



THE ROLE OF FOREST EXPERIENCES IN ENHANCING CHILD WELL-BEING AND RESILIENCE

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Izvleček/Abstract

Given the alarming prevalence of (mental) health problems in children and young people, exacerbated by the pandemic and environmental fears, the question of how we can strengthen children for an increasingly complex world with all that it entails is more topical than ever. This article therefore addresses the importance of resilience, well-being, and experience of nature for children's development, particularly through time spent in a forest. Experiencing the forest strengthens the immune system, reduces stress, and promotes social and motor skills, and can therefore have a positive influence on children's well-being and the development of resilience.

Vloga izkušenj v gozdu za dobro počutje in odpornost otrok

Keywords:

dobro počutje otrok,
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Zaskrbljujoče težave (duševnega) zdravja otrok in mladih, ki so se še povečale zaradi pandemije in strahov, povezanih z okoljem, vodijo do vprašanja, kako lahko otroke pripravimo na vse zapletenejši svet in posledice – bolj aktualno kot kadar koli prej. V članku zato obravnavamo pomen odpornosti, dobrega počutja in doživljanja narave za razvoj otrok, zlasti s preživljanjem časa v gozdu. Doživljanje gozda namreč krepi imunski sistem, zmanjšuje stres, spodbuja socialne in motorične spretnosti ter lahko tako pozitivno vpliva na dobro počutje otrok in razvoj odpornosti.

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Introduction

How are our children and young people currently doing?

Results from the Children's League Report on the situation of children and adolescents in Austria (2021) show an enormous increase in risk factors for child development, such as poverty, psychosocial problems, lack of care and educational gaps; these were particularly evident during the pandemic (Österreichische Liga für Kinder- und Jugendgesundheit, 2021). Post-pandemic, the psychosocial health of children and adolescents shows worrying trends in 2024: the results of the sixth and seventh rounds of the *COPSY* study conducted by the University Medical Centre in Hamburg-Eppendorf (UKE, Germany) indicate that 22% of young people are affected by mental health problems, and 21% have a reduced quality of life and well-being as a result. Worries about war, economic uncertainty and climate change are a particular burden (Universitätsklinikum Hamburg-Eppendorf, 2024). According to the *DAK Prevention Radar*, one in seven children shows depressive symptoms, and one in three feels lonely. Multiple (psycho-) somatic complaints are on the rise (DAK-Gesundheit, 2024). The *Youth in Germany 2024* trend study shows that 51% of young people are regularly stressed, 36% suffer from chronic exhaustion and 8% have suicidal thoughts. The main concerns are inflation (65%), fear of war (60%) and worries about affordable housing (54%) (Schnetzer et al., 2024).

As a result, the question of how we can strengthen children from an early age to deal with risk situations and multiple stresses is more topical than ever and can be seen as a collective task for educational institutions.

One starting point here is certainly to support children at an early age in developing resilience, or more specifically, individual protective factors. In this context, protective factors are understood as resources that can help children to adapt better to difficult life circumstances, pressures, and stress and to restore the well-being that has been lost in the short term (Wustmann, 2004). Based on the theory of the attachment and exploration system, it can be argued that early childhood well-being is a prerequisite for learning and should therefore be at the centre of elementary education (Ahnert, 2019; Fischer, 2010). Resilience and well-being are closely linked and influence each other (Arnold et al., 2023; Asselmann, 2021). Werner and Smith (2001) postulate that various protective factors can be developed in early childhood that promote long-term mental health and well-being.

In this context, it has been shown that regular time spent in natural environments such as forests has a particularly favourable effect on well-being and the associated health status (Polz-Watzenig, 2020; Schuh and Immich, 2019; Wolfram, 2021).

For this reason, the *WoLeWa* project (Well-being and Learning with and in the Forest - duration 2023-2027, Salzburg University, School of Education), which is the subject of this paper, is dedicated to the health and well-being aspect of Agenda 2030 and investigates whether and how the subjective well-being of children (5-6 years) can be addressed through regular visits to the forest and what benefits this brings for early childhood educators. Among other methods, semi-standardised interviews were used to survey the children's perspectives directly at two measurement points: (A) in the kindergarten classroom, and (B) during a forest day ($N=50$). In addition, the professionals were also asked directly about their subjective well-being in the two distinct settings.

This article presents a section of the project and first examines the theoretical basis by analysing the relationship between resilience and well-being. It also clarifies what is meant by well-being in preschool children and how the construct can be methodically researched. In addition, the benefits of regular forest experiences on the human organism are presented on the basis of current studies, and an attempt is made to systematically bring together the three constructs of resilience, well-being and the forest effect. The article ends with an insight into the use of forest experiences in early childhood education in Salzburg and with projections for the future.

Resilience

What do we know from resilience research?

Resilience refers to the ability of people to overcome crises, challenges, or stresses and to emerge stronger from them. It includes characteristics such as emotional stability, adaptability and a positive attitude, which together help to overcome stress and setbacks (Werner, 2005; Werner and Smith, 2001). Resilience can be promoted through personal resources, social support, and targeted training and is multidimensional and multi-layered (Luthar, 2003; Wustmann, 2004). The resilience construct describes the dynamic and reciprocal interaction between the risk factors and protective factors that influence how well people deal with stressful situations.

Risk factors (as presented in Table 1) refer to influences that increase the likelihood of negative effects on development or well-being. Some of them are shown in the following table in three distinct dimensions: individual, within the family and in the immediate environment.

Table 1

Risk factors (Evans et al., 2018; Luthar, 2003; Moore and Woodcock, 2017; Werner and Smith, 2001; Wustmann, 2004)

Risk factors in (early) childhood		
Individual level	Within family	Immediate environment
• Early childhood trauma • Chronic illnesses or disabilities • Low self-efficacy expectations • Persistent stress or strain • Lack of emotional regulation • Low self-esteem • Negative thinking patterns • Low social support system • Mobbing	• Low socio-economic status, chronic poverty • Chronic family disharmony • Parental separation, divorce • Unemployment of parents • Alcohol and drug abuse by parents • Mental disorders or illness of the parents • Death or loss of close relatives or friends • Criminality of the parents • Parents' low level of education • Absence of one parent • Educational deficits • Migration background • Very young parents • Social isolation • Siblings with disabilities	• Social isolation • Poverty • Discrimination and prejudice • Dangerous or unstable political conditions • Natural disasters and pollution • No access to education and health services • Crime and violence in the neighbourhood • Lack of social support systems • No availability of resources • Media and social media: The influence of media, especially social media, can affect stress levels and self-image

Resilience arises when the negative effects of risk factors can be cushioned by protective factors in the described dynamic process (Werner, 2005). The protective factors across the three dimensions (individual, within the family and in the immediate environment) are presented in Table 2.

Table 2

Protective factors (Evans et al., 2018; Luthar, 2003; Moore and Woodcock, 2017; Werner and Smith, 2001; Wustmann, 2004)

Protective factors in (early) childhood		
Individual level	Within family	Immediate environment
• Physical health • Positive attachment and relationship experiences • Self- efficacy • Positive self concept • Optimism, • Creativity • Talents, interests, hobbies • Good cognitive skills • Stress management skills • Emotional regulation • Intelligence and problem solving competency • Goal-orientation • Planning competence	• Stable bonds • Supportive relationships • Positive parental behaviour • Democratic parenting style • Good communication • Sibling bonds • Commitments • High educational level of parents • Harmonious parental partnership	• Safe and supportive living conditions • Access to education • Prosocial role models <u>In education system:</u> • Clear, transparent and consistent rules and structure • Appreciative climate • High and appropriate level of performance • Positive reinforcement of performance and willingness to make an effort • Positive peer contacts / friendship relationships • Promotion of basic skills • Cooperation with parents and other social institutions

In this context, it has been shown that the promotion of emotional regulation and support in dealing with anger, fear or frustration strengthens resilience in the long term (Denham et al., 2012). The development of cognitive skills, such as problem-solving strategies and the ability to think flexibly, is another important protective factor. Children who learn to recognise and solve problems at an early age develop more self-confidence and are better able to deal with future challenges (Masten and Cicchetti, 2016). Based on these findings, various explicit ‘resilience promotion programmes’ have therefore been developed, which can readily be implemented in early education practice (Scheithauer et al., 2008). For some time now, there has been a trend within early childhood education towards implicit or everyday integrated support measures in various areas of development, which have proven to be efficient and sustainable in corresponding evaluation results (Noller, 2017). Against this backdrop, the term ‘everyday integrated resilience promotion’ has recently been used (Kaiser et al., 2018; Masten and Cicchetti, 2016). Everyday integrated resilience promotion aims to strengthen the development of children’s

protective factors through everyday interaction and routines and emphasises the importance of relationships, emotional support, and the creation of a supportive environment.

Resilience and well-being

What is the relationship between resilience and well-being?

Resilience and well-being exist in dynamic interplay. Well-being describes a state that is characterised by satisfaction, positive emotions, and a fulfilled life. It can be viewed subjectively (e.g., happiness) and objectively (e.g., health) (Arnold et al., 2023).

Resilient people are better able to deal with stress and experience negative events as less stressful. This protects their well-being from the effects of crises. Resilience helps to reduce mental illnesses such as depression or anxiety disorders, which can severely impair well-being (Asselmann, 2021). A high level of well-being in turn strengthens resilience, since positive emotions and social support create resources that are helpful in challenging times. Psychological and subjective well-being are also discussed as components of resilience (Rönnau-Böse and Fröhlich-Gildhoff, 2015; Schmidt and Schultze-Lutter, 2020; Wieland, 2011). People with a stable sense of well-being often have a more optimistic view of the world, which increases their ability to cope with problems (Arnold et al., 2023). This interaction also exists in reverse: a lack of resilience can reduce well-being, which in turn can impair the ability to deal with new challenges (Gilan et al., 2023).

Child well-being

What areas does children's well-being encompass?

The conceptualisation of (children's) well-being is subject to the social and cultural connotations of the good life (Woopen et al., 2021). Accordingly, the existing research literature lacks a standardized (universally accepted) definition. Social, health, educational, childhood and developmental science approaches to *child well-being* offer a broad field of varying considerations: Child well-being as a component of mental health is postulated by Nentwig-Gesemann and Fröhlich-Gildhoff (2022). Susanne Viernickl (2022) describes the classic three dimensions of physical, mental, and social health in relation to well-being. In principle, the construct of well-being, regardless of how many dimensions are assigned, is a production process in the context of social and spatial arrangements (Viernickl, 2022).

The published Index of Child Well-being in Europe comprises the following seven areas: *Health, subjective well-being, personal relationships, material resources, education, behaviour and risks, housing and environment* (Bradshaw and Richardson, 2009). According to Nentwig-Gesemann and Fröhlich-Gildhoff (2022), *subjective well-being* is characterised by the fact that “people experience themselves, other people, their life situation and opportunities for self-realisation as positive and consequently also rate them positively” (Nentwig-Gesemann and Fröhlich-Gildhoff, 2022, p. 115). International comparative research shows a common endeavour to identify valid and reliable indicators of child well-being.

Initially, children’s well-being was predominantly collected in the form of external assessments - observational data obtained both directly in the field and from video recordings - usually from parents or educational professionals (De Schipper et al., 2004; Laevers, 2005; Seland et al., 2015; Viernickel et al., 2018).

Relatively early in the study of children’s well-being, researchers called for a shift in and broadening of perspective. In addition to indicators that are determined by adults, children’s perceptions of well-being should increasingly be surveyed (Ben-Arieh, 2008).

In the *Children’s Worlds: 2010-2019* study (N=100 000), the subjective experience of children was consistently focussed on in 37 countries (Rees et al., 2020). As part of the *Child and Adolescent Health Survey (KiGGS)*, the *KINDL-R* questionnaire was used with the dimensions of *physical well-being, emotional well-being, self-esteem, well-being in the family, well-being in relation to friends, school (day-care centre) well-being* (Ravens-Sieberer et al., 2007). The UNICEF study *Child Well-being in Rich Countries* (UNICEF Office of Research, 2020) included an analysis global and distal indicators, alongside data collected from parents and children approximately eight years of age and older (e. g., their assessment of their relationships with parents and peers) (Bradshaw et al., 2007).

Despite the high level of research interest in *child well-being*, empirical and systematic studies on the well-being of younger children are still rare. One reason for this could be that a suitable repertoire of methods is required for surveying children in this age group (Andresen and Viernickel, 2022; Schelle et al., 2019). However, a new model of *well-being from a child’s perspective* by Nentwig-Gesemann and Fröhlich-Gildhoff (2022) offers an empirically well-founded orientation on the topic. In line with the *theoretical reframing* approach, existing empirical data on daycare centre quality, derived

from the perspective of four- to six-year-old children, was given an alternative interpretation (*well-being*). From the data collection “*four dimensions of children’s well-being*” were extracted, as shown in Table 3.

Table 3

Well-being dimensions from the perspective of four- to six-year-old children in early education institutions (Nentwig-Gesemann and Fröhlich-Gildhoff, 2022, p.120).

Well-being dimensions from the perspective of four- to six-year-old children in early education institutions	
Personal Well-being	
Engage in challenging, risky, serious and strenuous (self-) educational activities	Immerse yourself in play, relax, move, experience happy moments in the here and now
Social Well-being	
Feeling safe in, resonant relationships with professionals and accepting education	Socialise in peer cultural communities and experience belonging and solidarity there
Space-, time- and object-related Well-being	
Be able to settle into and ‘live around’ the spaces prepared by adults	Discover new spaces and create your own spaces of children's culture - real or imaginary/imaginative
Organisational Well-being	
Feel secure in the daycare centre organisation with its procedures, rules, role and behavioural expectations	Being able to participate as a group of children in the rules, boundaries, norms, role and behavioural expectations of the daycare organisation

Within these four core areas, there are areas of tension or poles - shown in the two columns next to each other - between which a balance must be found. Consequently, well-being in the centre is a continuous process. Professionals must continuously analyse whether the children feel comfortable in the facility, and these analytically formed dimensions of well-being from the child’s perspective can be helpful, because they “mark the cornerstones for determining the well-being of children” (Nentwig-Gesemann and Fröhlich-Gildhoff, 2022, p. 120). According to the authors, these can be used to “determine whether resilience factors are strengthened, and the children’s basic needs are adequately met” (Nentwig-Gesemann and Fröhlich-Gildhoff, 2022, p. 121). For the *WoLeWa* project, items were extracted from this existing material, validated by experts and subjected to a pretest procedure with satisfactory reliability values and can therefore be used in the main survey with minor modifications: *Personal well-being* (5 items) $a = .60$; (B) *Social well-being* (4 items) $a = .78$; (C) *Space-, time- and object-related well-being* (5) $a = .79$; (D) *Organizational well-being* (4 items) $a = .73$. In the pretest procedure, an average high level of well-being ($M = 2.7 - 3.5$, scale 1-4) was found among the children surveyed ($N=10$) in the

kindergarten classrooms in the four dimensions. The individual item analysis showed a low level of well-being with regard to self-determination and the availability of space and time for undisturbed play. The data from the main survey will provide more precise information about the well-being of children in kindergarten.

Benefits of forest experiences for well-being and resilience

Can the forest influence well-being and everyday integrated resilience promotion in children?

Numerous studies indicate that experiencing the forest has positive effects on the human organism (Raith et al., 2014; Kühn et al., 2017; Polz-Watzenig, 2020; Schuh and Immich, 2019; Wolfram, 2021). For example, regular time spent in the forest significantly strengthens the immune system, reduces stress, and lowers pulse rate and blood sugar levels (Li et al., 2009). Spending time in forests increases exposure to microbial diversity, which is particularly important for immune regulation at an early age (Li, 2010). The diverse environmental stimuli lead to a balancing of the nervous system. The forest exerts not only a stress-reducing effect, but also a mood-enhancing impact (Annerstedt et al., 2013; Moula et al., 2021; Sonntag-Öström et al., 2011). “This is particularly beneficial for children, as their nervous system is still primarily malleable and capable of learning at a young age” (Arvay, 2019, p. 16). Children who regularly spend time in nature show a more stable emotional well-being. The calming effect of nature helps to reduce anxiety and stress, which is specifically important for preschool children. *Shinrin-yoku* (forest bathing) also has a calming effect on children (Hartig et al., 2014; Li, 2010). Self-regulation and prosocial behaviour can also be improved by spending time in the forest (Gebhart, 2023). Shared experiences in the forest strengthen social bonds and promote the ability to develop empathy. Interacting with living creatures and experiencing natural relationships sensitise children to environmental and social issues (Chawla, 2007). Other relevant studies show that physical dexterity is trained in the forest, which has a positive influence on motor development: uneven ground, tree trunks and other natural obstacles encourage them to improve balance and coordination (Fjørtoft, 2001). Spending time in the forest also encourages creativity and problem-solving skills. The diverse impressions and tasks that nature offers train the senses and at the same time stimulate the brain and contribute to the development of extended concentration and attention spans, which have a beneficial effect on task mastery. Research suggests that children are less easily distracted and can concentrate better after forest activities (Fyfe-Johnson et al., 2021; Sando et al., 2021; Scheersoi, 2021;

Taylor and Kuo, 2009). Extended exposure to natural environments is effective: differences are evident, especially for children with special care needs (Miklitz, 2019). In the systematic meta-analysis *Nature and Children's Health* by Fyfe-Johnson et al. (2021), the relationship between contact with nature and children's health was examined in 296 studies showing positive effects on children's physical, cognitive, behavioural and mental health. However, they point out that the heterogeneity of the studies and a moderate to high risk of selection bias may affect the validity of the results. Hunziker et al. (2012) were able to show that the connection between experiencing nature and health is initiated in early childhood. Those who had the opportunity to experience nature as a child can use this as a resource for the rest of their lives (Milojevic et al., 2021; Pensini et al., 2016). At this point, it should also be noted that experience in forests, in nature generally, is essential for promoting environmental awareness and action: Environmental education concepts are based on the assumption that children can only develop an awareness of environmental degradation if they develop an emotional connection to nature. The guiding principle "I am only prepared to protect what I value" illustrates this approach: children who have no experience of nature are unlikely to develop a sensitivity to environmental problems (Pensini et al., 2016).

How can the complexity of the interaction between resilience, well-being and the forest be clearly presented?

The diagram (Figure 1) shows that the four dimensions of subjective well-being can be assigned to the personal and social protective factors of resilience research. The effects of experience the forest, shown by the arrows on the left and right, indicate that both the dimensions of children's well-being (left column) and (personal and social) resilience factors (right column) can be addressed and positively influenced.

**Figure 1**

Linking the dimensions of children's well-being with personal and social resilience factors influenced by time spent in the forest (based on Nentwig-Gesemann and Fröhlich Gildhoff, 2022; Fröhlich-Gildhoff and Rönna-Böse, 2016; Wustmann, 2004)

Conclusions

What are the consequences for early childhood education?

The scientific findings from a remarkable body of evidence clearly indicate that spending time in the forest can make a significant contribution to the holistic development of children. For children up to the age of seven, regular experiences in nature are a valuable opportunity to promote both their physical and mental health as well as their resilience in the long term. Experience of the forest or nature in general have a positive influence on subjective well-being and health (Hartig et al., 2014; Tam 2013; Howell et al., 2011; Mayer et al., 2009).

The positive impact of experiencing forests and nature raises the question of whether alienation from nature has negative psychological and somatic effects, i.e. whether it makes people ill. In the case of children, this is referred to as *nature deficit syndrome*. The term was coined by US author and journalist Richard Louv in his book *Last Child in the Woods* (2005). He uses it to describe the negative effects that a lack of contact with nature can have on the physical, mental, and emotional health of people, especially children. Although *Nature Deficit Syndrome* is not an official medical

diagnosis, it is of immense importance in the discussion about the well-being of people in modern, technological and urbanised societies. It emphasises the need to reintegrate nature more strongly into our everyday lives, and it is also referred to indirectly in other sources (Renz-Polster and Hüther, 2013).

Against this background, it seems particularly important to create opportunities for forest experiences in educational institutions and in everyday family life. In Norway, children now spend between 70% (summer) and 31% (winter) of their kindergarten time in outdoor areas close to nature, and the *forest school approach* has also become established in Denmark, where children spend the majority of their kindergarten time in the forest (Moser and Martinsen, 2010; Williams-Sieghfredsen, 2017). In Austria, regular time spent outdoors with children in kindergartens is already a widespread reality. Many institutions have outdoor areas that are close to nature, gardens are visited with the children, and forest days have also become established (Kobler, 2024).

In German-speaking countries, a distinction is made between *classic forest kindergarten* (children spend the entire kindergarten time in the forest, there are protective devices), *integrated forest kindergarten* (children can regularly spend a kindergarten day in the forest approximately once a week) and *special forms* (e.g., farm kindergartens) (Bancalari, 2021). Forest kindergarten initiatives are being implemented in all federal states. With regard to the concrete use of forests as an educational space, it can be stated, based on a current internet search, that there are now 79 groups throughout Austria, 64 of which are forest children's groups and 15 nature children's groups (Branco, 2023). The number of these integrated forest kindergartens is thought to be significantly higher, although there are no exact figures for Austria either (Bundesforschungszentrum für Wald, 2021; Waldpädagogik Austria, 2025). During the *WoLeWa* project, we were able to determine that 22.4% of kindergartens in the federal state of Salzburg regularly (approximately once a week) offer children forest experiences across all districts, and a further 28.8% offer nature experiences in outdoor spaces at the same frequency. This amounts to a total of 48.3 % and thus almost half of all institutions. In contrast, the integrated forest kindergartens in Salzburg City amount to 18.4%, and 2.6% of the institutions regularly implement nature days; in total, 21% of children in municipal institutions spend a kindergarten day outdoors once a week. According to the respondents, the accessibility and availability of suitable outdoor areas play a major role.

The fact that the forest is increasingly being integrated into early childhood education practice as an educational space that promotes health and development is

encouraging and is based on the research findings mentioned above. However, it is not yet clear whether, from their own perspective, children feel more, less, or equally comfortable in the forest, compared to their feelings in the group classroom. It is also unclear what effects regular visits to the forest with children have on educators. For this reason, the *WoLeWa* project is dedicated, among other things, to the question of whether the subjective well-being of children and professionals can be addressed through regular forest experiences. The corresponding results are expected in 2026.

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