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# Network structures of workplace sustainability and employee outcomes: a two-wave study

Zane Sheeran and Anna Sutton
*School of Psychology, The University of Waikato, Hamilton, New Zealand, and*
Helena Dorothy Cooper-Thomas
*Faculty of Business, Auckland University of Technology, Auckland, New Zealand*

## Abstract

**Purpose** – This study examines how employees' perceptions of their organisation's environmental sustainability relate to their well-being and performance. This study aims to clarify these relationships by investigating the role of individual differences within the interconnected networks linking sustainability, well-being, performance, person–organisation fit (P–O fit), self-determination and environmental attitudes and behaviours.

**Design/methodology/approach** – Australian employees completed a two-wave online survey (Time 1: $n$ = 628; Time 2: $n$ = 493). Network analysis was used to examine the associations between perceived organisational sustainability and a range of individual factors and outcomes, allowing for the assessment of stability in the network structure over time.

**Findings** – Across both timepoints, strong and stable positive associations were found between perceived sustainability, well-being, performance and P–O fit. Self-determination was also strongly linked to well-being and performance. P–O fit emerged as a central component within the network, emphasising its role in supporting positive employee outcomes in sustainable workplaces. No significant structural or global strength differences were observed over time, indicating that the network's overall structure and density remained stable.

**Originality/value** – This study provides novel evidence using network analysis to map the relationships among sustainability perceptions, key individual variables and employee outcomes. This paper demonstrates that these relationships are robust over time and highlights P–O fit as a core mechanism underpinning how sustainability initiatives contribute to a healthy, productive and sustainable work environment.

**Keywords** Sustainability, Employee well-being, Job performance, Network analysis

**Paper type** Research paper

## Introduction

In a time of escalating concern for the climate and increasing societal demand for environmental responsibility, workplaces across the world are under growing pressure to adopt sustainable practices (Ones and Dilchert, 2012). These practices not only shape the organisation's reputation but may also influence how employees feel and perform at work (Ma *et al.*, 2023). Yet the process through which workplace environmental sustainability affects employee outcomes remain severely understudied.

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Sustainability means ensuring we appropriately manage and protect the environment our natural resources to ensure they remain available for generations to come (Goodland, 1995). Over the past few decades, public attitudes towards sustainability have shifted because of rising environmental concern, the visible effects of climate change and greater access to information about environmental degradation. Many now fear that we may have reached a tipping point, beyond which there will not be enough resources left for future generations (United Nations Development Programme 2024). This shift has fuelled heightened consumer demand for green goods and services (Sharma, 2021) and a stronger desire among individuals to work for organisations that actively contribute to environmental protection (Ma *et al.*, 2023).

This widespread emphasis on sustainability has put pressure on all modern workplaces; organisations are choosing to adopt environmentally responsible practices to not only meet external expectations but also attract and retain talent, improve employee well-being and enhance overall performance (Ma *et al.*, 2023; Ones and Dilchert, 2012). Research also consistently highlights the organisational benefits of increased sustainability, including competitive marketing advantages (Sharma, 2021) and decreased operational costs (Rounaghi *et al.*, 2021). However, while these benefits are becoming increasingly well-documented, the theoretical mechanisms that explain how sustainability practices influence employees remain less clear. Psychological frameworks can help by providing explanations to better understand both how and why organisational sustainability may result in improved employee well-being and performance.

Two theoretical perspectives provide especially useful insights. First, person–organisation fit (P–O fit) theory suggests that alignment between an individual's values and those of their organisation results in positive outcomes such as higher well-being and performance (Cable and Judge, 1996). From this perspective, sustainability can be viewed as adding worth to an organisation's culture through enhancing its human capital; in other words, employees who value sustainability and environmental responsibility and belong to a workplace that also values sustainability and environmental responsibility may, therefore, experience greater satisfaction and effectiveness. Second, Self-Determination Theory (SDT; Deci and Ryan, 1985) explains how intrinsic motivation and the satisfaction of basic psychological needs – autonomy, competence and relatedness – enhances positive employee outcomes. Organisational sustainability initiatives may help employees meet these needs by allowing them to act autonomously in environmentally responsible ways, feel competent in their contributions towards sustainability efforts and connect with others through collective environmental goals or participation in community-based sustainability programs. Together, these frameworks provide explanations for how sustainability initiatives may foster positive outcomes for both individuals and organisations.

By bringing these frameworks together, this study aims to provide insight into explanations of workplace sustainability driven by psychological theory. Prior research has primarily highlighted associations between sustainability and positive outcomes (Han *et al.*, 2021; Sadick and Kamardeen, 2020; Sheeran *et al.*, 2025a), whereas the present study extends on the literature by framing P–O fit and SDT as underlying theoretical explanations that can help explain these links. Through this approach, we contribute both a stronger theoretical basis for future research investigating sustainability and employee outcomes and practical insights for workplace sustainability.

*Employee outcomes: Well-being and performance*

Well-being is crucial for both employee and organisational success (Zheng *et al.*, 2015), being associated with outcomes such as higher levels of performance and productivity, lower

levels of depression, anxiety, stress, burnout, absenteeism, presenteeism, turnover intention and counterproductive work behaviours (CWBs) (Goetzel and Ozminkowski, 2006; Pescud *et al.*, 2015). Recent research further suggests that CWB reflects the combined influence of multiple workplace perceptions and attitudes rather than a single underlying factor (Abdullah and Al-Abrrow, 2025), highlighting the importance of including CWB in workplace research. As such, improving and maintaining the well-being of employees has been an increasing interest of organisations over the years (Salas-Vallina *et al.*, 2021). Coupled with the global shift towards sustainability, research has investigated the links between sustainability and positive individual outcomes. For example, spending time in nature reduces stress and increases general health and well-being (White *et al.*, 2019); furthermore, spending time in green urban environments increases life satisfaction (Reyes-Riveros *et al.*, 2021). Additionally, working in organisations that implement sustainability practices has been linked to increased levels of employee well-being (Han *et al.*, 2021; Sadick and Kamardeen, 2020), job satisfaction (Crucke *et al.*, 2022) and performance (Bohlmann *et al.*, 2018; Sheeran *et al.*, 2025a). However, to date, the mechanisms of these relationships have not been established. To better understand how and why sustainability initiatives impact employee outcomes, therefore, we draw on two key theoretical frameworks: P–O fit theory and SDT to explain the underlying psychological mechanisms. We suggest that alignment with organisational values and the fulfilment of basic psychological needs may foster positive employee outcomes in sustainable workplaces.

*Person–organisation fit*

P–O fit identifies that alignment between an individual's values and an organisation's values results in positive outcomes for both employees and organisations (Judge and Kristof-Brown, 2004), including well-being and performance (Chen *et al.*, 2016; Sousa and de Porto 2015). Considering P–O fit as a mechanism, these positive outcomes occur as alignment fosters a sense of meaning, purpose and identity congruence: employees perceive their work as consistent with their personal values, which enhances intrinsic motivation, satisfaction and engagement. In the context of environmental sustainability, an individual's environmental worldview and pro-environmental behaviours (Pro-EBs) may influence the relationship between organisational sustainability and employee outcomes. Pro-EBs are observable behavioural expressions of environmental values, serving as indicators of the values an individual prioritises, while environmental worldview reflects personal beliefs and attitudes about humans' relationship with the natural environment (Milfont, 2012). Pro-EBs are conceptualised in this study as behavioural expressions of underlying values and attitudes, rather than as independent drivers of other constructs. Within the network, they are therefore interpreted as observable manifestations of broader psychological processes, such as value alignment. In line with P–O fit theory, a stronger alignment of values between individual and organisation – for example, someone who aims to cut their personal carbon emissions by cycling to work and reducing meat in their diet and who works for an organisation that has adopted a goal of reduced carbon emissions, such as moving to a hybrid vehicle fleet – will be associated with higher employee well-being and performance.

However, value alignment alone may not fully explain the internal motivational processes that drive these outcomes. Here, SDT complements P–O fit by identifying the psychological needs (autonomy, competence and relatedness) that sustainability initiatives can fulfil. While P–O fit explains the alignment mechanism, that is, why employees respond positively to matching values, SDT explains the motivational pathways, that is, how need satisfaction promotes intrinsic motivation, well-being and performance. Given the importance of personal values in the domain of environmental sustainability, we expected that P–O fit

would be more centrally linked to employee outcomes than motivational processes. Accordingly, we conceptualise SDT as a complementary secondary pathway, operating under conditions where sustainability initiatives are sufficiently salient to support autonomy, competence and relatedness.

*Self-determination theory*

The SDT (Deci and Ryan, 1985) provides a framework that may help explain how an organisation's sustainability efforts translate into enhanced employee well-being and performance, by providing insight into the role of intrinsic and extrinsic motivation in the workplace. The SDT outlines three basic psychological needs: autonomy, competence and relatedness, which can all be used to understand sustainability motivation. For example, when individuals feel autonomy over their sustainable choices, such as whether to choose low or no emission transport options, they may be more motivated to act sustainably or make sustainable choices. Further, sustainable actions may also enhance their sense of being capable of enacting sustainable choices (competence) and doing so to benefit their community and future generations (relatedness).

Research grounded in SDT has consistently shown that higher levels of self-determination are positively associated with higher levels of both well-being and performance in employees (Ryan and Deci, 2000). Over the years, SDT has been applied to several domains, including sustainability, where it helps explain how autonomous motivation and psychological need satisfaction underpin sustainable attitudes and actions (De Groot and Steg, 2010; Gauthier *et al.*, 2022).

Experimental research has compared individuals who are self-determined, those whose environmental behaviours are guided by intrinsic motivation and the satisfaction of basic psychological needs, with individuals who are externally motivated, those whose behaviours are primarily influenced by external rewards or social pressures (Aitken *et al.*, 2016; De Young, 2000). In these studies, self-determined participants reported greater dissatisfaction with the current state of the environment, perceived environmental problems as more important, felt more competent to take action and were, therefore, more likely to engage in Pro-EBs. External motivation, in contrast, was associated with lower perceived competence and weaker engagement in environmentally beneficial activities.

Further, as Pro-EBs become more externally regulated rather than self-determined, they become less frequent (Pelletier *et al.*, 1998). SDT states that motivation exists along a continuum ranging from external regulation, where behaviours are driven by external rewards or pressures, to intrinsic motivation, where actions are performed out of genuine interest or personal value (Ryan and Deci, 2000). When Pro-EBs are motivated by external factors, such as strict organisational rules, they are less likely to be internalised and integrated into individual's sense of self, resulting in reduced consistency and long-term engagement in sustainable behaviours. This highlights the importance of organisational efforts to support their employees to be green through activating self-motivations, rather than attempting to force behaviours through strict policy that kindles extrinsic motivation (Colombo *et al.*, 2023). Social and contextual factors of motivation towards the environment have also been explored, aligning closely with the relatedness facet of SDT. Findings suggest self-determination is greater when individuals are surrounded by others who behave similarly (e.g. co-workers who also act in environmentally conscious ways) (Darner, 2009). This implies that building a supportive and sustainable organisational culture is key to improving individual member's sustainable behaviours.

Together, both the P–O fit and SDT frameworks provide a comprehensive account of how organisational sustainability may influence employee outcomes through both value congruence and need satisfaction.

*The present study*

Recent research has established positive relationships between employee's perceptions of their workplace sustainability and self-reported outcomes, well-being and job performance (Bohlmann *et al.*, 2018; Han *et al.*, 2021; Sadick and Kamardeen, 2020; Sheeran *et al.*, 2025b). Furthermore, both P–O fit and SDT outline potential mechanisms explaining how the sustainability of an organisation influences employees. However, research is yet to investigate how key variables such as environmental worldview, Pro-EBs and motivational factors interact within a broader network to influence employee outcomes in sustainable organisations. Taking a network perspective is important because workplace sustainability operates as a complex web of interrelated processes. Understanding these connections can reveal how sustainability related attitudes and motivations collectively shape well-being and performance; key insights that traditional correlational approaches may overlook. Our approach allows us to identify central constructs, those with the highest predictability, in the sustainability-employee outcomes relationships, providing a more holistic understanding of how sustainability is embedded within organisations.

In this study, we measure employee perceptions of workplace sustainability, self-determination, P–O fit, Pro-EBs, environmental worldview and the key employee outcomes of well-being and performance. It is important to note; sustainability is a broad concept that is often identified as challenging to measure. Because of its subjective nature and lack of standardised measurements, researchers often focus on one dimension of sustainability which can lead to biases (Hall *et al.*, 2022). To address this challenge, the current study measures perceptions of sustainability as a meaningful proxy to actual sustainability measurements, such as environmental audits. It is, therefore, important to clarify that sustainability in the context of this paper refers to *perceived organisational sustainability* and reflects employees' subjective interpretations rather than objective organisational sustainability. Perceptions reflect individuals' interpretive processes through which environmental cues are cognitively processed and assigned meaning (Fiske and Taylor, 2013). As sustainability initiatives are often complex, multifaceted and potentially not visible to all employees, perceptions capture how sustainability is noticed, interpreted and understood by individuals in the workplace. Accordingly, this paper's findings should be understood as reflecting the psychological meaning of sustainability to employees, rather than objective organisational practices. Furthermore, focusing on perceptions of sustainability allows insight into how sustainability efforts are experienced and evaluated by employees from a diverse set of organisations where sustainability practices may vary greatly.

Although related, perceived organisational sustainability and corporate social responsibility (CSR)-related constructs are distinct concepts. Perceived organisational sustainability refers to employees' overall subjective evaluation of how environmentally responsible their organisation is (Sheeran *et al.*, 2025b). In contrast, CSR-related constructs encompass a wider domain that includes social, ethical and economic responsibilities in addition to environmental concerns and are often conceptualised at the organisational level rather than as individual's perceptions (Sheehy, 2015). Therefore, while these constructs overlap in their focus on organisational responsibility, the present study focuses specifically on employees' individual-level perceptions of environmental sustainability, rather than broader CSR.

Using a two-wave design and network analyses, we identify how these constructs interact and contribute to broader sustainability outcomes in the workplace (see Figure 1 for hypothesised network model). Network analysis explores complex associations between multiple variables (Chalmers *et al.*, 2022) and as such will build insights into how sustainability and other key variables influence each other as well as the part they play within the wider network. Network analysis uses predictability, an indication of how interconnected each individual node is within the network, to establish how important each measure is within its network. An alternative way to understand this is how much the explanatory power of the network would be reduced if a variable was removed. By taking a network analysis approach, we offer a complementary lens to traditional theory-testing approaches. Additionally, we repeat the network analysis over two timepoints, with this two-wave design allowing us to test for stability over time.

## Method

### *Participants and procedure*

Data were collected from the same participants at two timepoints ($n$ = 628 and $n$ = 493) using Prolific, an online research recruitment platform. Australia was used as the sample country to avoid potential bias associated with the current political climate in more commonly studied populations such as the UK and the USA, which may influence responses related to well-being and politically charged issues such as sustainability (Van Bavel *et al.*, 2024). Thus, to be eligible to participate, individuals had to be employed and living in Australia. Following data cleaning (outlined below), data from 573 participants were retained for analysis at Time 1, and data from 451 matched participants were retained at Time 2. Within this study, a two-week time lag was chosen to assess short-term attitudinal stability; this was identified as optimal based on research suggesting if the lag period is too short respondents may remember their responses and respond using their past feelings not how they feel when taking the survey (Kawakami *et al.*, 2020).

Demographics were as follows: 54.97% female, 42.06% male and 2.97% other/prefer not to say. The age of participants ranged from 18 to 79 years (M = 36.41, SD = 11.34). The majority

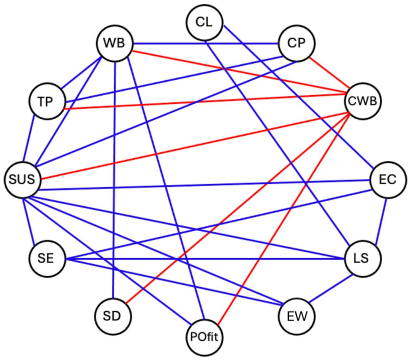


**Figure 1.** Hypothesised relationships between sustainability, employee outcomes and key variables
**Note:** Blue lines represent positive relationships, red lines represent negative relationships

of participants (51.93%) identified as white/European, 22.81% as Australian, 19.47% as Asian, 0.7% as Aboriginal or Torres Strait Islander and the remaining 5.09% as other. Participants were employed in a diverse range of sectors, including Health care (17.28%), Education (15.71%), Office/Administration (13.61%), Retail (9.25%), Government (9.08%) and other (35.07%), with a mean tenure of 5.13 years (SD = 5.83).

*Measures*

*Sustainability* is an inherently broad and multifaceted concept, yet existing measures often lack standardisation and capture only one specific dimension relevant to the researcher's focus. This narrow approach to sustainability, for example, assessing only whether an organisation recycles, overlooks the wider range of environmental practices and commitments that together define sustainability (Hall *et al.*, 2022). Moreover, an organisation might market its sustainability, with various policies and initiatives, but there may be minimal actual resourcing to enable these to succeed. To mitigate such concerns and measure the breadth and reality of the organisation's sustainability actions, we used employee perceptions of their workplace's sustainability (Sheeran *et al.*, 2025a). This scale combines two domains. The first dimension, *perceived protection of the natural environment*, uses the seven-item Corporate Stakeholder Responsibility Scale (CStR–NE; El Akremi *et al.*, 2018). An example item is, "Our company makes investments to improve the ecological quality of its products and services". The second dimension, *perceived organisational support towards the environment*, consists of the five-item scale developed by Lamm *et al.* (2015). An example item is, "My actions toward sustainability are appreciated by my organization". Together, these two domains capture employee perceptions of both the direct environmental actions of their organisation and the frameworks their employer puts in place to support employees' environmental actions (Sheeran *et al.*, 2025a). This combined measure of perceived environmental sustainability showed high internal consistency (Time 1 $\alpha = 0.93$; Time 2 $\alpha = 0.94$).

*Self-determination* was measured using Sheldon and Deci's self-determination scale (2016). The scale measures self-perceptions of determination through ten pairs of statements split into two subscales, each comprising five pairs of items. The first subscale, awareness of oneself, includes pairs of statements relevant to individuals' awareness of their thoughts, feelings and attitudes. An example pair is, "(A) I feel that I am rarely myself" and "(B) I feel like I am always completely myself". The second subscale, choice in one's actions, includes pairs of statements that are relevant to individuals' autonomy. An example pair is "(A) I feel pretty free to do whatever I choose to" and "(B) I often do things that I don't choose to do". Participants were asked which statement they felt was more true using a five-point scale ranging from 1 "A feels more true than B" to 5 "B feels more true than A". According to Sheldon and Deci (2016), the subscales can be used separately or combined; we took the latter approach, combining the two subscales into an overall measure of self-determination. In the present study, the combined scale showed good internal consistency (Time 1 $\alpha = 0.84$; Time 2 $\alpha = 0.83$).

*P–O fit* was measured using the three-item Perceived P–O fit scale (Cable and Judge, 1996). An example item is, "My values match or fit with the values of this organisation"). Responses were on a five-point Likert scale ranging from "strongly disagree" to "strongly agree". The scale showed good scale reliability (Time 1 $\alpha = 0.87$; Time 2 $\alpha = 0.88$).

*Pro-EB* was measured using Larson *et al.*'s (2015) Pro-EB scale. The scale consists of four subscales, each asking how often respondents engage in behaviours across the four Pro-EB dimensions: conservation lifestyle (three items; e.g. "Recycled paper, plastic and metal"); land stewardship (three items; e.g. "Volunteered to improve wildlife habitat in my community"); social environmentalism (three items; e.g. "Talked to others in my community

about environmental issues") and environmental citizenship (four items; e.g. "Signed a petition about an environmental issue"). Responses were recorded on a five-point Likert scale ranging from "never" to "very often". All scales showed low but adequate scale reliability, aligning with Larson's original reliability findings (above $\alpha = 0.66$). Ziegler *et al.* (2014) discuss the challenges of using Cronbach's alpha to measure scale reliability in short scales. To address this concern, we highlight the test-retest reliability (Rammstedt and Beierlein, 2014), found to be good across all four scales ($r > 0.72$ and $p < 0.01$).

*Environmental worldview* was measured using the Revised New Ecological Paradigm Scale (Dunlap *et al.*, 2000). The scale consists of 15 items that measure an individual's worldview regarding the state of the environment and environmental issues, for example, "When humans interfere with nature it often produces disastrous consequences". Following Hawcroft and Milfont's (2010) guidelines, responses were on a five-point Likert scale, ranging from strongly disagree to strongly agree. The scale's unidimensionality was supported by the full scale showing good reliability (Time 1 $\alpha = 0.86$; Time 2 $\alpha = 0.88$).

*Employee well-being* was measured using the Employee Well-Being Scale (Zheng *et al.*, 2015), consisting of 18 items (e.g. "I find real enjoyment in my work"). Responses were recorded using a six-point Likert scale ranging from 1 "never" to 6 "all of the time". The scale reliability was good (Time 1 and Time 2 $\alpha = 0.93$).

*Performance* was measured using the Individual Work Performance Questionnaire (Koopmans *et al.*, 2012). The Individual Work Performance Questionnaire comprises three self-report dimensions of individual performance at work: task performance (five items; e.g. "I planned my work optimally"); contextual performance (eight items; e.g. "I continually sought new challenges in my work"); and CWB (five items; e.g. "I made problems at work bigger than they were"). Responses were recorded on a Likert scale ranging from 0 "seldom" to 4 "always" for task and contextual performance and from 0 "never" to 4 "often" for CWB. The scale showed good reliability over dimensions and time (Time 1 $\alpha = 0.82$, 0.88 and 0.83; Time 2 $\alpha = 0.81$, 0.88 and 0.83, respectively).

*Data analyses*

Before analysis, data were cleaned using three exclusion criteria:

(1) failure to commit to answering honestly;

(2) failure to respond to more than 95% of the questions; and

(3) completing the survey faster than 50% of the median completion time.

Descriptive and correlational analyses were run using IBM SPSS. Network analyses were then carried out using R software (Version 4.5.1) (R Core Team, 2025). Network analysis was chosen because it allows us to model the structural interdependencies among constructs empirically rather than imposing predefined latent structures, resulting in the predictability of variables being highlighted, which may be obscured in more traditional analyses. All variables measured at Time 1 were added as nodes in the Gaussian Graphical Model. Extended Bayesian Information Criterion Graphical LASSO (EBICglasso) methodology was used to identify the unique pathways between variable pairs (Epskamp *et al.*, 2012), and 5,000 bootstrap samples were estimated to gain confidence intervals and assess network stability. A combination of exploratory (Time 1) and confirmatory (Time 2) network analyses were used, with comparisons also being made to assess network stability between the two timepoints. Following network analysis formation and comparison, the predictability of each node was then calculated. Predictability is the extent to which each node may be predicted by all other nodes within the network; it is calculated using Bayesian $R^2$ (Chalmers *et al.*, 2022).

Predictability, therefore, indicates how interconnected each individual node is within the network and can be used as a measure of how important each measure is within its network. Although it should be noted, centrality and predictability reflect statistical interconnectedness rather than causal influence.

## Results

### *Descriptive statistics*

Descriptive and correlational statistics are presented in Supplementary Table S1. Differences between variable scores at the two timepoints were assessed using paired *t*-tests, as establishing stability over time is essential for ensuring that subsequent network analyses yield meaningful and interpretable conclusions (Hevey, 2018). Only three variables showed significant differences between Times 1 and 2, and these were all small. The three differences were for sustainability ($t = 2.407$, $p = 0.016$ and *Cohen's d* = 0.115) and two Pro-EB facets (conservation lifestyle, $t = 4.574$, $p = <0.001$ and *Cohen's d* = 0.218; and environmental citizenship, $t = 2.668$, $p = 0.008$ and *Cohen's d* = 0.127) (Supplementary Table S2). The small number of significant differences and the small effect size of these differences indicate participants' responses generally remained stable over time. This supports the variables' stability; given the observed stability in responses, we proceeded to conduct network analyses to explore the relationships between variables at both timepoints.

### *Exploratory network analysis*

Data collected from participants at Time 1 were used to estimate an exploratory network analysis to investigate relationships between variables; the resulting Gaussian Graphical Model is shown in the top half of Figure 2. Visual analysis and edge weight estimates show sustainability has significant positive relationships with several variables, most notably P–O fit (edge weight = 0.39 [0.31–0.45]), well-being (edge weight = 0.07 [0.00–0.15]) and contextual performance (edge weight = 0.08 [0.00–0.15]). The network also showed strong positive correlations between self-determination, P–O fit, well-being and performance. Further, the network highlighted the interconnectedness of the four facets of Pro-EBs. See Supplementary Table S3 for a summary of network statistics.

### *Confirmatory network analysis*

Data collected from participants at Time 2 were used to estimate a confirmatory network analysis (see the bottom half of Figure 2 for the Time 2 GMM). This enabled us to verify the relationships between variables found at Time 1. Visual analysis of the model, coupled with edge weight estimates, shows sustainability to again have significant positive relationships with several variables. Most notably sustainability was positively associated with P–O fit (edge weight = 0.45 [0.38–0.53]) and well-being (edge weight = 0.26 [0.18–0.33]), though the relationship with contextual performance was weaker at Time 2 than Time 1. Further confirming the Time 1 network, the Time 2 network showed similarly strong positive correlations between self-determination, P–O fit, well-being and performance. And finally, the Time 2 network also confirmed the interconnectedness of the four facets of Pro-EBs. See Supplementary Table S3 for a summary of network statistics.

### *Predictability*

Predictability in network analyses refers to the extent to which one node can be predicted by all other nodes in the network. In other words, predictability tells us how important each node is within the network: the higher the predictability, the more important the node.

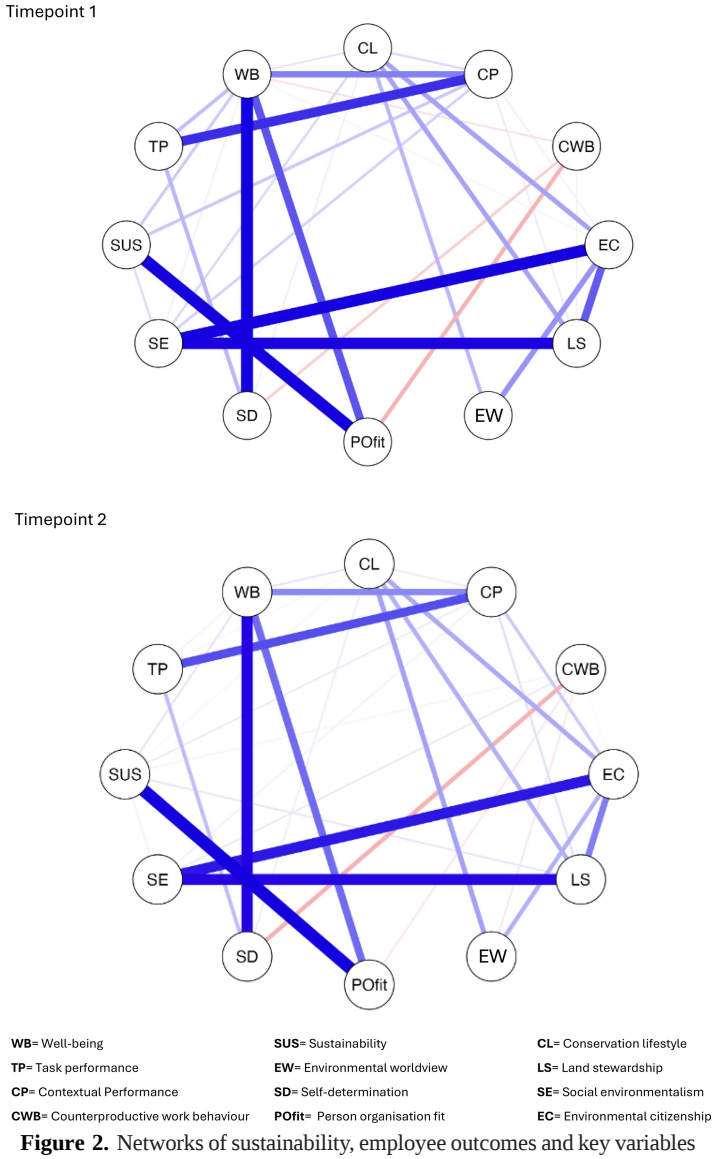


**Figure 2.** Networks of sustainability, employee outcomes and key variables

Predictability showed the same results at both Times 1 and 2: the three facets of Pro-EBs, namely environmental conservation, social environmentalism and land stewardship, showed the highest predictability (Time 1: 0.52, 0.51 and 0.45; Time 2: 0.51, 0.53 and 0.47). Other key nodes with high levels of predictability at both times include well-being (Time 1 = 0.49, Time 2 = 0.45), sustainability (Time 1 = 0.34, Time 2 = 0.31) and P–O fit (Time 1 = 0.38, Time 2 = 0.39). Both counterproductive work behaviours and environmental worldview

were at the lower end of the predictability spectrum (Time 1 = 0.08 and 0.11, respectively; Time 2 = 0.10 and 0.13, respectively). See Supplementary Table S4 and Supplementary Figure S1 for the predictability summary and comparison by time point.

*Stability*

We conducted a network comparison test to compare the structure and strength of the network over time, assessing the stability between Times 1 and 2. The results indicated there was no significant variance in the network structure between timepoints ($M$ = 0.086, $p$ = 0.63). Similarly, no significant differences were found when assessing global strength ($S$ = 0.21, $p$ = 0.47), indicating that the overall level of connectivity among variables, and thus, the general degree of interdependence within the network remained stable across the two timepoints. Edge invariance tests revealed one edge, between well-being and social environmentalism, showed a significant change ($p$ = 0.01). No other edges differed significantly between timepoints.

## Discussion

In this study, we used network analysis to investigate the interconnections between workplace sustainability, perceptions of self-determination and P–O fit, Pro-EBs, environmental worldview and the key employee outcomes of well-being and performance.

Our results find positive relationships between employee perceptions of their workplace's sustainability and their well-being, providing support from a new context and sample for previous findings (Han *et al.*, 2021; Sadick and Kamardeen, 2020). Furthermore, our findings show sustainability to be positively associated with contextual performance, building on emerging research (Sheeran *et al.*, 2025a), suggesting that employees may be more likely to go beyond their formal role requirements when they perceive their organisation as doing good for the environment and extending this work through the use of network analysis, which offers a more nuanced, fine-grained understanding of how sustainability perceptions relate to contextual performance. It is important to note that the network edges may partially reflect shared evaluative schemas or common method variance, and therefore, the findings should be interpreted as relational patterns. We do not suggest our findings provide evidence of distinct causal mechanisms.

Although CWBs did not emerge as strongly connected within our network, this pattern is consistent with research suggesting that CWB tends to arise from more distal processes. Prior research indicates that CWB is typically shaped through indirect pathways involving stress, burnout and negative workplace perceptions, rather than directly through positive value-based constructs (Abdullah and Al-Abrrow, 2025), as investigated in the current study. As such, the weak negative associations we observed may reflect the absence of adverse workplace conditions in our sample, with sustainability functioning more strongly as a positive factor for well-being and performance than as a direct inhibitor of counterproductive behaviour.

Previous research has clearly established a link between more self-determined individuals and higher levels of well-being and task performance, as well as decreased levels of counterproductive work behaviours (Ryan and Deci, 2000). Interestingly, however, the findings of our network analyses did not provide support for the theorised relationships between self-determination and sustainability, despite finding significant weak positive correlations at both timepoints. As network models control for all other nodes, weak links may not appear as edges once shared variance is accounted for and it is likely, therefore, that the relationship between self-determination and sustainability may be explained by other variables in the network.

The networks remained stable over time, with no significant network structure variance or global strength variance, indicating that the network's structure, density and strength remained generally stable between timepoints. The weakening of the edge between well-being and social environmentalism between timepoints may suggest that the initial link was context-dependent or driven by short-term awareness. Between timepoints, the perceived connection between socially oriented environmental behaviours and personal well-being weakened. However, the consistently high predictability of social environmentalism across both time points suggests it remains strongly influenced by other factors within the network, even as its direct link with well-being weakened. This finding adds to existing research showing that individuals are more likely to act sustainably when surrounded by others who carry out sustainable behaviours (Darner, 2009; Zorell, 2020), further highlighting the value of creating a workplace culture that both supports and normalises sustainability practices.

Previous work has found that personal experiences and connection with nature are key forces that shape an individual's environmental worldview (Kukkonen *et al.*, 2018). Similarly, in our research, environmental worldview was found to have relatively low predictability (or interconnectedness) within the network, suggesting that it may function more as an outcome variable rather than a driver of other constructs. In other words, carrying out Pro-EBs may influence an individual's environmental worldview rather than the other way around.

*Implications*

According to P–O fit theory, employees experience higher levels of well-being and performance when their personal values align with those of the organisation (Judge and Kristof-Brown, 2004). Our results highlight P–O fit as a crucial variable in the complex network of relationships, suggesting this is a potential theoretical mechanism for the relationship between organisational sustainability and employee outcomes. These network insights imply that organisations may benefit from prioritising leverage points such as P–O fit. Aligning with Schneider *et al.* (1995), organisations that successfully and visibly embed sustainability into their strategy may therefore be more likely to attract, retain and motivate sustainably minded employees, in turn leading to positive employee outcomes.

In contrast, although SDT provides a useful conceptual lens, we found it played a limited role in the network and showed low predictability. While autonomy, competence and relatedness are theorised to support well-being and performance, our findings suggest these motivational elements are less influential than value alignment with the organisation. This may mean within the context of workplace sustainability, fostering P–O fit is more critical than targeting intrinsic motivation directly.

Furthermore, the four facets of Pro-EBs – conservation lifestyle, land stewardship, social environmentalism and environmental citizenship – exhibited high levels of predictability within the network models. This suggests that employees who actively engage in Pro-EBs may also be those with values that are more closely aligned with the organisation's sustainability values. From a P–O fit perspective, this alignment is likely to enhance positive outcomes. Practically, this highlights the potential benefit of recruiting or developing employees with strong pro-environmental orientations, as it is likely they will both contribute to the organisation's sustainability objectives and function as more motivated and productive employees.

Additionally, the high level of interconnectedness between the facets of Pro-EBs suggests that promoting one form of sustainable behaviour may lead to increases in others, consistent with findings that environmentally conscious behaviours often cluster together (Larson *et al.*, 2015). Specifically, the high predictability of social environmentalism, which remained

stable between timepoints, demonstrates the importance of including social aspects in understanding the interaction between sustainability and human outcomes. These social factors, such as relationships and organisational culture, play a critical role in determining how sustainability practices are perceived and adopted by employees (Gadomska-Lila, 2024). Practically, this may provide organisations with further incentive to focus on the social aspects of sustainability to benefit from increased positive employee outcomes. For example, organisations can embed sustainability into workplace culture by sharing employee success stories in sustainability newsletters or integrating environmental achievements into recognition programs. These practices make sustainability a visible and valued part of the organisational identity, strengthening employees' sense of shared purpose and commitment and placing focus on the social aspect of sustainable actions (El Akremi *et al.*, 2018).

*Limitations and future directions*

While our findings offer meaningful insights, this study was not without limitations. Firstly, our sample consisted of employed individuals living in Australia. While this was chosen to mitigate biases associated with the current political climate in more commonly studied populations such as the UK and the USA, we acknowledge this may limit our results' generalisability because of Australia's unique, relaxed and flexible culture (Ang *et al.*, 2006). Additionally, Australia has its own unique sustainability challenges, performing relatively poorly on international environmental sustainability metrics, with challenges in climate policy, biodiversity protection and carbon emissions (OECD, 2019). Therefore, our sample may have been biased by a mismatch between perceived and actual sustainability, limited workplace exposure to robust sustainability practices and cultural norms that negatively influence the salience of environmental issues. Such biases may have led to weaker associations between sustainability and employee outcomes, as sustainability may have been viewed more as an abstract concept than as an experienced organisational reality. Consequently, the effects of sustainability on well-being and performance may have been underestimated in this sample. Similarly, the lower reliability of the Pro-EB scales mean that caution should be exercised in interpreting these relationships and future work should perhaps use more robust scales. Further work could also assess the added value of network models alongside established methodologies such as structural equation modelling, to aid in providing clarity to these complex relationships.

Another limitation faced in this study involves the reliance on self-report data collection. This means the findings may be influenced by common method variance, which could inflate observed associations despite the use of network modelling. Furthermore, several other biases are possible because of self-report methodology, especially for variables such as job performance and perceptions of their organisation's sustainability. Self-report measures were used to assess performance because of their practicality for online participant recruitment; we acknowledge they are vulnerable to social desirability bias (Krumpal, 2013), where participants may overestimate their performance to present themselves as higher performing. Conversely, cognitive biases, such as the Dunning-Kruger effect, may also cause inaccurate reporting where low performers overrate their abilities (Dunning, 2011). Equally, self-report perceptions of sustainability are subjective and may be influenced by a number of factors, including an individual's knowledge or interpretation of sustainability (Hall *et al.*, 2022). Responses may also be shaped by recency biases (Baddeley and Hitch, 1993), for example, if their organisation recently implemented a small sustainability initiative, then employees may inflate their perceptions of how sustainable their workplace is. Another notable limitation of the scales used is that the scale used to measure employee self-determination was not made up of subscales measuring autonomy, competence and relatedness. By investigating self-

determination as a single variable, some theoretically meaningful distinctions may be obscured; therefore, we encourage future research to measure the three psychological needs distinctly.

A further limitation of this research is while organisational sustainability is often framed as a positive organisational value, it may also introduce emotional burdens for some employees, including feelings of guilt, pressure or exhaustion associated with environmental responsibility. These negative dynamics were not explored in the present study and represent an important avenue for future research. Additionally, although the Pro-EB scale used in this study mirrored the scale reliability found during scale creation, future research may benefit from using more robust Pro-EB scales.

Given that this study focused on a specific population from a wealthy, predominantly white, English-speaking country, future research could apply similar network-based analyses to more diverse populations. Comparisons could then be made to establish cross-cultural differences or similarities and assess the generalisability of this study's results. Additionally, as our study's key finding highlighted the crucial role of P–O fit in the relationship between sustainability and employee outcomes and the lack of influence stemming from individuals' environmental worldview, further research should investigate whether other specific personal values (such as environmental concern or activism) influence the relationship between P–O fit and outcomes.

## Conclusion

This study contributes to the growing literature on workplace sustainability by demonstrating the robust and stable network relationships between organisational sustainability, P–O fit, employee well-being and performance. Using a two-wave design and network analyses, we found that P–O fit plays a central role in linking organisational sustainability to positive employee outcomes, with sustainability also significantly relating to contextual performance and well-being. Accordingly, the contribution of this study lies in demonstrating how network analysis can be used as a theory-testing tool to enrich understanding of existing frameworks, rather than in extending or reformulating theory itself. Interestingly, self-determination and environmental worldview were less central in the network. Conversely, the high predictability and interconnectedness of Pro-EBs underscore the importance of human factors in workplace sustainability systems. These findings highlight how sustainability efforts may influence employees and reinforce the value of embedding and promoting sustainability within organisations to support positive organisational and individual outcomes. At a broader level, cultivating sustainability within workplaces may also contribute to the wider societal transition towards environmental responsibility and ecological resilience.

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**Supplementary material**

The supplementary material for this article can be found online.

**Corresponding author**

Zane Sheeran can be contacted at: zanes@waikato.ac.nz