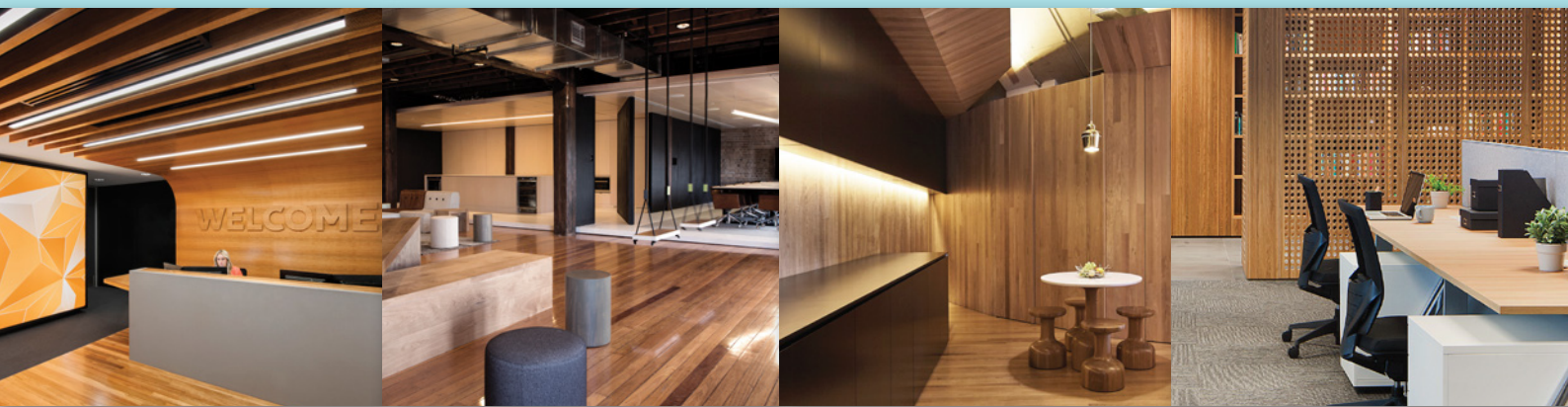


# Workplaces, Wellness and Wood



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Internationally and in Australia, there has been extensive research on the positive health and wellbeing impacts of spending time outside in nature. This research builds on the 'biophilia hypothesis'<sup>1</sup> first popularised by Edward Wilson. Wilson argued that humans have an innate tendency to seek connections with nature and other forms of life. Biophilic design elements such as natural light, plants, nature views and water features are increasingly used in the modern built environment. In the last 35 years there have been several studies exploring the relationship between exposure to these elements and wellbeing. Some of the key findings are outlined below.

- **Homes:** 7-8 % less crime attributed to areas with access to nature and can command an increase of 4-5% in property price
- **Office design:** productivity can be increased by 8% and rates of well-being increased by 13%
- **Education spaces:** increased rates of learning, improved test results, concentration levels and attendance, reduced impacts of ADHD
- **Healthcare spaces:** post-operative rates of recovery reduced by 8.5%, reduced pain medication by 22%
- **Retail:** the presence of vegetation & landscaping has been found to increase average rental rates on retail spaces with customers indicating they were willing to pay 8-12% more for goods and services.

More recently this hypothesis has been extended to include exposure to wood in the built environment. As a natural material wood is thought to provide a connection to nature and therefore improve physical and mental wellbeing. Internationally studies have demonstrated this relationship in offices, schools and hospitals. However, to date there has been little rigorous primary research conducted in Australia.

In the context of increasing urbanisation and declining exposure to nature Pollinate undertook a large-scale study investigating the relationship between exposure to wood in the workplace and worker wellbeing. The following report is based on the results of an online survey of n=1000 Australians working in indoor environments. The sample was recruited via an accredited market research panel and structured according to the indoor working population with respect to gender, age and location using ABS data.

<sup>1</sup> Wilson, E.O. 1984. *Biophilia*. Harvard University Press, Cambridge.

# Executive Summary



There is a growing body of evidence internationally demonstrating that connection to nature, biophilic design and wood is associated with improved physical and mental wellbeing. Australians lead increasingly indoor lives and have limited opportunities to connect with nature in their everyday life. It is therefore important to simulate this important connection with nature through the use of wood and biophilic design in the built environment.

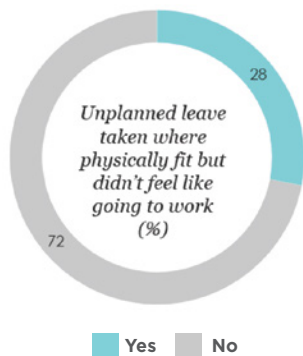
Pollinate have conducted Australia's first large scale study investigating this relationship among indoor workers. A survey of n=1000 indoor workers was conducted and resulted in the following key findings:

- Around two thirds of indoor workers spend most of their work day in an office environment
- Around half spend an hour or less outdoors each day
- Over a third aren't satisfied with their physical working environment
- The majority use negative words such as enclosed and dull to describe their workplace
- Over one in four take unplanned leave when they are physically fit but don't feel like going to work
- Workers who are satisfied are less likely to take unplanned leave and have fewer sick days
- Workers in workplaces with more wood have higher levels of satisfaction
- Biophilic design elements e.g. plants, natural light are also correlated with increased workplace satisfaction
- Workers in work environments with exposed wood feel more connected to nature and have more positive associations with their workplace
- Those in wooden working environments have higher levels of wellbeing and take less leave
- Wood is correlated with higher levels of concentration, improved mood and personal productivity



# The Australian indoor workplace

**Figure 1: Incidence of avoidable unplanned leave**



**Figure 2: Satisfaction with working life and workplace physical environment**



Australians lead increasingly indoor lives. Increasing urbanisation rates mean that people have less access to nature in their daily lives with Australians now spending over 90% of their time indoors.<sup>2</sup> Obesity, stress levels and mental health issues have risen and technology (especially screens) have encroached into almost all areas of life. With working hours on the rise, the workplace too plays an increasingly significant role in the overall wellbeing of Australians.

Indoor workers have very limited exposure to the outside world. The average full-time indoor worker spends 38 hours a week at their workplace with two thirds working in an office environment. For half of these people the average work day involves an hour or less spent outdoors. In this context the impact that the physical workplace environment has on a worker's physical and mental health should not be underestimated.

According to the results of the survey the average worker takes 3.2 sick days a year (see Figure 1). While this figure might not sound alarming, these sick days are not all attributable to illness. Over one in four (28%) workers admitted to taking unplanned leave on days where they felt physically fit but just didn't feel like going to work. Minimising this

unplanned leave has significant implications for workplace productivity and therefore the Australian economy.

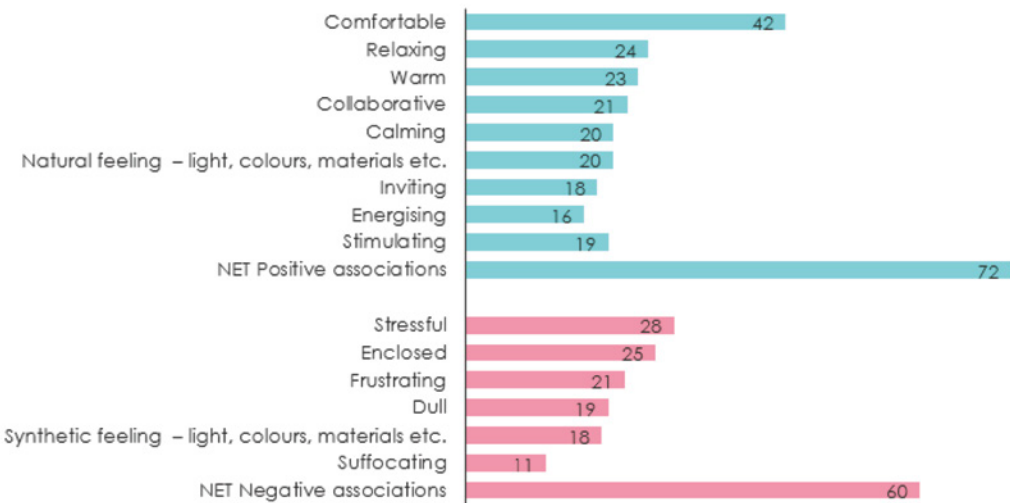
The link between job satisfaction and productivity has been well established in several academic papers<sup>3</sup>. The happier the worker the more effective they will be in their role. Therefore, it is crucial for organisations to focus on worker satisfaction in order to maximise productivity. According to the results of the survey 66% of workers are satisfied with their working life and 59% with their workplace physical environment (see Figure 2). This leaves a significant proportion who may not be maximising their potential while at work.

<sup>2</sup> Indoor air. at <<http://www.environment.gov.au/topics/environment-protection/air-quality/indoor-air>>

<sup>3</sup> Westover, J. H., Westover, A. R., & Westover, L. A. (2010). Enhancing long-term worker productivity and performance: The connection of key work domains to job satisfaction and organizational commitment. *International Journal of Productivity and Performance Management*, 59(4), 372-387.

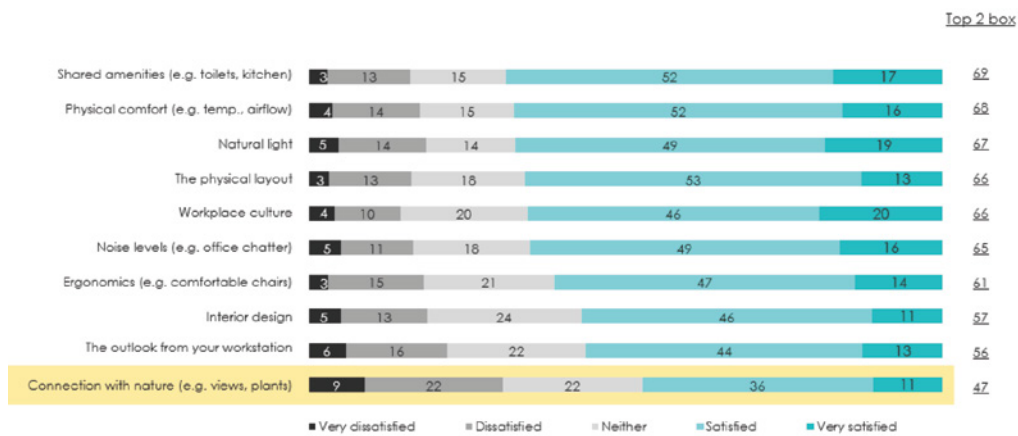
Figure 3: Words used to describe workplace

When asked which words describe their workplace, most workers chose some negative associations such as enclosed, dull and synthetic.



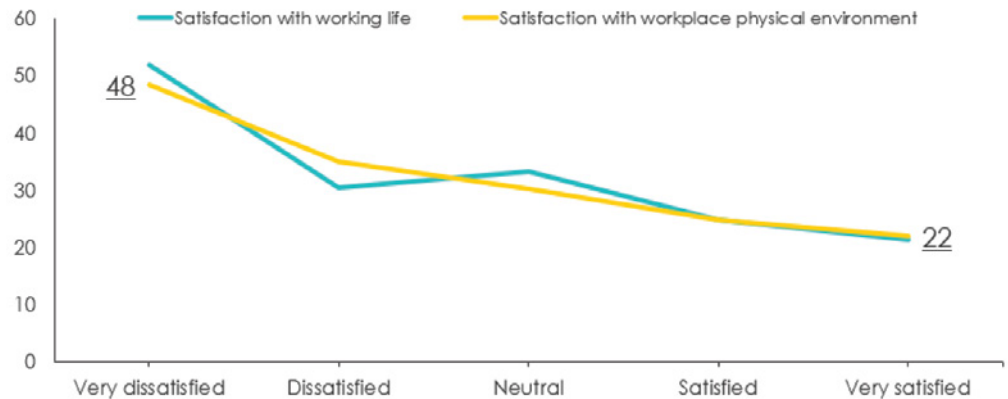
An area where workers are least satisfied is connection with nature while at work. Only 47% of workers are satisfied with this element of their workplace. Given the established link between nature and wellbeing there is a need to improve this component of the Australian workplace. Incorporating biophilic design elements such as wood, plants, nature views is an opportunity to improve workers' connection with nature and therefore overall wellbeing and productivity.

Figure 4: Satisfaction with elements of the workplace



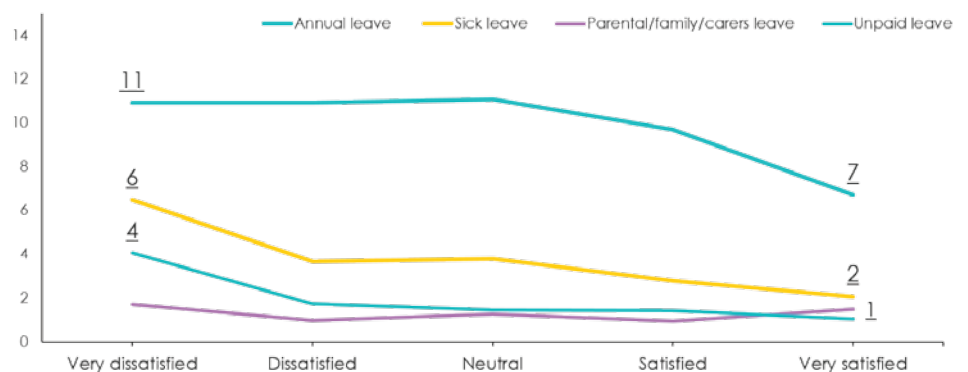
# Workplace satisfaction and worker performance

**Figure 5: Incidence of unplanned leave by workplace satisfaction**



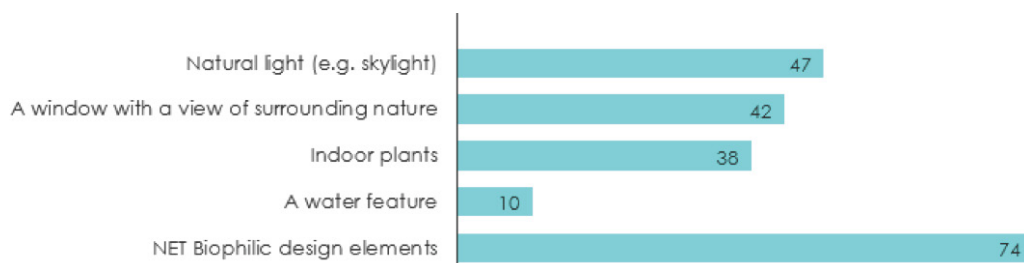
Workers who are satisfied with their physical workplace take less sick leave. On average workers who are very satisfied with their physical workplace take 4 less sick days per year compared to those who are very dissatisfied.

**Figure 6: Average leave days by physical workplace satisfaction**



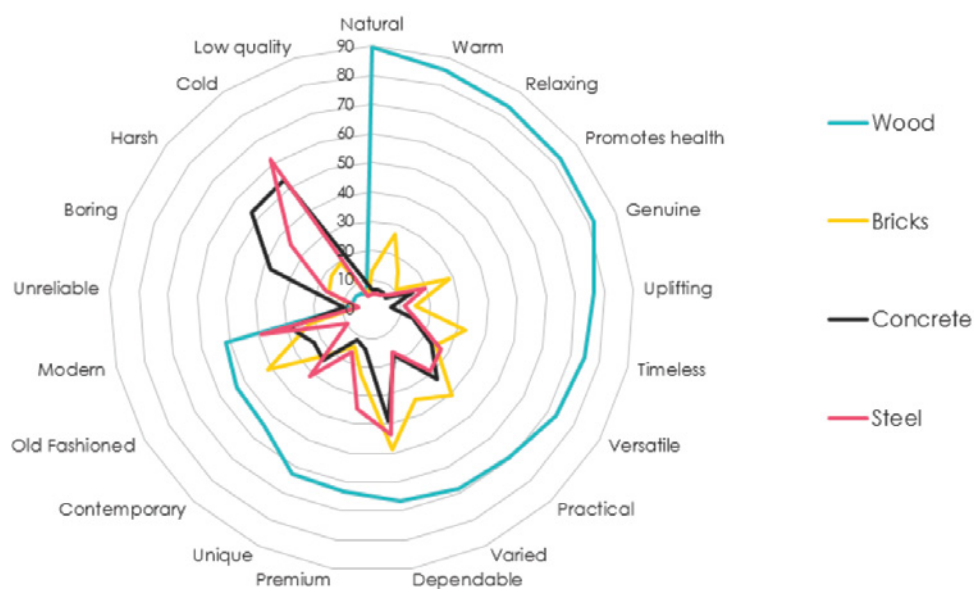
# Wood, biophilic design and workplace satisfaction

Figure 7: Elements visible from primary workstation



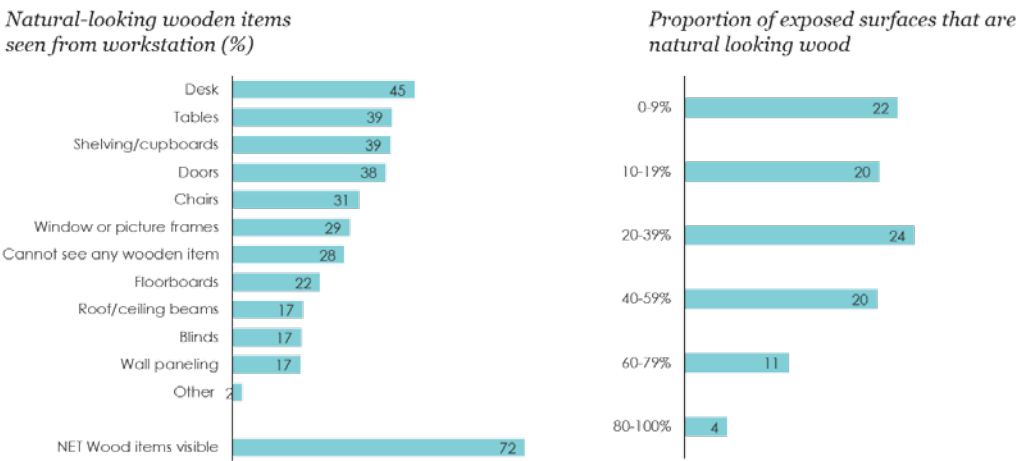
For Australians wood has very positive associations, particularly when compared to other materials such as concrete and steel. The vast majority see wood as being natural, warm and relaxing. As a natural material with very positive associations wood has the potential to offer workers a connection to nature inside the workplace.

Figure 8: Material associations (Pollinate consumer tracking research 2017)



Exposure to wooden items in the workplace environment is relatively high. Around three quarters of workers can see at least one natural looking wooden item from their workspace e.g. their desk, tables, cupboards. While there is high incidence of biophilic design elements and wooden items there is a spread in terms of the number of elements and proportion of surfaces that are wood. This spread enables us to look at these different groups to investigate the relationship with worker satisfaction.

Figure 9: Elements visible from primary workspace/workstation



Satisfaction with both working life and the physical workplace increases steadily along with the proportion of natural looking wooden surfaces. Those in workplaces with less than 20% natural looking wooden surfaces are far less satisfied with both their working life and physical workplace compared to those with a high proportion of wood

Figure 11: Workplace satisfaction by number of biophilic design elements

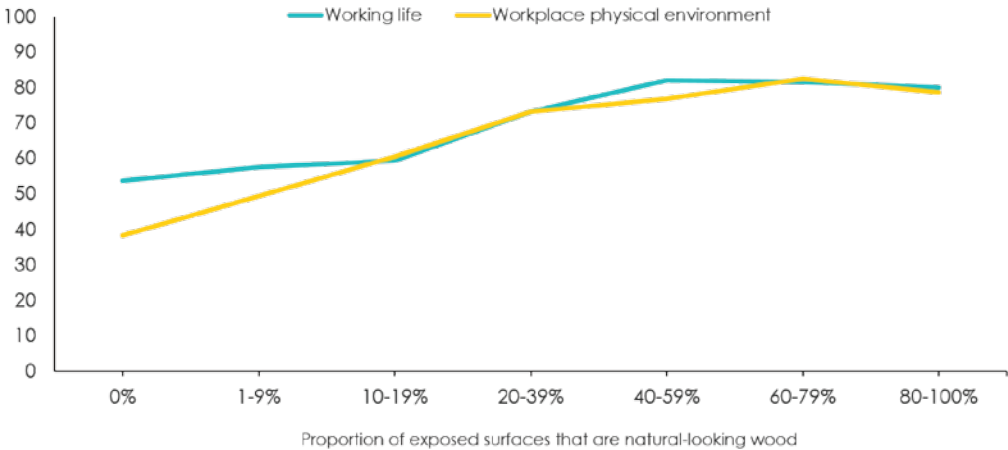
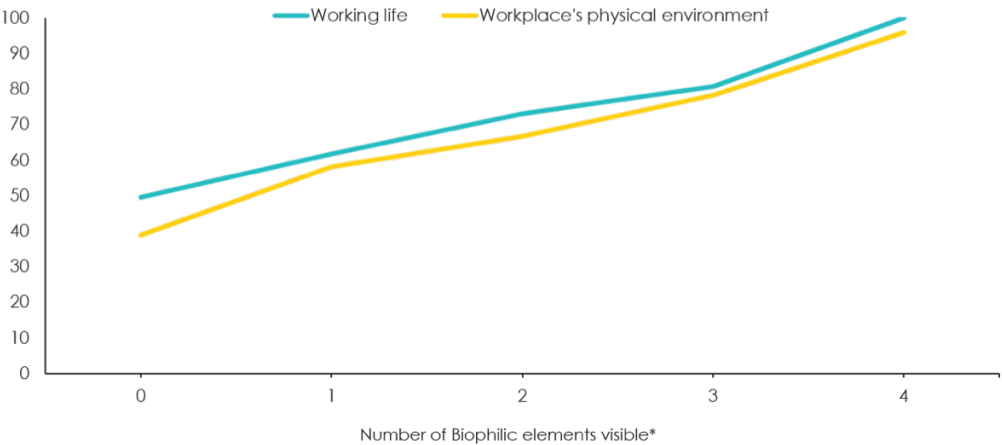




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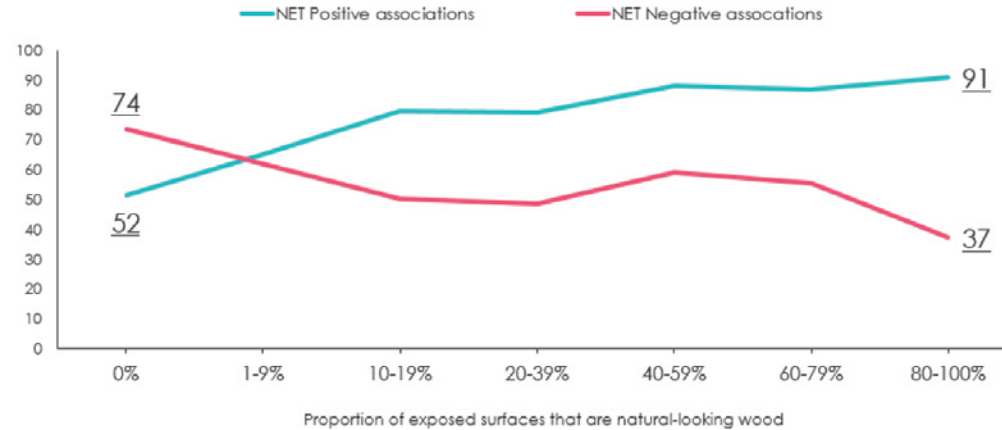
This relationship also holds when it comes to biophilic design elements. Satisfaction with both working life and the physical workplace increases along with the number of biophilic design elements visible. These findings reinforce the benefits of offering a connection to nature in the indoor environment.



So how do we explain this clear relationship between wood, biophilic design and workplace satisfaction? Leading US architecture critic and lecturer Professor Sarah Goldhagen makes a compelling case for how the built environment shapes our emotions, memories and wellbeing.<sup>4</sup> Design can either embrace and enhance the human experience or can result in habitats that detract from the day-to-day business of being human. Goldhagen claims that the use of natural elements and views is essential to good design. She also makes a case for public policy to consider the impacts of the urban form and urban design on the health, productivity and wellbeing of the entire community.

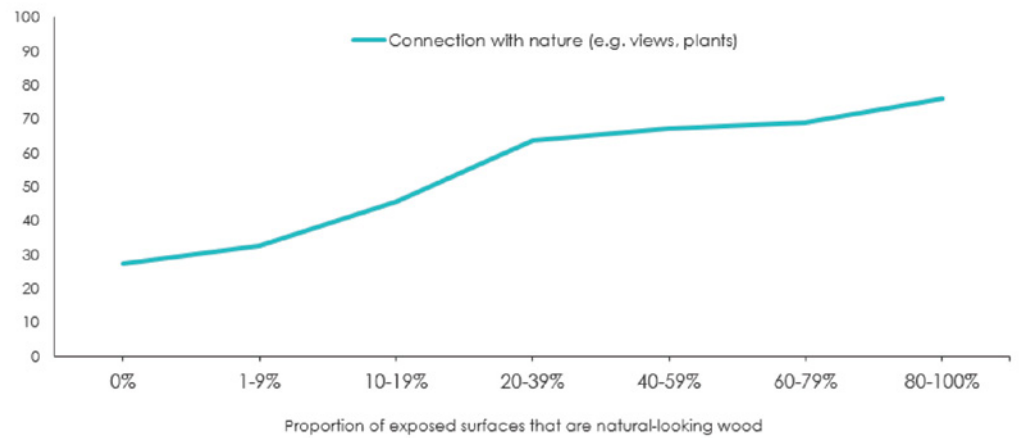
With its powerful positive associations wood taps into our feelings and enhances our workplace experience. Workers with higher proportions of wooden surfaces have more positive associations with their workplace e.g. relaxing, calming and feel more connected to nature.

Figure 12: Workplace satisfaction by proportion of natural looking wooden surfaces



<sup>4</sup> Goldhagen, S.W. 2017. *Welcome to your world*. Harper Collins.

**Figure 13: Connection with nature by proportion of natural looking wooden surfaces**

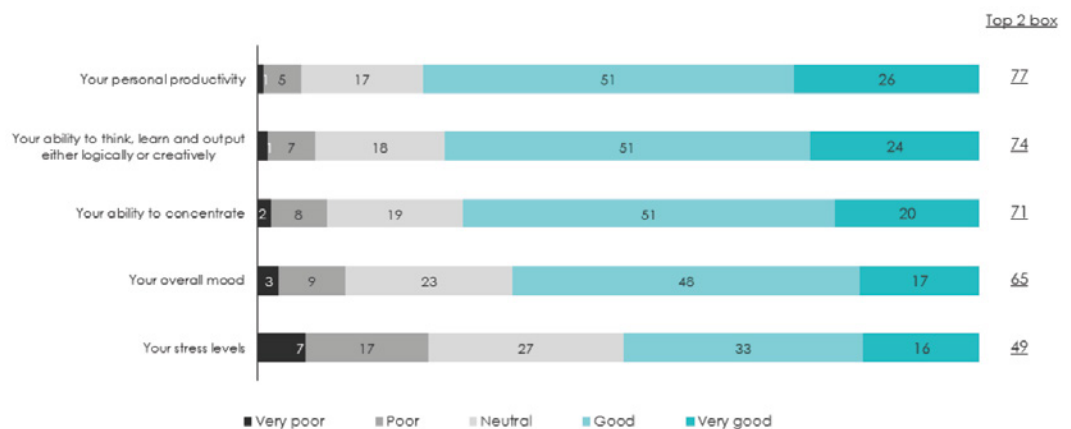


The results of this survey build on the biophilia hypothesis and demonstrate that, in the context of increasingly indoor lives, wood in the workplace offers a connection to nature. This connection with nature drives feelings of satisfaction and positive workplace associations. To outline this relationship simply:

- Wood = connection with nature
- Connection with nature = workplace satisfaction
- Wood = workplace satisfaction

# Wood and worker performance

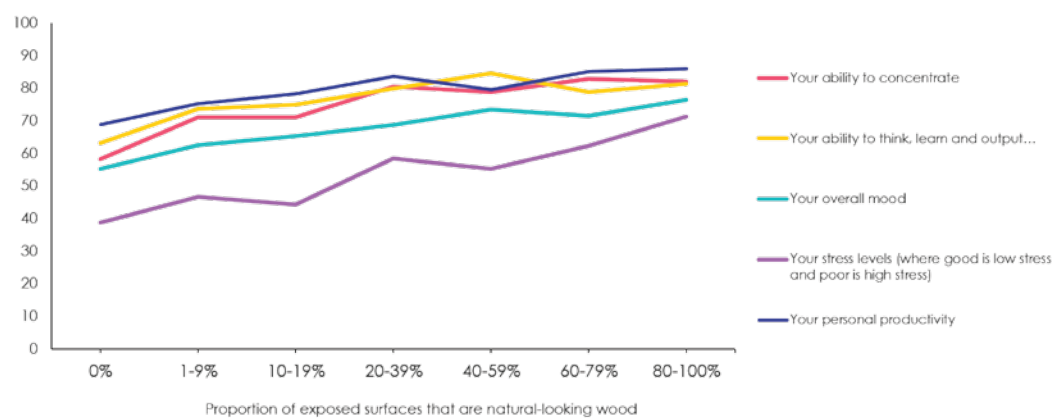
**Figure 14: State at work most of the time**



Biophilic design in the workplace has been shown to increase productivity by 15%, increase creativity, improve staff retention and crucially reduce absenteeism<sup>5</sup>. Given its role in increasing connection to nature wood is also associated with higher levels of productivity.

Those in workplaces with more exposed wood rate their personal productivity, ability to concentrate and overall mood more positively. These workers are far more likely to rate their stress levels as good when compared to those with little to no exposed wooden surfaces.

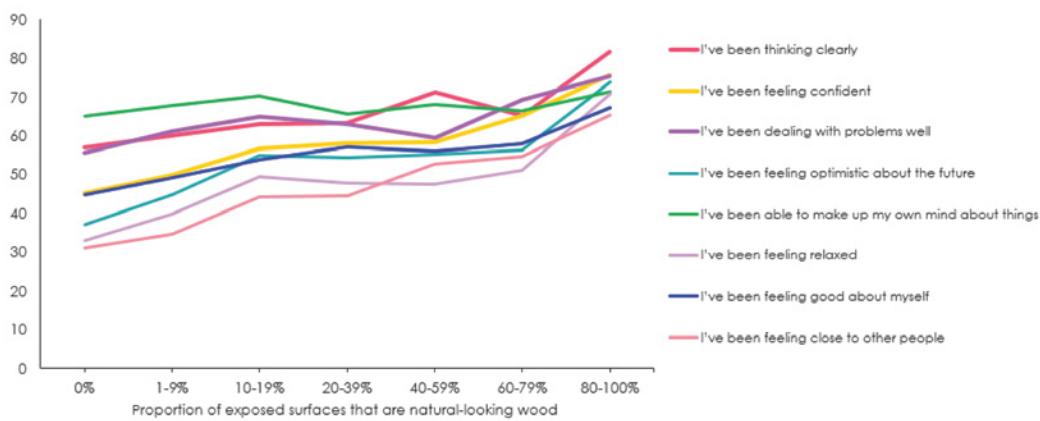
**Figure 15: Productivity, concentration and mood by proportion of natural looking wooden surfaces**



<sup>5</sup> The economics of Biophilia, Terrapin Brighton Green 2012

Figure 16: Feelings and thoughts at work by proportion of natural looking wooden surfaces

This pattern can also be seen when it comes to clarity, confidence and optimism.





# Accounting for confounding variables



The preceding results show a clear relationship between wood and workplace satisfaction and productivity. However, it is important to consider external factors that may be contributing to the relationship.

Further analysis controlled for factors known to be associated with worker wellbeing includes gender, age, income, occupation and education. Even after controlling for these potential confounding factors workers with more visible wooden surfaces reported significantly higher work satisfaction and productivity than those with fewer wooden surfaces.

# Conclusion



Humans have an innate need to connect with nature. In an increasingly urbanised world with rising work hours Australians are now spending over 90% of their time indoors. It is therefore important to look for opportunities to enhance our connection with nature in the indoor environment.

The use of wood and biophilic design in the Australian indoor workplace has clear benefits for both the employee and the organisation. The positive connection people have with wood as a natural material has the effect of increasing workplace satisfaction and wellbeing. Those in workplaces with a higher proportion of wood feel more connected to nature and rate their working environment far more positively. These people have lower stress levels, higher concentration and improved overall mood.

In addition to these compelling employee benefits, the use of exposed wood in the workplace has a clear benefit to the organisation. Wood in the workplace is associated with higher productivity and reduced sick leave.

Increasing the use of wood in the Australian workplace not only benefits employees but improves organisational productivity and therefore the Australian economy. Wood is the only renewable building materials and the one most loved by Australians. Wood is natural, timeless, versatile and elicits feelings of warmth and comfort in those exposed to it. There is a growing body of evidence to suggest that the future of the Australian indoor built environment is wood.