hartig et al., 2003) along with eliciting a sense of “being away” from everyday pressures, resulting in improved health and well-being through positive emotional reactions and stress reduction, even when it is a representation, rather than when one is physically present (Litleskare, MacIntyre, & Calogiuri, 2020). Although most research was conducted with adults, we feel that it is a reasonable assumption that similar effects would be applicable to children. It is, however, a point worth making that future research in the area needs to include children and young adults.

Another way of maintaining the benefits of contact to nature during lockdown is by including natural objects in indoor spaces. The presence of natural objects within an environment has been found to have a net-positive impact on psychology, elevating a sense of connectedness between people, to nature and also in creating a potentially more aspirant sense of meaning for life as a whole (Olivos & Clayton, 2016). Further evidence suggests that natural objects being present in non-natural environments might have value in promoting pro-nature connectedness pro-social dispositions and responses (Passmore & Holder, 2017; Richardson et al., 2016).





**Figure 1.** Grey-scale heat map of deviation in behaviour from baseline (the median value, for the corresponding day of the week, during the 5-week period Jan 3–Feb 6, 2020).



**Figure 2.** Mobility data for four countries during the pandemic. Vertical line indicates date of government guidance towards country specific lockdown regime.

There is some evidence (Ikey, Song, & Miyazaki, 2017) to suggest that tactile contact with wood, as opposed to marble or stainless steel, for example, can have a calming effect on prefrontal cortex activity and induce a relaxation response. When thinking about children's toys, natural materials, including those that can be collected from outdoors, like sticks and other loose parts, which are linked with more creative and dramatic play (Gibson, Cornell, & Gill, 2017; Maxwell, Mitchell, & Evans, 2008).

Beyond sight and touch, exposing children to natural sounds could have benefits for their wellbeing and cognitive skills, such as attention (Lechtzin, Busse, & Smith, 2010; Saadatmand & Vahid, 2015; Van Hedger et al., 2018). By trying to maximise the non-anthropocentric sounds (e.g., birds, wind, and rain?) in our environment we can create some of the benefits found from natural sounds in relation to providing soft focus attention (Abbott et al., 2016). Being able to identify the natural feature from which the sound is coming, e.g., which bird species, further emphasises this (Van Hedger et al., 2019). There are, therefore, many activities that could promote wellbeing, from actively listening to nature sounds, to having them play in the background. We can also combine natural sounds and views, in the form of watching nature documentaries. The latter have been linked to promotion of ecological behaviours, though not directly to building a connection to nature (Arendt & Matthes, 2016; Martin et al., 2020).

Previous studies with children have highlighted the importance of engaging with nature's beauty through art in promoting connection to nature, and these are certainly activities that can be done indoors or out (Bruni et al., 2017).

## **CONCLUSION**

In this paper we proposed how we can continue supporting family mental health and wellbeing through nature contact and nature connection, even during social distancing. We focused on the role that public and private urban green spaces can play in facilitating opportunities for contact with nature and during the period that lockdown conditions exist, recognise how exposure to these spaces and features (such as local plants and bird life) can create timely and meaningful responses in terms of mental health and wellbeing.

In recognising the potential role of green spaces, we recommend that access is maintained and managed during lockdown conditions and that even limited access has value for positively influencing wellbeing. With public, private, urban as well as indoor spaces that contain natural elements all demonstrating a positive contribution to wellbeing, we can recognise how vital these are in our response to the challenges presented during lockdown conditions.

Whilst more research is needed, there is growing body of evidence that natural spaces, as well as imagery and materials, provide a variety of opportunities to engage with the natural world and, in so doing, improving mental health and wellbeing. One challenge that we were presented with during this literature review is the predominance of research taking place with adults, due to their association with the multiple contexts in which research has been undertaken (e.g., in the treatment of medical conditions and/or mental health challenges). Another limitation of research to date has been in exploring the cultural and/or individual perceptions and narratives around nature that influence the degree of benefits obtained. The authors of this paper would like to see more research focusing on the ways in which we can qualify contact with nature and a sense of connection with it.

Additionally, exploring the relationship between socio-economic status, culture, environment (urban/rural) and distribution amongst different age ranges would further provide useful data in understanding the barriers to natural contact as described above. This would provide valuable insight into how to promote and facilitate nature-based experiences as valuable and viable routes to wellbeing for all.

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