



Access to nature and the workplace

WHAT IS THE EVIDENCE?

WHAT DOES THIS MEAN FOR THE

MODERN WORKPLACE?

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Incorporating nature into workspaces is increasingly popular, whether it be through plants in the office, natural views, or locating close to parks and greenspace. But what can workplaces really expect in terms of benefits from increasing access to nature for their employees? What kinds of nature matter? What studies can be applied to the workplace? Here at IWBI and Nature Sacred we break down the latest evidence, its implications for the workplace, and emerging trends.

The theories behind the benefits of nature for human health and well-being

The most common and well – tested theories on why nature benefits human health come from two key theories that argue that nature, due to its ability to engage our attention in a ‘soft fascination,’ helps to restore our ability to concentrate, ^{1,2} recover faster from stress, ³ reduce burnout, ⁴ and improve our mood. ⁴ These studies have been tested for over thirty years from everything from wilderness excursions ^{5,6} to urban parks ⁷ to lab studies of nature videos. ^{8,9} More recently, some research has further explored outcomes on the role that nature plays in increased socialization, cohesion, physical activity, ¹⁰ and health, ¹¹ mostly done in urban parks.

What does the research say about nature and key workplace outcomes?

The following key outcomes are the most relevant to workplaces on the benefits of nature:






Task performance

Research has shown that contact with nature can improve task performance, usually through increased attention and focus. This is often evaluated with cognitive tests that measure productivity through proxy measures, such as the speed of completion for tasks,¹² classic cognitive load tests (often working memory), error rate,¹³ short-term memory,¹⁴⁻¹⁷ and higher order mental functions – argued by some to be supported by directed attention that can suppress distractions and increase the load on working memory.¹⁸

These tests are useful for understanding how quickly employees can complete challenging tasks and their ability to concentrate, and as they are often lab – tested, researchers can point to nature, versus other factors, that is influencing the task performance outcome. However, as they are often done with virtual nature (such as pictures or videos), some have argued that the experience of real-world nature can be more complex. Furthermore, the typical tasks expected of many white – collar employees, particularly at an advanced level, are often much more complex than those measured by the tasks commonly used in these studies. However, some studies done on real – world access to nature such as views or physical access to green roofs from the workplace, or walks in a park, have found similar results, such as improved attention¹⁹ or

focus^{20,21} respectively. In addition, other researched benefits of nature, such as attention restoration, creativity, socialization, and stress reduction (see below) indicate that when combined with other types of measurement these productivity tests can provide a useful indicator of workplace benefits. Lastly, studies that have shown reduced cognition from high levels of CO₂²² and bio – effluents²³ point to the potential for plants, with their known ability to clean the air,²⁴ to also positively impact cognition in buildings.

KEY MEASURED OUTCOMES FOR TASK PERFORMANCE

-  Short – term memory has been found to improve after watching videos of nature,¹⁵ being exposed to biophilia in the workplace,¹⁴ and walks in urban greenspace.¹⁶
-  Improved concentration has been found after viewing both real nature, such as green roofs^{19,25} and window views,²⁶ and virtual nature, including nature images²⁷ and videos,²⁸ and taking nature walks²⁹ to name a few.
-  Improved task performance has been found after viewing plants,¹³ after a nature retreat,⁶ and in buildings, with 72% of employees indicating that they felt more alert and productive in a building with numerous biophilic elements and gardens.³⁰






Stress, Mood, and Restoration of Attention

Research has shown that contact with nature can reduce stress and improve mood, often through the restorative qualities of nature. There is some indication that the visual and symbolic qualities of nature, for example viewing 'naturalized' green roofs,¹⁹ or taking work breaks in hospital gardens⁴ allows people to take short 'mental breaks' by letting their mind wander, and it is this 'soft fascination' quality of nature that researchers posit explains the mental restoration benefits.^{2,31} Mental restoration is often evaluated both through psychological measures such as psychological tests or questions that evaluate mental health, such as levels of stress,^{16,32,33} depression,³⁴ anxiety,¹⁶ or mood,^{35,36} as well as physiological tests that evaluate the body's response to stress, such as high blood pressure,^{15,34} cortisol levels (used to measure stress),^{37,38} and heart rate.^{39,40} These tests have been done in laboratory work,⁸ meta - analyses of multiple studies,⁴¹ and population - level studies,^{42,43} which when combined with both physiological and psychological tests speak to a strong link between contact with nature and improved health.

Most of these studies have been done on large - scale nature such as parks or population studies, but lab or in - situ studies with very small doses of nature have recreated their results with as little as five minutes of exposure.^{14,44,45} Thus while few of these studies have been done on office workers to date, there are some indications that the benefits of nature around stress and burnout reduction,^{4,41} improvement of mood,⁴⁶ restoration⁴⁷ and overall subjective well-being⁴⁵ can also benefit office

workers. For example, poor mental health has been linked to absenteeism, a higher number of sick days, and increased mortality.⁴⁸⁻⁵⁰ Stress in particular has been linked to burnout, which was recently recognized as a health condition by the World Health Organization.⁵¹ Mood has been linked to engagement,^{52,53} which may be as good an indicator of performance and attrition as traditional measures of productivity.⁵⁴ Lastly, the general benefit of restoration - whether of attention, mood, or recovery from stress - point to overlapping benefits for the workplace.

KEY MEASURED OUTCOMES FOR STRESS REDUCTION, MOOD, AND RESTORATION

-  Research has found that access to both outdoor greenspace,^{32,39} such as forests,⁵⁵ urban parks,⁵⁶ and tree cover,⁵⁷ and indoor nature,⁴¹ including plants⁵⁸ and nature imagery,^{58,59} can lead to stress reduction.
-  The effects of nature on mental fatigue and restoration is well-documented in the literature with a 2015 systematic review finding 41 studies on nature's attention restoration potential.¹⁸ This topic has been studied across various types of nature including landscape art, window views, plants, and outdoor nature^{47,60,61} with higher plant biodiversity often being associated with greater restoration.⁶
-  Studies have shown that exposure to nature can lead to improved mood^{7,63-65} with physical nature often providing the greatest benefit to mood,⁶³ including the potential to moderate or reduce noise annoyance, a key issue in urban areas.⁷






Socialization

A less – known benefit of contact with nature for the workplace is increased socialization. Most research on social benefits has looked at community – scale greenspace, such as parks, ⁶⁶ vacant lots, ⁶⁷ and gardens, ⁶⁸ showing that spending time in nature or viewing nature has been linked to increased social interaction, ⁶⁹ decreases in feelings of loneliness and increases in social cohesion, ⁶⁶ and increases in residential or place attachment, pride, and perceived quality of life. ^{60,68} Most of these are measured through psychological metrics such as the social cohesion and trust scale, ⁶⁶ surveys that ask about the use of common spaces and attachment, ^{60,70,71} observation of the use of common spaces, ⁷² or semi structured focus groups ⁶⁹ and interviews. ⁶⁸ Researchers attribute these outcomes partly to the qualities of nature itself – it makes parks and urban areas more inviting for people to spend time in, ⁷³ and much research has been done on exactly which qualities of nature – such as trees, meadows, and flowers – people find most attractive. ^{74–76} Increased physical activity, again most often researched by park visits, is another potential benefit. ^{77–80}

While few studies have looked at the impact of nature in the workplace on socialization, there are key benefits that translate to the workplace. Loneliness has been linked to poorer health outcomes and reduced life expectancy, ^{81–83} while increased physical

activity has been linked to reduced levels of depression ^{84–86} and improved cognitive function, including memory, ^{87,88} in addition to other health benefits. ^{89,90} Furthermore, there is some indication that socialization, here in the form of face-to-face interactions, is a key component of increased workplace performance, trust in coworkers, and decreased isolation. ⁹¹ This makes nature in the workplace particularly relevant to debates around enticing workers back to the office post – COVID for collaborative work. Thus while nature and socialization has not generally been tested in the workplace, research does point to the potential for natural views and plants in the workplace to benefit social interaction in the workplace.

KEY MEASURED OUTCOMES FOR SOCIALIZATION:




-  Nature, in particular neighborhood greenspace and urban nature, has been found to increase community social cohesion. ^{34,66,92}
-  Research has indicated that neighborhood common spaces, ⁷² green roofs ⁶⁹ and urban parks ⁹³ increase social interaction.
-  Community greenspace, including neighborhood gardens and revitalized vacant lots, have been found to increase neighborhood pride ⁶⁸ and place attachment. ⁶⁷



Creativity

Creativity may be one of the least – studied components of the benefits of nature, but those studies that do exist have found that time spent in nature (most commonly studied),⁹⁴ viewing nature,⁹⁵ or around indoor plants^{35,96} have been linked to creative performance,⁹⁷ problem-solving^{6,95} or the creative process.⁹⁸ Many of these studies have been done on creative professionals⁹⁸ or students,^{6,35,97,99,100} but a few have been done on office workers.⁹⁶ Measurements include drawing tasks,⁹⁹ questionnaires,^{99,100} creativity problem – solving tasks,⁶ qualitative interviews,⁹⁸ assessments,⁹⁷ and alternative uses tasks.⁹⁷ While the exact mechanism is unclear, researchers have posited that time in nature can re-charge directed attention, which is a key component of the preparation and incubation phase of the creative process,⁹⁸ that spaciousness and unpredictability are predictors of creative performance,⁹⁷ and that plant foliage may facilitate creative work.^{35,96}

KEY MEASURED OUTCOMES FOR CREATIVITY:

-  Nature imagery⁹⁹ and connectedness⁹⁸ has been shown to improve creative thinking
-  Those more connected to nature were found to prefer innovative thinking styles.¹⁰⁰
-  After a 4 – day nature retreat, students improved by 50% on a creative problem – solving task.⁶



Nature in the workplace and sustainability

There are additional potential benefits of incorporating nature into the workplace that may align with other goals of an organization. For example, many projects that pursue healthy building certification also pursue green building certification, or at the very least also have Sustainable Development Goals (SDG) or report on Environmental, Social, and Governance (ESG) metrics. While research on occupant satisfaction in green versus conventional buildings is currently mixed,¹⁰¹ there is some indication that the benefits to occupants from sustainable buildings may be psychological—and in particular increase pride in the workplace,¹⁰² which has been linked to increased engagement.¹⁰³

Furthermore, as shown by some successful city-level initiatives, incorporating nature into buildings can be an effective symbolic gesture of a larger environmental and social commitment that can help publicize less-visible green initiatives.¹⁰⁴

Lastly, while the aesthetics of some urban greening projects that also have ecological goals (such as habitat or stormwater management) can be perceived as 'messy' and 'unkempt,' research has also shown that these more visually interesting projects that prioritize biodiversity and habitat increase fascination and thus attention restoration and concentration.^{19,105,106}

Moving forward: What does this mean for your workplace?

While many organizations have heard about the potential benefits of providing access to nature for their occupants, there are still many real and perceived barriers to doing so. Some of these include not really believing that benefits from nature are ‘real’ or as real as say, indoor air quality. However, the combination of both subjective (such as surveys) and objective (such as heart rate, cortisol levels, and blood pressure) measures over the last thirty years provide solid evidence that access to nature does have measurable positive outcomes for mental and physical health as well as improved performance. Future research includes targeting exactly which types of nature, and how much, will lead to which outcomes, the pathways through which this occurs,^{107,108} as well as cultural and sociodemographic variations.¹⁰⁹

From a workplace perspective, projects do not need to wait for this research to develop to realize the benefits of providing more access to nature for their occupants. While in general more nature is better to give that sense of ‘restoration’, the symbolic aspect of nature means that even small interventions can provide measurable benefits. These benefits include views of nature (parks or green roofs), plants in the workplace (including a green wall), and even locating close to urban pocket parks. Nature interventions are particularly effective when combined with a full sensory experience, such as the sound of water, plants with scent or herbs, and

lots of visual interest that can help encourage ‘fascination’, ‘being away’, ‘extent’, and ‘compatibility’.² While more elaborate plant interventions do require maintenance, the benefits far outweigh other costly amenities such as elaborate lobbies and may align with other sustainability goals (such as a green roof). Fear that plants will attract bugs or aggravate allergies can be a minor barrier, but examples from around the world indicate that these are not insurmountable. Adding nature to buildings is in fact on-trend with the movement to ‘re-wild’ our cities¹¹⁰ and make workplaces and buildings less sterile and ‘dead zones.’ This is particularly important given the rising demand for access to nature in cities and buildings during the current hybrid work model.^{111,112} Lastly, while real plants are best, more and more research is showing that even natural materials and design interventions that mimic nature (often called biophilia) – such as shiny surfaces for water, the use of wood, and carpets and fabrics that mimic nature, can provide calming effects when real plants are not possible.^{113,114} As with any specialized intervention, it is always a good idea to hire someone who is experienced with plants and can provide effective solutions that are climate and design appropriate for your space. Lastly, designing access to nature interventions can simultaneously address multiple objectives, even in “small nature” settings in and near workplaces. For example, projects can balance ecological and environmental benefits as well as individual and collective health and wellbeing

outcomes. These could include accessible green roofs that provide opportunities for respite for workers as well as habitat for migratory birds and insects, or at - grade rain gardens that also provide stormwater management. As these small - scaled nature projects often align with city - level urban greening policies - level benefits, they may be eligible for developer benefits or incentives. Cutting edge best practices for landscape design for these kinds of nature interventions include creating green spaces that incorporate such elements as a portal, path, destination and surround to provide concrete guidance for designing spaces that encourage wellbeing.¹¹⁵ For examples of real - world nature solutions in the workplace see [this hospital garden at Legacy Emanuel Medical Center](#) in Portland, Oregon, that is integrated into the institution's human resources program; or this green roof, which incorporates a contemplative space adjacent to its [rooftop labyrinth at the American Psychological Association in Washington D.C.](#)



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