



Canterbury
Christ Church
University

Research Report



From Weeds to Tiny Flowers:

Rethinking the Place of the Youngest Children Outdoors

OCTOBER 2023

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Funded by
**Froebel
Trust**



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Introduction to the authors



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Acknowledgements

This report is the first stage of a research project made possible by funding from the Froebel Trust. Images used with kind permission from Bright Horizons.

Executive Summary

- This report provides new knowledge and understanding about babies and toddlers outdoors. It starts from a point of concern about the way the youngest children are seen as ‘out of place’ or not belonging in outdoor spaces. We use the metaphor of “garden weeds” (after Jenks, 2005) to convey this idea.
- The evidence in the report is based on a systematic literature review conducted by the authors as the first part of a Froebel Trust funded project.
- Three types of outdoor spaces are important in the lives of the youngest children – those in the home, community and within ECEC settings. Research emphasises the importance of specific environmental characteristics (greenness, the presence of natural features, enclosure) within these outdoor spaces.
- Adults play a key role outdoors in supporting babies and toddlers in outdoor spaces. Research highlights the importance of connective care practices and interactions that facilitate familiarity with the natural world.
- The interactions between babies and toddlers, the adults who care for them, and outdoor spaces are complex and can either be connective (oriented towards inclusion) or disconnective (oriented towards exclusion).
- A range of intersecting social characteristics (socio-economic status, education, class, ethnicity, and disability), cultural, and environmental factors are understood to influence interactions outdoors.
- ECEC settings have a potentially critical role in developing more inclusive practices, and challenging the idea that the youngest children don’t belong outdoors.
- Drawing on Froebelian thinking, we suggest that babies and toddlers can be helpfully likened to ‘tiny flowers’ that need ‘space and time’ to flourish and grow ‘in and with nature’.

1. Introduction

Garden weeds?

There is increasing concern about the marginalisation of babies and toddlers (and those who care for them) in research, policy, and practice. This marginalisation is at once practical (their needs are not considered or understood) and conceptual (they are seen as ‘out of place’ in spaces that adults and older children occupy). The outdoors is one such space that the youngest children are not seen to belong in. Previous research found that concerns about safety and the perception that the outdoors is a place to be physically active underpin the exclusion of babies from the outdoors in Early Childhood Education and Care (ECEC) settings (Kemp & Josephidou, 2021). However, little is known about their wider access to outdoor spaces.

The significance of access to outdoor spaces was highlighted during the Covid-19 pandemic and research has highlighted deep and persistent social justice concerns about who has access and to what type of outdoor spaces. Children and families living in less affluent contexts and from ethnic minority backgrounds are more likely to lack access to green spaces and are less likely to spend time outdoors (Natural England, 2019). This report provides new knowledge and understanding about the access of babies and toddlers to outdoor spaces drawing on a systematic review of published research literature.

In this report we provocatively use the metaphor of ‘garden weeds’ (after Jenks, 2005) to describe and challenge through research evidence the idea that babies and toddlers don’t belong outdoors.

2. What we did: A systematic review of the research literature

We completed a systematic search of the international research literature to find any research about babies and toddlers outdoors. It was designed in accordance with procedures developed by the Evidence for Policy Practice Information and Co-ordinating Centre (EPPI-Centre) (Gough, Oliver & Thomas, 2017); the process is summarised in Figure 1.

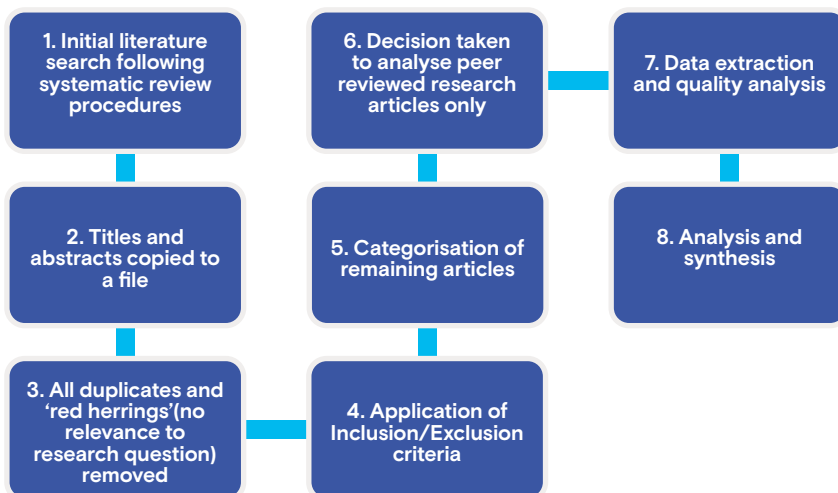


Figure 1: Overview of the research design and procedure

Internationally published literature was searched using EBSCO (including Academic Search Complete (ASC), British Education Index (BEI), Education Research Complete (ERC) and Education Resources Information Centre (ERIC)) and SCOPUS. The search took place in November–December 2022 and the fields included were titles and keywords. Publications were limited to those published between 2002–2022. The search terms are summarised in Figure 2.

(("infant-toddler pedagogy" OR infant* OR baby OR babies OR toddler* OR newborn* OR "birth to two" OR "birth to 2" OR "0 to 2" OR "0-2" OR "1-3" OR "1 to 3" OR "under threes" OR "under 3s" OR "birth to three" OR "birth to 3" OR "0 to 3" OR "0-3" OR "zero to three" OR "zero - three" OR "one year old" OR "one-year-old" OR "two year old" OR "two-year-old" OR "mixed age" OR "mixed-age") AND (outdoor* OR outside OR natur* OR out-of-doors OR external OR playground))

Figure 2: Search Terms

We applied the inclusion and exclusion criteria shown in Table 1 and then eliminated any sources that were not peer-reviewed research articles. A total of 41 papers were included for final review and these included research from 15 different countries although the majority were from the Global North.

INCLUSION CRITERIA	EXCLUSION CRITERIA
Discusses children aged birth to two	Does not discuss children aged birth to two
Discusses children's experience outdoors and/or in nature	Does not include children's experiences outdoors and/or in nature
Available electronically	Not available electronically
Written after 2001	Not written after 2001

Table 1: Inclusion and Exclusion Criteria

A total of 41 papers were included for final review and these included research from 15 different countries although the majority were from the Global North.

COUNTRY	AUTHOR	NUMBER OF PAPERS INCLUDED IN THE REVIEW (n= 41)
USA	Chen & Hamel (2022); Dinkel et al. (2019); Hager et al. (2015); Hall, Howe, Roberts, Foster Shaffer & Williams (2014); Jennissen, Koos & Denning (2018); Jimenez et al. (2020); Jimenez et al. (2021); Murray & Williams (2020); Stanton-Chapman & Schmidt (2017)	9
Australia	Little (2022); Little & Stapleton (2021); Malone & Moore (2019); Mangan, Leavy & Jancey (2018); Morrissey, Scott & Wishart (2015); Ng et al. (2020); Rouse (2015); Rouse (2016)	8
England	Hackett, MacLure & McMahon (2021); Josephidou & Kemp (2022); Josephidou, Kemp & Durrant (2021); Kemp & Josephidou (2021)	4
Canada	Carsley et al. (2017); Hystad et al. (2014); Nielsen, Amrhein, Osornio-Vargas, & DoMiNO Team (2017); Sharp et al. (2018)	4
Finland	Tourula et al (2011); Tourula, Isola, Hassi, Bloigu & Rintamäki (2010); Tourula, Pölkki, & Isola (2013)	3
Germany	Boxberger & Reimers (2019); Fantasia, Oña, Wright, & Wertz (2021); Weck (2019)	3
Norway	Kleppe (2018); Moser & Martinsen (2010)	2
New Zealand	Lee (2007)	1
Hungary	Belasko, Herrán & Anguera (2019)	1
Chile	Aguilar-Farias et al. (2021)	1
Spain	Ferrero et al. (2017)	1
Netherlands	Gubbels, Van Kann, Cardon & Kremers (2018)	1
China	Huang et al. (2021)	1
Sweden	Klaar & Ohman (2012)	1
Ghana	Monroe et al. (2015)	1

Table 2: Summary of papers included for review by country

3. What we found out

Complex interactions occur between babies and toddlers, the adults who care for them, and outdoor spaces (Figure 3). These interactions can either be connective (oriented towards inclusion) or disconnective (oriented towards exclusion). We start by summarising the connections that babies and toddlers need to support their holistic learning and development and provide responses to two critical questions.

- What do babies and toddlers need from outdoor spaces to support their holistic learning and development?
- What do babies and toddlers need from adults in outdoor spaces?

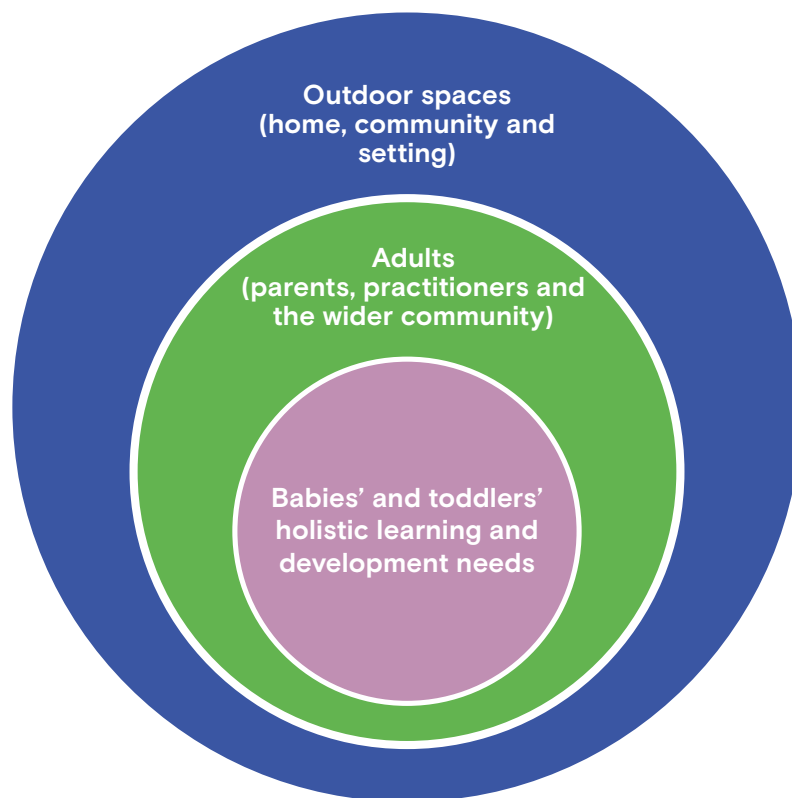


Figure 3: A simplified illustration of the interactions between babies and toddlers, adults and outdoor spaces

We then detail the factors that research has identified as influencing these interactions.

3.1 What babies and toddlers need from outdoor spaces to support their holistic learning and development.

Three types of outdoor spaces are important in the lives of the youngest children – those at home, in the community and within ECEC settings. The research emphasises the importance of specific environmental characteristics (greenness, the presence of natural features, enclosure) within these outdoor spaces.

Regular exposure to 'green' or 'natural' spaces, even before birth and when sleeping is associated with a range of health and well-being benefits. Tourula et al. (2010: 1413), for example, found that 'Infants clearly slept longer outdoors (range 83–300 min) than indoors (range 28–185 min). The mean difference was 92 min' concluding that 'the lengthening of sleep duration may constitute a beneficial health effect' (1416).

Living in a green environment is positively associated with beneficial birth outcomes (Hystad et al., 2014) and improved executive function and behaviour (Jiminez et al., 2021). Spending time outdoors is also understood to have a negative association with myopia in very young children (Huang et al., 2021).



“Robert has learned a lot about what in scientific terms are called friction and inclined planes...he has learned that icy slopes are slippery (have low friction), that the slipperiness can be dealt with by walking slowly with bent knees (by lowering centre of gravity), that some surfaces are slippery and some are rough (have different friction), and that it is possible to slide on a rough surface by pushing with one’s hands (overcome high friction by adding more force”

(Klaar & Öhman, 2012: 451)

Natural features such as slopes, grassy areas, plants and trees offer diverse learning and development opportunities for babies and toddlers. Research highlights how embodied outdoor experiences can promote understanding of scientific concepts (Klaar & Öhman, 2012). Mathematical learning is emphasised by Lee (2007) whilst Hackett et al. (2021: 213) focus on early language development. The presence of natural features is associated with higher levels of physical activity (Gubbels et al., 2018; Morrissey et al., 2015; Ng et al., 2020; Dinkel et al., 2019) and also with risk-taking, autonomy and independence (Murray & Williams, 2020). Kleppe (2018), for example, focuses on the opportunities that natural features offer 1–3 years olds to play with risky elements. Children’s interactions with ‘risky’ natural elements such as rocks and stepping blocks

have also been found to increase their sense of belonging (physical, social, and emotional) within ECEC settings (Little & Stapleton, 2021). However, Josephidou & Kemp (2022) found that even in settings where outdoor provision is prioritised, opportunities to engage with nature are scarce.

Enclosed spaces are important for the youngest children to feel emotionally and physically safe outdoors. Physical safety is a priority for babies and toddlers who can be particularly vulnerable to injury in shared outdoor spaces such as playgrounds (Jennissen et al., 2018). Enclosed spaces not only offer physical security but can support a sense of emotional safety and social connection in outdoor environments (Hall et al., 2014; Moser & Martinsen, 2010; Hackett et al., 2021).

3.2 What babies and toddlers need from adults outdoors

Research highlights the significance of familiar and trusted adults (parents, practitioners, and those from their wider community) in the lives of the youngest children. Adults can play a key role in supporting babies and toddlers to connect physically, socially, and culturally and build a holistic sense of belonging in the world. In the following examples, it is important to note that the research is referring to very specific adults who are familiar to the baby/toddler and with whom there is an established connection.



“Infants exhibit caution when approaching plants in a naturalistic setting: they were significantly less likely to take the initiative to approach plants before their caregiver, and caregivers most often were the first member of the dyad to smell and touch the plants. This finding is consistent with a growing set of laboratory studies that have found that 8- to 18-month-old infants take longer to touch plants and touch them less frequently than other types of objects.”

(Fantasia et al., 2021: 11)

Although beneficial to their learning and development, natural environments include elements (plants, surfaces, noises) that may be unfamiliar to babies and toddlers, so interactions need to be carefully facilitated by adults. A particularly interesting study from Germany (Fantasia et al., 2021) found that very young children have in-built response to treat plants as potentially dangerous so take the lead from their trusted caregivers.

The role of the adult in facilitating a sense of familiarity in natural environments has also been noted in other studies including Hackett et al. (2021) in England and Chen & Hamel (2022) in the USA.

Little's (2022: 17) study of toddler risky play in Australia highlights the importance of attentive interactions and close observation to enable the complex interrelationships between adult/child/natural environment to evolve and develop.

Research positions the outdoors as a space in which social, cultural, and environmental connections can be built from birth through adult care practices (in the home, community, and setting). Care practices and routines such as dressing to go outdoors, sleeping outdoors and outdoor tasks are highlighted as a means of passing on cultural values (Belasko et al., 2019; Tourula et al., 2013; Tourula et al. 2011; Monroe et al., 2015). Outdoor sleeping, for example, is recognised as a means of passing on the cultural values about nature connection. Such practices also enable babies and toddlers to be included in the everyday social life of the family and wider community. In Ghana, Monroe et al. (2015:5) note 'Mothers carried infants on their backs while doing chores and socializing.' These care practices are deeply connective and are underpinned by an understanding that humans are fundamentally interdependent with each other and the natural world. This understanding is powerfully expressed in a paper by Malone & Moore (2019:19–20) that observes an Aboriginal infant outdoors and details her mimicry of everyday tasks such as grinding ochre enacted through sensory encounters with stones.

3.3 What factors influence the interactions outdoors?

A range of intersecting social characteristics (socio-economic status, education, class, and ethnicity, disability) are understood to influence access to outdoor spaces (both quality and quantity). Several papers from the USA note the association between high socio-economic status and access to high-quality (defined by greenness, nature-based) outdoor spaces (Jimenez et al., 2020; Murray & Williams, 2020; Hager et al., 2015). However, there appears to be a negative relationship between high levels of parental education and outdoor play (Boxberger & Reimers, 2019; Aguilar-Farias et al. 2021). In another study no direct association with maternal education was found although babies and toddlers spent less time outdoors when at home if they accessed daycare suggesting working parents may be relying on settings to provide time outdoors (Carsley et al., 2017). In Germany, Weck (2019) found that class and its expression in social conduct and parenting behaviours were significant factors in parents' decision-making about which playground to use. Ethnicity is identified as a significant variable in some larger-scale quantitative studies and associated with both residential greenness (Jimenez et al., 2020) and with time spent outdoors (Boxberger & Reimers, 2019). Engagement with the outdoors is also mediated by the social characteristics of the child including temperament (Sharp et al., 2018; Gubbels et al., 2018) and disability (Stanton-Chapman & Schmidt, 2017). These studies highlight the range of social participation barriers that exist for very young children with negative affective temperaments and those with an identified disability.

Cultural factors play a role in mediating adult-child interactions outdoors. A relatively recent concern highlighted by Mangan et al., 2018 relates to the way mobile phone use amongst parents might be impacting their ability to facilitate very young children's engagement outdoors. They found that the majority of parents observed used their mobile phone during the observational period and most stated that they think it is possible to supervise adequately when using their phone. Cultural perspectives about the appropriateness of the outdoors for babies and toddlers are also understood to influence adult attitudes and behaviours (Rouse, 2016). Kemp & Josephidou (2021) identify two dominant narratives (of safety and of physical activity) that drive outdoor pedagogies in the global North, particularly in relation to engagement with natural elements.

“““

“The Walang surround her. Small, black and noisy. The sea waters pick up the stones and throw them back and from time to time she looks out and observes this. It is windy. She crouches and strikes them together. She strikes and grinds. She rolls the Walang in her hands and finds a rust coloured stone and begins to chip and grind it on another black stone. Budya has observed the grinding of ochre in Aboriginal community contexts. She encounters the Walang by striking them together and mimics the grinding of ochre. She repeats this rhythmically in her play and it is an act that she comes back to”

(Malone & Moore, 2019: 19–20)

Morrissey et al. (2015: 43) note that after ‘greening’ in an Australian ECEC setting, ‘natural elements such as stick shelters and plants were perceived as unsafe by practitioners’ resulting in children being kept away rather than facilitated to engage safely. Josephidou et al.’s (2021) study of English ECEC settings found that natural elements were often replaced by artificial ones such as ‘fake grass’ or removed due to safety concerns. In the USA, Murray & Williams (2019) highlight the way in which parental concerns about safety can limit the way their children engage with the outdoors and are associated with risk aversion in very young children.

Research highlights the ways changes in the quality and quantity of outdoor spaces can affect very young children even before birth.

It is important to state that the changes we are referring to are all the result of human activity (so are intimately connected to the social and cultural factors already discussed). Only one paper (Aguilar-Farias et al., 2021 writing from the perspective of Chile) specifically explored the impact of Covid on access to the outdoors finding that toddlers living in rural areas and with spaces to play at home were least affected (in terms of their physical activity). In some cases, changes were

intentional to improve the quality of the outdoor space in some way by those who care for babies and toddlers (such as Morrissey et al.’s (2015) example of greening a setting environment). However, most were unintentional deriving from processes such as urbanisation and industrialisation and negatively impact the quality and quantity of outdoor spaces. The effect of exposure to pollutants (airborne and land-based) is a particular concern as it is associated with poorer birth outcomes (Nielsen et al., 2017) and respiratory problems (Ferrero et al., 2017). There is a growing sense of awareness among adults of these changes. Parents in Northern Finland reported concerns about the way in which the environment is changing and how this influences their thinking about the practice of outdoor sleeping (Tourula et al, 2013).

“““

“Mothers had taken notice of the greenhouse effect, which was seen as different, shorter, “strange” winters that came later than normal. The northern city environment was sometimes noisy and the air polluted. In addition to these aforementioned physical factors of the environment, the social context of the downtown was considered insecure.”

(Tourula et al., 2013: 175)

4. Reflections on our findings

This findings in this report strongly align with Froebelian pedagogic principles. They demonstrate the importance of outdoor spaces for babies and toddlers to build their sense of connectedness and belonging in the world (Unity and Connectedness). These connections are fostered (or weakened) through their interactions with the people and places that are present in their lives even before birth (Relationships Matter). Opportunities to experience and understand nature is fundamental to human and environmental flourishing (Engagement with Nature).

Our analysis suggests that the narrative about the youngest children outdoors is not a single one of exclusion. There are examples of deeply inclusive care practices that build a sense of belonging outdoors, particularly in the Global South and within indigenous communities. Even in the Global North, some babies and toddlers regularly access high-quality natural environments that support their holistic learning and development needs although the attitudes and behaviours of adults may limit rather than facilitate their sense of belonging outdoors.

A key point is that there are significant differences in the experiences of babies and toddlers outdoors and that these are underpinned by a range of interconnecting cultural, social, and environmental factors only some of which are already documented in research. These factors have been shown to directly influence the interactions between the child, the adults who care for them, and the outdoors. In the same way that concepts such as ‘deprivation’ are understood to derive from multiple interrelated factors (Ministry of Housing, Communities and Local Government, 2019) the exclusion of babies and toddlers from outdoor spaces can also be thought of similarly (and is driven by many of the same factors).

Exclusion appears to operate as a vicious cycle with factors such as low socio-economic status multiply implicated (via lower residential quality, poorer birth outcomes, limited access to natural environments, less physical activity etc.) and combined with cultural and physical factors that may further limit connective interactions outdoors. In contrast, inclusion is a virtuous cycle and this report details some of the care practices that are associated with building social, cultural, and physical connections.

We suggest that the ECEC sector could play a significant role in challenging the exclusion that operates in the outdoor spaces within the homes and communities of many babies and toddlers. Research tells us that the youngest children need adults to facilitate their engagement with natural environments and that these interactions can then inform their behaviours in other outdoor spaces. There is an opportunity for practitioners to develop inclusive outdoor pedagogies and for ECEC settings to ‘naturalise’ or ‘green’ their outdoor spaces to better meet the needs of babies and toddlers and to share this with parents and the wider community.

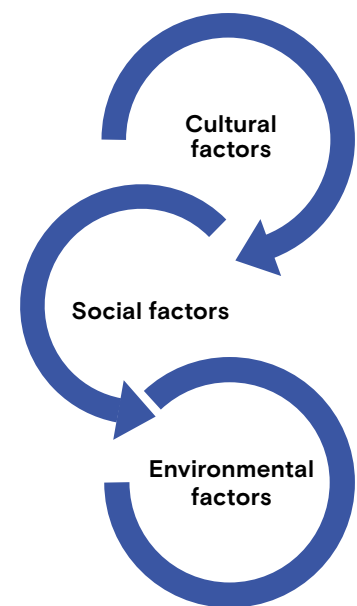


Figure 3: Cycles of inclusion or exclusion

5. Conclusions:

From Weeds to Tiny Flowers

To return to the metaphor with which we started this report, the evidence is that far from being ‘weeds’ that need to be removed from the garden, being outdoors is fundamental to the holistic learning and development of the youngest children and helps them develop a sense of their place in the world.

Froebel used nature as a metaphor for human development but rather than “weeds” he likens young children to “tiny flowers.” This perspective sees the child ‘as’ nature as well as needing time and space ‘in and with nature’ in order to flourish. We suggest that there is a need to rethink the place of babies and toddlers outdoors and that this begins with understanding what the youngest children need.

“““

“Children are like tiny flowers: they are varied and need care, but each is beautiful alone and glorious when seen in a community of peers.”

(Froebel, 1887)

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