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The relationship between psychological ownership and sustainable behavior in coworking spaces

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Abstract

Purpose – It is currently unknown if psychological ownership of a coworking space affects coworking members' engagement in sustainable behaviors and to what extent. Thus, this paper aims to investigate the relationship between psychological ownership and sustainable behaviors in coworking spaces.

Design/methodology/approach – This study is based on a cross-sectional design to test the hypothesized relationship between the independent variable psychological ownership of a coworking space and the dependent variable sustainable coworking behavior. Sustainable coworking behavior is a multidimensional construct consisting of prosocial behavior, responsible space-sharing behavior, task performance and creative performance. Data were collected from 423 members of coworking spaces via a global survey. The structural equation modeling method was used for data analysis.

Findings – The findings indicate that there is a statistically significant relationship between psychological ownership and all four dimensions of sustainable coworking behavior. Specifically, a positive relationship was found between psychological ownership and prosocial behavior ($R\text{-sq} = 17\%$, $p < 0.001$), task performance ($R\text{-sq} = 12\%$, $p < 0.001$) and creative performance ($R\text{-sq} = 3\%$, $p = 0.013$). A negative relationship was found between psychological ownership and responsible space-sharing behavior ($R\text{-sq} = 1\%$, $p = 0.093$).

Originality/value – From an academic perspective, this study is among the first to incorporate psychological ownership theory in the unique setting of coworking spaces. From a managerial perspective, these findings highlight that by cultivating psychological ownership, providers may activate an underutilized resource, the members themselves, as actors of sustainable behavior.

Keywords Sustainability, Structural equation modeling, Psychological ownership, Coworking, Coworking spaces, Sustainable behavior

Paper type Research paper

1. Introduction

During the past decades, the way that we work has changed remarkably and more people than ever are working in places other than their main workplace (Felstead and Henseke, 2017). A relatively new type of workplace emerging from this is the coworking space (Clifton *et al.*, 2022; Johns *et al.*, 2024). The coworking movement began in 2005 with Spiral Muse in San Francisco, often considered the first coworking space (Merkel, 2015; Spinuzzi, 2012). Since then, coworking spaces have steadily become an increasingly popular workplace alternative (Coworking Resources, 2020). This rise in popularity can be attributed to several reasons, including the 2008 economic crisis (Merkel, 2015), growing interest in



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the sharing economy (Richardson, 2015), advances in digitalization enabling remote work (Johns and Gratton, 2013) and shifting attitudes toward flexibility in the post-pandemic era (Smite *et al.*, 2023).

In this paper, we refer to coworking spaces as “subscription-based workspaces in which individuals and teams from different companies work in a shared, communal space” (Howell, 2022, p. 1). Coworking spaces typically offer a dynamic setting where entrepreneurs and other independent professionals without dedicated offices work side by side (Bouncken and Reuschl, 2018), but they are also becoming popular in academic settings (Bennis and Orel, 2025) and among companies (Orel and Bennis, 2021) to promote community, collaboration and innovation.

In parallel with the growing popularity of coworking spaces, organizations face increasing pressure to adopt sustainable practices. Governments are implementing policies and regulations to encourage sustainable transformation, while consumers become increasingly aware of issues such as climate change, biodiversity loss and resource scarcity and therefore favoring organizations that show a genuine commitment to sustainability. Consequently, integrating sustainability into the coworking concept becomes important. Furthermore, sustainability is also considered as a core value of the coworking movement (Coworking, n.d).

Recent articles on coworking have been dedicated to areas related to sustainability. For example, Carton *et al.* (2024) investigated sustainable development through spatial practices, Bouncken *et al.* (2023) explored the effects of sustainability exposure, Bouncken *et al.* (2022) examined sustainable transformations of coworking spaces, and Oswald and Zhao (2020) studied business models for sustainable coworking spaces. With respect to these studies, we identify a gap where there is little to no attention given to the members’ role. A number of researchers argue that the overall sustainability performance of any business depends on human behavior (Bénabou and Tirole, 2010; Lülfs and Hahn, 2013, 2014; Oskamp, 2000). This idea suggests that to have more sustainable coworking, it is necessary to have coworking members who engage in sustainable behaviors. Hence, it becomes sensible to understand what influences coworking members to engage in sustainable behaviors.

Coworking spaces are, at their core, built on sharing (Spinuzzi, 2012). Members use common desks, meeting rooms, kitchens and equipment such as printers. This shared model reduces infrastructure needs and offers inherent sustainability benefits (Kojo and Nenonen, 2017), but it also raises questions of ownership. Who truly owns the shared resources in practice, and how does this shape their use? For example, although no member legally owns the printer, its usage may depend on whether members feel it is theirs. This highlights the importance of ownership perceptions in coworking and suggests that stronger feelings of ownership could encourage more sustainable behaviors.

There has been an expansion of research linking psychological ownership (Pierce *et al.*, 2001, 2003) with a range of desirable attitudes and behaviors (Dawkins *et al.*, 2017). For example, psychological ownership has been found to positively influence desirable behaviors in traditional workplaces (Van Dyne and Pierce, 2004) and in third places such as libraries and cafeterias (Joo, 2020). However, Morisson (2019) suggests that a coworking space is neither a traditional workplace nor a third place, but rather a hybrid “second-third place” designed for a new way of working and sharing knowledge. Consequently, it is currently unknown if psychological ownership of a coworking space affects coworking members’ engagement in sustainable behaviors and to what extent. Thus, this paper aims to investigate the relationship between psychological ownership and sustainable behaviors in coworking spaces. This study is among the first to incorporate psychological ownership

theory in the unique setting of coworking spaces. It highlights the member perspective on sustainability in coworking spaces, which is largely overlooked in prior coworking research (Bouncken *et al.*, 2023, 2022; Carton *et al.*, 2024; Oswald and Zhao, 2020). Furthermore, knowing the relationship between psychological ownership and sustainable behavior can support coworking providers to create more sustainable coworking spaces.

This paper is structured as follows. Section 2 reviews the related literature on sustainable behavior and psychological ownership and presents the hypotheses. Section 3 outlines the research method, including the survey design and the use of structural equation modeling. Section 4 reports the results of the hypothesis testing. Section 5 discusses the findings and addresses the study's limitations. Finally, Section 6 concludes the paper.

2. Related literature and hypotheses formulation

2.1 Sustainable behavior in coworking spaces

Before examining the link between psychological ownership and sustainable behaviors in coworking spaces, it is necessary to define what we refer to as sustainable behavior. Some researchers equate sustainable behavior with pro-environmental behavior (McKenzie-Mohr, 2000; Sparkman and Walton, 2017) or organizational citizenship behavior towards the environment (Lamm *et al.*, 2013; Temminck *et al.*, 2015), including actions like waste reduction, energy conservation, and emission reduction. Trudel (2019) defines sustainable consumer behavior as decisions made to benefit or minimize environmental impact. Juárez-Nájera *et al.* (2010) and Tapia-Fonllem *et al.* (2013) argue that traditional measures of sustainable behavior focus mostly on environmental conservation while neglecting social aspects. Their point of view expands the concept to include pro-ecological, frugal, altruistic and equitable behavior. Corral-Verdugo *et al.* (2021) further refine this framework with a person-society-nature model, adding self-care as a fifth dimension. In business, sustainability is often framed using the triple-bottom-line including social (people), environmental (planet) and economic (profit) dimensions (Elkington, 1997).

Magnusson *et al.* (2024) contextualized sustainable behaviors (Corral-Verdugo *et al.*, 2021) within a coworking space setting and coined the term sustainable coworking behavior. By contextualization, they mean that sustainable coworking behavior comprises a set of actions that achieve the goals and objectives of the represented organization, benefit other individuals inside the coworking space, and responsibly share the coworking space. Since this view of sustainable behavior is already contextualized to a coworking setting, we use this way of defining sustainable behavior. Furthermore, Magnusson *et al.* (2024) found that sustainable coworking behavior is a multidimensional construct that consists of three specific types of behaviors that can be connected to the triple-bottom-line (Elkington, 1997): prosocial behavior (social), responsible space-sharing behavior (planet) and productive behavior (profit).

Prosocial behaviors refer to acts that promote or protect the welfare of individuals, groups, or organizations (Bolino and Grant, 2016; Brief and Motowidlo, 1986), responsible space-sharing behaviors describe acts that benefit the work environment as well as omissions of acts that harm it (Magnusson *et al.*, 2024), and productive behaviors refer to acts by organizational members that positively contribute to achieving the organization's goals and objectives (Park, 2020). To more accurately reflect the complexity of productivity in coworking contexts, productive behavior is subdivided into two distinct components: task performance and creative performance, in line with prior literature on office workers' productivity (Drucker, 1999; Koopmans *et al.*, 2011; Oldham and Cummings, 1996; Viswesvaran and Ones, 2000).

2.2 Psychological ownership

Psychological ownership in a work context was first mentioned by [Pierce et al. \(1991\)](#). It is a state in which individuals feel that something, or the target of ownership, is theirs even though they do not own it ([Pierce et al., 2001](#)). The term “target” in the psychological ownership literature is quite broad and refers to whatever the object of attachment represents. These targets may be as small as a preferred seat or as large as the organization or an entire industry ([Avey et al., 2009](#)). A concrete example of psychological ownership is a guest’s favorite place in a cafeteria. The guest does not legally own it but feels like it is their place and might become somewhat irritated if the seat is occupied. [Pierce et al. \(2003\)](#) theorized that there are a myriad of positive and constructive behaviors associated with psychological ownership. More than a decade later, [Jussila et al. \(2015\)](#) created a conceptual model illustrating that psychological ownership can have motivational, attitudinal and behavioral consequences.

Psychological ownership can be divided into two distinct categories, organization-based (i.e. individuals’ feelings of possession and psychological connection to an organization as a whole) and job-based (i.e. individuals’ feelings of possession toward their particular jobs) ([Mayhew et al., 2007](#); [Peng and Pierce, 2015](#)). Coworking members have a job, belong to an organization (either their own business or as an employee of a company), and are members of a coworking space. Based on this reasoning, different levels of psychological ownership of the coworking space should therefore have behavioral consequences for the coworking member.

2.3 Hypotheses formulation

2.3.1 Psychological ownership and prosocial behavior. Empirical studies in contexts other than coworking spaces have generally established a positive relationship between psychological ownership and various prosocial behaviors ([Dawkins et al., 2017](#); [Pierce et al., 2009](#)). [Vandewalle et al. \(1995\)](#) found a positive relationship between organization-based PO and extra-role behaviors such as altruism and participation. Similarly, VA [Dyne and Pierce \(2004\)](#) and [Liu et al. \(2012\)](#) found that organization-based psychological ownership has explanatory power in predicting organization citizenship behavior, specifically volunteering and helping others. Furthermore, [Ramos et al. \(2014\)](#) investigated how both organization- and job-based psychological ownership affect extra-role behaviors in small family firms. Their findings indicate that organization- and job-based psychological ownership have significant direct effects on extra-role behaviors. Similar findings were also found by [O’driscoll et al. \(2006\)](#) who found a positive relationship to organizational commitment and [Asatryan and Oh \(2008\)](#) identified a positive relationship with word-of-mouth. Another example is [Jami et al. \(2021\)](#), who found that activating a sense of psychological ownership increases individuals’ likelihood of engaging in prosocial behaviors such as donating to charities. Since numerous empirical studies suggest that organization- and job-based psychological ownership have a positive effect on certain prosocial behaviors in contexts outside coworking spaces, the following hypothesis was formulated:

H1. Psychological ownership of a coworking space is positively associated with coworking members’ prosocial behaviors.

2.3.2 Psychological ownership and responsible space-sharing behavior. [Pierce et al. \(2003\)](#) argued that, besides citizenship behavior, psychological ownership positively affects the willingness to assume personal risk or make personal sacrifices, as well as promotes feelings of protectiveness, care and nurturing toward the target. Building on this reasoning,

VA Dyne and Pierce (2004) and Pierce *et al.* (2009) suggested that possessions and feelings of ownership trigger a sense of responsibility for the entity. Preston and Gelman (2020) and Wang *et al.* (2022) concluded that to promote people's willingness to preserve and protect natural areas such as public lands or national parks, decision makers should find a way to imbue them with a sense of psychological ownership. Similarly, Peck *et al.* (2021) identified a positive relationship between individual's stewardship and psychological ownership of public goods. Furthermore, Li *et al.* (2021) stated that customers' psychological ownership can activate a sense of responsibility making them more inclined to engage beyond simple transaction (e.g. convincing others to buy, providing feedback to firms and helping develop new products or services). In contrast, results from Mayhew *et al.* (2007) did not support a statistically significant relationship between job-based psychological ownership and voice behavior (i.e. constructive expression aimed at the organization). Although the literature generally support a positive relationship between psychological ownership and responsibility-related behaviors, these studies have not been conducted in a coworking context. Therefore, drawing on previous research, the following hypothesis was formulated:

H2. Psychological ownership of a coworking space is positively associated with coworking members' responsible space-sharing behaviors.

2.3.3 Psychological ownership and productive behavior. Pierce *et al.* (1991) and Jussila *et al.* (2015) speculated that psychological ownership could potentially affect job performance, absenteeism, tardiness and turnover, all of which relate to productive behavior. This hypothesized relationship received some support from Brown *et al.* (2014) who reported a small, but positive, relationship between psychological ownership and sales performance. Van Dyne and Pierce (2004) also reported a slightly positive relationship between organization-based psychological ownership and productivity levels. Furthermore, Zhang *et al.* (2021) found evidence for a positive relationship between psychological ownership and job satisfaction, self-esteem and work engagement. Hamrick *et al.* (2024) identified that job-based psychological ownership can positively influence entrepreneurial intentions and work performance. Conversely, empirical results from Mayhew *et al.* (2007) suggest that psychological ownership is not statistically significantly related with in-role behavior in terms of engaging in behavior expected in their job position. They therefore called for further research on psychological ownership to enhance understanding of its external validity and underlying mechanisms. This leads to the following two hypotheses:

H3a. Psychological ownership of a coworking space is positively associated with coworking members' task performance.

H3b. Psychological ownership of a coworking space is positively associated with coworking members' creative performance.

In summary, previous conceptual and empirical research, suggest that psychological ownership may have a positive influence on sustainable coworking behavior and its underlying dimensions, namely prosocial behaviors, responsible space-sharing behaviors, task performance and creative performance. To illustrate these hypotheses, a research model is presented in Figure 1.

3. Method

3.1 Data collection

To collect data, a survey instrument was used. Blair *et al.* (2014) emphasize that survey data is particularly useful when researchers aim to examine relationships between multiple

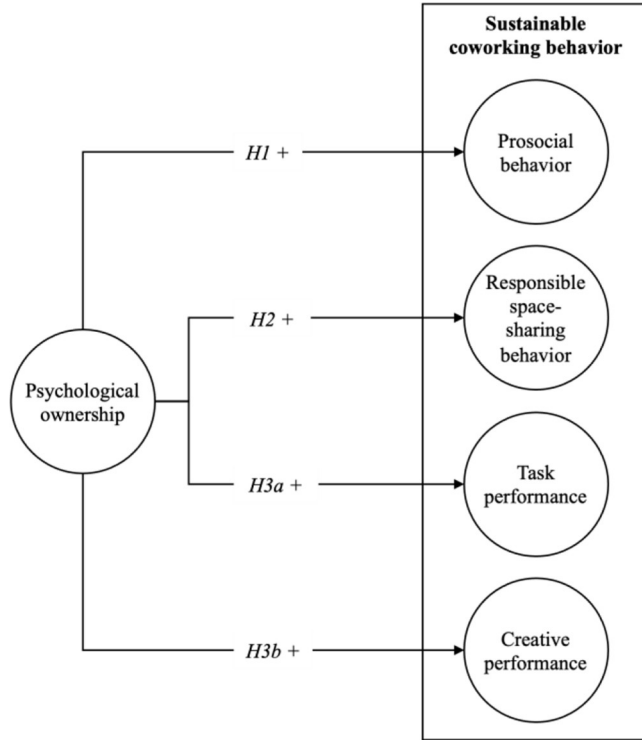


Figure 1. Research model
Source: Authors' own work

variables. The survey was conducted in March 2025 and distributed to coworking members worldwide. Participants were recruited via Prolific, a commercial sampling platform known for producing high-quality behavioral research data (Douglas *et al.*, 2023; Peer *et al.*, 2021). The respondents were compensated following the recommendations provided by Prolific.

To ensure that the sample aligned with this paper’s focus, only individuals who identified as entrepreneurs and were currently active in a coworking space were eligible. Survey duration was monitored, and responses submitted in less than half of the expected completion time were removed to maintain data reliability. To further ensure data quality and screen out inattentive or automated respondents, two simple arithmetic questions were embedded as attention checks.

3.1.1 Survey design. The survey was developed using the platform SurveyMonkey and divided into four sections. Section 1 included a short introduction with the purpose of convincing potential respondents that our survey was important enough for them to give their time and effort and provide accurate answers. As suggested by Blair *et al.* (2014), the introduction included information about the purpose of the study, why the study was important, who were conducting the study, the expected time needed to answer, what will be done with the results, and how the data was treated. The purpose was phrased in a neutral way to reduce the likelihood of respondents answering in a socially desirable way.

Section 2 focused on collecting demographic information about the respondents. The respondents were able to indicate their office type, how long they have been a member, their main motivation for becoming a member (Appel-Meulenbroek *et al.*, 2021), how often they work in the coworking space, their age group, their gender and the size of their company. We asked these questions to ensure that our sample was diverse and representative of the general coworking member.

In Section 3, we asked the respondents about sustainable coworking behavior. To measure sustainable coworking behavior, we developed our own instrument following a scale development process (Churchill, 1979; Devellis and Thorpe, 2022; Hinkin, 1995; Lambert and Newman, 2023). To refine the four underlying dimensions, we conducted 30 semi-structured interviews with coworking members, which helped identify 15 relevant facets. These facets guided a deductive item-generation process based on an extensive literature review. The initial item pool was then purified through three validation steps:

- (1) cognitive interviews with six coworking community managers (Willis, 2004);
- (2) expert evaluation by seven researchers and practitioners (Hardesty and Bearden, 2004); and
- (3) a pilot survey with 18 coworking members at a university-based coworking space (Johanson and Brooks, 2010).

As a result from the scale development process, we created a 47-item scale.

Specifically, 20 items were used to assess prosocial behavior (e.g. Bettencourt, 1997; Podsakoff *et al.*, 1990; Pommier *et al.*, 2020; Smith *et al.*, 1983; Williams and Anderson, 1991), 15 items for responsible space-sharing behavior (e.g. Avey *et al.*, 2009; Lamm *et al.*, 2013; Robertson and Barling, 2013; Van Dyne and LePine, 1998; Williams and Anderson, 1991) and 12 self-developed items for productive behavior. The full list of items is available in Appendix 1. Respondents indicated their answers using a seven-point Likert scale. Notice that this measurement scale is the final scale used after the pretesting (see Section 3.1.2) was conducted.

In the fourth and final section, questions about psychological ownership were given to the respondents. Van Dyne and Pierce (2004) developed and validated a seven-item measure of psychological ownership. Out of these seven items, we decided to exclude three and reformulated four to better fit a coworking space setting (see Table 1). For example, the item “This is MY organization” was reformulated to “This is MY coworking space” and the item “I sense that this is MY company” was reformulated to “I sense that this is MY coworking space.” After further scrutinization, these two items were deemed too similar, so we decided to retain only one of them. In addition, the item “Most of the people that work for this organization feel as though they own the company” was excluded, as we perceived it to assess others’ perception rather than the respondent’s own sense of psychological ownership. Responses were collected using a seven-point Likert scale based on level of agreement.

Table 1. Items used for measuring PO

Item	Item description
PO1	I sense that this is MY coworking space
PO2	I feel a very high degree of personal ownership for this coworking space
PO3	I sense that this is OUR coworking space
PO4	It is hard for me to think about this coworking space as MINE (<i>reversed</i>)

Source(s): Van Dyne and Pierce (2004)

An option of “Don’t know” was provided for each question of sustainable coworking behavior and psychological ownership to enable respondents to opt out if they were genuinely unable to quantify their perceptions, which, according to Dolnicar and Grün (2014), can have positive effects on data quality.

3.1.2 *Pretest.* Blair et al. (2014) emphasize the importance of pretesting surveys to, among others, identify potential comprehension issues, ensure that the survey logic functions as intended, and assess response variability. To pretest the survey, it was distributed in collaboration with one of the largest coworking providers in Gothenburg, Sweden where 77 responses were fully completed and analyzed. Before distributing the survey, to potentially boost the response rate, a lottery was introduced, offering a chance to win a voucher worth €100 or a winter hat as prizes.

Based on the insights from this pretest, some revisions were made to the sustainable coworking behavior items in Section 3. First, the stem “While working in this coworking space I [...]” was rephrased to “While inside the coworking space I [...]” since some respondents seemed to have interpreted the statement more narrowly than anticipated where they only considered behavior during work-related tasks (i.e. while working). Second, the item “Challenge other members if I think something is done wrong” was reassigned from responsible space-sharing behavior to prosocial behavior because the empirical results indicated a stronger alignment which was also theoretically justifiable. Finally, “Try to help keep this coworking space clean” was simplified to “Help to keep this coworking space clean” considering the use of the word ‘try’ could unintentionally shift the focus from actual behavior to intention or effort.

Preliminary data analysis from this survey using structural equation modeling indicate that psychological ownership of coworking spaces seems to have a statistically significant positive effect on prosocial behavior ($R^2=0.278$, $p<0.01$), responsible space-sharing behavior ($R^2=0.186$, $p<0.01$) and productive behavior ($R^2=0.086$, $p=0.033$). However, caution is warranted when interpreting this result as structural equation modeling is a large-sample technique where several researchers suggest a minimum of 200 respondents (Bentler and Chou, 1987; Shah and Goldstein, 2006) and the sample is only based in Sweden.

3.1.3 *Sample design.* A total of 423 valid responses were collected. A summary of the demographic characteristics of respondents is presented in Table 2. Based on the demographic profiles, the sample seems to include a proper mix of different types of coworking members which can be considered representative.

3.2 Data analysis

3.2.1 *Validity analysis of measurement models.* To ensure that the measurement models (i.e. the scales used to measure sustainable coworking behavior and psychological ownership) accurately capture what they are intended to measure, it is necessary to assess their construct validity (Lambert and Newman, 2023). Construct validity consists of convergent and discriminant validity (Bagozzi et al., 1991). Convergent validity refers to the degree to which multiple attempts to measure the same concept are in agreement whereas discriminant validity is explained as the degree to which measures of different concepts are distinct (Campbell and Fiske, 1959).

Traditionally, confirmatory factor analysis (CFA) has been used to evaluate the construct validity of latent variables. However, research suggests that CFA may fail to meet standards for good measurements when analyzing multidimensional constructs (Marsh et al., 2014) such as sustainable coworking behavior. In response, modern factor analysis techniques including exploratory structural equation modeling (ESEM) and its bifactor counterpart have been developed to improve measurement accuracy (Asparouhov and Muthén, 2009; Howard et al.,

Table 2. Summary of demographic profiles of the respondents

Characteristic	<i>n</i>	%
<i>Office type</i>		
Fixed space	96	23
Flexible space	114	27
Shared office	140	33
Private office	63	15
Other	10	2
<i>Tenure</i>		
<1 year	33	8
1–2 years	131	31
2–3 years	86	20
3–4 years	77	18
>4 years	96	23
<i>Main motivation</i>		
Workplace outside home	50	12
Part of community	44	10
Vibrant and creative atmosphere	65	15
Sharing knowledge	71	17
Professional appearance	22	5
Affordable workplace	38	9
Business-related networking	39	9
Flexibility	20	5
Professional support services	19	5
Social interactions	21	5
Was assigned by company	33	8
<i>Workdays</i>		
0–1 days/week	17	4
2–3 days/week	181	43
4–5 days/week	194	46
6–7 days/week	31	7
<i>Age</i>		
18–24 years	77	18
25–34 years	194	46
35–44 years	77	18
45–54 years	44	11
55–64 years	25	6
>65 years	6	1
<i>Gender</i>		
Female	276	65
Male	147	35
<i>Company size</i>		
Myself	12	3
2–10 employees	51	12
11–50 employees	134	32
51–250 employees	145	34
>250 employees	81	19

Source(s): Authors' own work

2018; Marsh *et al.*, 2014; Morin *et al.*, 2013, 2020). Therefore, to analyze the validity of sustainable coworking behavior, we followed guidelines of Alamer (2022) and Swami *et al.* (2023) that build on modern factor analysis techniques. A merged version of these guidelines is presented as a flowchart (see Figure 2), illustrating the decision-making process for selecting the appropriate factor analysis technique. In contrast to sustainable coworking behavior, the scale to measure psychological ownership (Van Dyne and Pierce, 2004) is unidimensional, has been widely used in prior studies, and has been validated across multiple contexts. Although we modified this scale by eliminating three items and applying it in a new setting, we assume that the measurement model remains valid.

The flowchart presented in Figure 2 involves five decisions. The first decision (D1) is to determine if a clear *a priori* factor structure exists. In the data analysis, we use the term factor rather than dimension to stress that it is an empirical manifestation. Because sustainable coworking behavior is based on the factor structure proposed by Magnusson *et al.* (2024), a clear *a priori* factor structure is assumed. The second decision (D2) is to identify whether the factors are conceptually related. Prosocial behavior, responsible space-sharing behavior and productive behavior are all considered underlying factors of sustainable coworking behavior and are therefore assumed to be conceptually related. The third decision (D3) is to assess if theory postulates the existence of a global factor (G-factor). Sustainable behavior is a broad concept and when conceptualizing it in a coworking context, Magnusson *et al.* (2024) suggest that sustainable coworking behavior may include additional, unidentified dimensions. This supports the existence of a G-factor. In the fourth decision (D4), we determine if CFA or ESEM provide an adequate model fit for sustainable coworking behavior. To assess model fit, commonly applied goodness-of-fit indices should be examined with their respective thresholds (Hu and Bentler, 1999): the comparative fit index ($CFI \geq 0.90$ for acceptable), the Tucker–Lewis index ($TLI \geq 0.90$ for acceptable) and the root mean square error of approximation ($RMSEA \leq 0.08$ for acceptable). If both CFA and ESEM provide an inadequate model fit, subsequent analysis should focus on comparing bifactor CFA with bifactor ESEM (the “No” direction in D4). However, if CFA or ESEM provide an adequate fit, the next step is to decide if the differences are trivial (D5). To determine if the differences in model fit are trivial, the difference in CFI and TLI should be 0.01 or less and difference in RMSEA should be 0.015 or less (Swami *et al.*, 2023). If the differences are considered trivial, the analysis should only focus on comparing CFA and bifactor CFA since these models are more parsimonious compared to the ESEM models. However, if the differences are not considered trivial, the analysis should continue by contrasting ESEM and bifactor ESEM.

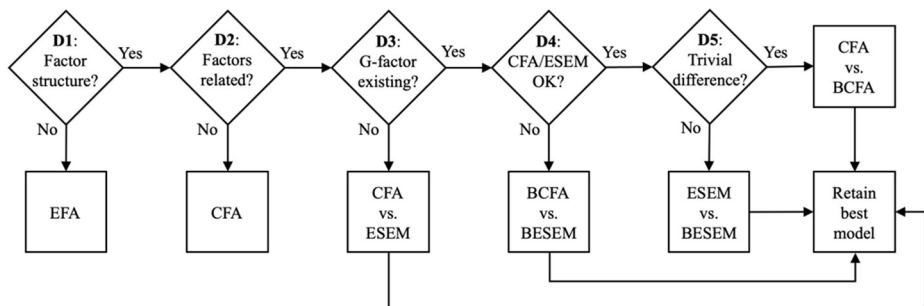


Figure 2. Flowchart to assess validity for multidimensional constructs
 Source: Alamer (2022); Swami *et al.* (2023)

The final step of the guidelines is to retain the model which has the best model fit and parameter estimates (e.g. interfactor correlations, factor loadings, cross-loadings). Convergent validity is demonstrated when the standardized factor loadings (λ) between an item and its intended construct meet acceptable thresholds. These thresholds vary by measurement model. In CFA, Fornell and Larcker (1981) suggest that loadings should exceed 0.70. For ESEM, Alamer and Marsh (2022) consider loadings above 0.50 acceptable, though values between 0.30 and 0.50 may be adequate if supported by prior research. In bifactor ESEM models, similar thresholds apply; however, as Morin *et al.* (2020) note, it is essential to evaluate item loadings on both the target factor and the global factor. Discriminant validity is supported when correlations between factors are not excessively high. In both CFA and ESEM models, a common rule of thumb is that inter-factor correlations between theoretically distinct constructs should remain below 0.75 (Cheung *et al.*, 2023).

All measurement models of sustainable coworking behavior were analyzed using Mplus version 8.11 employing a weighted least square estimator using a diagonal weight matrix (WLSMV). An oblique target rotation procedure was used as the rotation method for the CFA model and ESEM model which was recommended by Marsh *et al.* (2014) and Morin (2023). For the bifactor models, an orthogonal rotation method was used because, in these models, no covariance is assumed between the factors.

In addition to analyzing model fit and parameter estimates, McDonald's (1970) omega test (ω) was used to assess the internal consistency of the sustainable coworking behavior items. A commonly accepted cutoff value for ω is 0.7 (Cheung *et al.*, 2023). Note that ω tends to decrease in bifactor solutions because the variance is partitioned between the two sources of global and specific constructs (Alamer, 2022).

3.2.2 Structural model. To test the four hypotheses, we developed a structural model linking the psychological ownership model to the validated sustainable coworking behavior measurement model. The analysis was conducted using Mplus version 8.11, applying the same settings as those described in Section 3.2.1. Based on the structural regression coefficient (γ) and the proportion of variance in the sustainable coworking behavior constructs that can be explained by psychological ownership (R^2), it was decided whether the hypotheses could be supported. To clarify, R^2 shows how much of the variation in the dependent variable that is explained by the independent variables included in the model. Its values range from 0 to 1, where a higher value means that the independent variable has better explanatory power.

3.2.3 Power analysis. Statistical power is crucial for having a reasonable chance of rejecting the null hypothesis when it is false (Cohen, 1992). A common benchmark for adequate statistical power is 0.8 (Cohen, 1988). Performing power analyses for structural equation models is complex and to simplify this, Jak *et al.* (2021) developed Power4SEM, an interactive Shiny app for calculating statistical power. In this study, Power4SEM was used, with RMSEA-based power calculation (MacCallum *et al.*, 1996) chosen as the most suitable method. To calculate RMSEA-based power, Power4SEM requires the following inputs: degrees of freedom (df), sample size (n), RMSEA null hypothesis (H_0), RMSEA alternative hypothesis (H_1) and significance level (α).

Among the potential sustainable coworking behavior-models (CFA, ESEM, bifactor CFA, bifactor ESEM), the bifactor ESEM has the fewest degrees of freedom (df = 856). Using $\alpha = 0.05$, $H_0 = 0$, $H_1 = 0.05$ and df = 856, Power4SEM indicate that a minimum sample size of 52 is needed for 0.8 statistical power. Since 423 responses were collected, the bifactor ESEM model (and thereby all other models of sustainable coworking behavior in this paper), are sufficiently powered.

4. Results and analysis

4.1 Validity of measurement models

As suggested by D4 in [Figure 2](#), the model fit between CFA and ESEM for sustainable coworking behavior was first compared. Goodness-of-fit indices are shown in [Table 3](#). The values show that the ESEM model outperforms the CFA model and provides better values of CFI, TLI, and RMSEA. Since the difference in goodness-of-fit indices is relatively large, the differences cannot be considered trivial (D5 in [Figure 2](#)). Therefore, subsequent analysis focuses on the ESEM model and bifactor ESEM. Looking only at model fit, the bifactor ESEM seems to yield the most valid measurement for sustainable coworking behavior. Standardized parameter estimates for each model, including factor loadings, cross-loadings, inter-factor correlations, and omega-coefficients, are available in [Appendix 2](#), which also indicate bifactor ESEM being the best model.

4.2 Structural model

The results from the structural model testing are presented in [Figure 3](#) and its goodness-of-fit indices are presented in [Table 4](#). The goodness-of-fit indices show that the structural model has an acceptable fit to the data.

The data confirm that three hypotheses are supported and one is not (see [Table 5](#)). Specifically, The findings indicate that psychological ownership has a statistically significant ($p < 0.001$) positive effect on prosocial behavior where it explains, rounded to nearest integer, 17% of its variation (see R^2 -column in [Table 5](#)). These results provide support for *H1*. In contrast to *H1*, the relationship between psychological ownership and responsible space-sharing behavior is negative ($\gamma = -0.115$) and weakly significant ($p = 0.093$). Thus, *H2* is not supported. The relationship between psychological ownership and task performance is statistically significant ($p < 0.001$) where it explains 12% of the variation. The relationship is also positive and statistically significant ($p = 0.013$) to creative performance but the explanatory power is lower, explaining only 3% of the variation. Despite the relatively small R^2 -values, the relationships are statistically significant, providing support for *H3a* and *H3b*.

5. Discussion

The findings of this study provide valuable insights into the relationship between psychological ownership of a coworking space and sustainable coworking behavior. In this paper, we view sustainable coworking behavior as a multidimensional construct consisting of prosocial behavior, responsible space-sharing behavior and productive behavior (including task and creative performance) ([Magnusson et al., 2024](#)). Our results indicate that developing a sense of psychological ownership of a coworking space has an effect on coworking members' prosocial behavior, responsible space-sharing behavior, and productive behavior. Next, we discuss the results of each hypothesis in more detail.

Table 3. Goodness-of-fit indices for four measurement models

Model	χ^2	p	Df	CFI	TLI	RMSEA	90% CI for RMSEA
CFA	2838	<0.001	1028	0.896	0.890	0.065	[0.062, 0.067]
ESEM	1581	<0.001	899	0.961	0.953	0.042	[0.039, 0.046]
Bifactor CFA	2354	<0.001	987	0.921	0.914	0.057	[0.054, 0.060]
Bifactor ESEM	1401	<0.001	856	0.969	0.960	0.039	[0.035, 0.042]

Note(s): χ^2 = Chi-square test value, p = p -value, CI = confidence interval

Source(s): Authors' own work

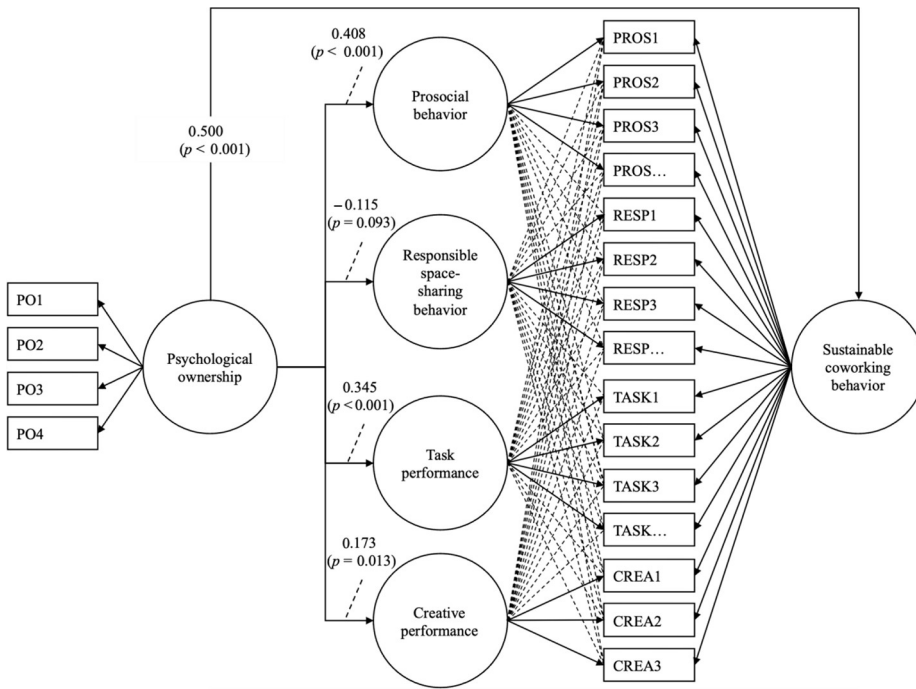


Figure 3. Results from structural model including structural regression coefficients and *p*-values
Source: Authors' own work

Table 4. Goodness-of-fit indices for the structural model

Model	χ^2	<i>p</i>	df	CFI	TLI	RMSEA	90% CI for RMSEA
Structural model	1934	<0.001	1041	0.951	0.941	0.045	[0.042, 0.048]

Note(s): χ^2 = Chi-square test value, *p* = *p*-value, CI = confidence interval

Source(s): Authors' own work

Table 5. Summary of hypotheses

Hypothesis	γ	<i>p</i>	R^2	Support
<i>H1</i> : Psychological ownership of a coworking space is positively associated with coworking members' prosocial behaviors	0.408	<0.001	0.166	Yes
<i>H2</i> : Psychological ownership of a coworking space is positively associated with coworking members' responsible space-sharing behaviors	-0.115	0.093	0.013	No
<i>H3a</i> : Psychological ownership of a coworking space is positively associated with coworking members' task performance	0.345	<0.001	0.119	Yes
<i>H3b</i> : Psychological ownership of a coworking space is positively associated with coworking members' creative performance	0.173	0.013	0.030	Yes

Source(s): Authors' own work

5.1 Effect of psychological ownership on prosocial behavior

The results provide support for *H1*. The findings align with previous research showing that psychological ownership positively influences behaviors similar to prosocial behavior, such as organizational citizenship behavior, extra-role behavior and willingness to donate (e.g. [Jami et al., 2021](#); [Liu et al., 2012](#); [Ramos et al., 2014](#); [Vandewalle et al., 1995](#)). This reinforces the generalizability of the association between psychological ownership and prosocial behavior, suggesting that psychological ownership may play an influential role in predicting such behaviors in coworking contexts.

5.2 Effect of psychological ownership on responsible space-sharing behavior

The results do not provide support for *H2*, since the correlation was negative. This result is unexpected, especially considering theoretical frameworks that link psychological ownership to a heightened sense of responsibility ([Pierce et al., 2003, 2009](#); [Wang et al., 2022](#)), as well as empirical findings that support similar relationships in other contexts ([Li et al., 2021](#); [Peck et al., 2021](#); [Van Dyne and Pierce, 2004](#)).

The absence of a strong relationship aligns with findings from [Mayhew et al. \(2007\)](#) who found a nonstatistically significant relationship between organization-based psychological ownership and voice behavior. Further exploration of the foundational work on psychological ownership may help explain why a negative correlation was found. [Pierce et al. \(2001\)](#) explain that psychological ownership arises from control, investment and intimacy with a space or object. They highlight the potential for territoriality and resistance to sharing when individuals feel highly invested, which can potentially lead to reduced cooperation in shared environments.

Furthermore, the result from the pretest does not align with the identified negative relationship. The pretest survey consists of a Swedish sample in which a positive and statistically significant relationship between psychological ownership and responsible space-sharing behavior was identified. This discrepancy suggests that the relationship between psychological ownership and responsible space-sharing behavior may be influenced by contextual or cultural factors, warranting further investigation.

5.3 Effect of psychological ownership on productive behavior

The results provide support for *H3a*. Although having a relatively low coefficient, the results also provide support for *H3b*. These findings align with previous research reporting low but positive associations between psychological ownership and productivity-related outcomes ([Brown et al., 2014](#); [Van Dyne and Pierce, 2004](#)). This suggests that even though psychological ownership is not a major driver of productive behavior, it still contributes to understanding coworking members' engagement in task performance and creative performance.

5.4 Effect of psychological ownership on sustainable coworking behavior

Although the hypotheses were focused on the specific dimensions of sustainable coworking behavior (prosocial behavior, responsible space-sharing behavior, task performance, and creative performance), the analysis also revealed a positive relationship between psychological ownership and the G-factor ($\gamma = 0.500$, $p < 0.001$, see [Figure 3](#)). This finding suggests that psychological ownership may influence sustainable coworking behavior more broadly, beyond its effects on the specific factors. However, as this relationship was not part of the original hypotheses, it should be considered exploratory and interpreted with caution. Future research is needed to further investigate the nature of this broader association.

5.5 Limitations

Since this research relies on cross-sectional data, the causal direction can be questionable. For example, coworking members who actively contribute to maintaining the space, assist others, or participate in community activities may develop a stronger sense of ownership. In other words, engaging in sustainable coworking behavior reinforces psychological ownership over time. It is also possible that a mutually reinforcing cycle exists in which psychological ownership fosters sustainable coworking behavior, and in turn sustainable coworking behavior strengthens psychological ownership. Measurement-related limitations can also be considered. While the adaptation of the psychological ownership scale (Van Dyne and Pierce, 2004) appears justified, it has not been rigorously validated in the coworking context. In contrast, the sustainable coworking behavior scale is newly developed and may require further validation. It consists of 47 items which can be demanding for the respondents. A shorter version of the scale would have been helpful to mitigate respondent fatigue.

6. Conclusion

The aim of this paper was to investigate the relationship between psychological ownership and sustainable behavior in coworking spaces. To fulfil this purpose, we tested four hypotheses regarding this relationship using structural equation modeling. The structural model shows that three out of four hypotheses were supported. Our findings demonstrate that there exists both a positive and negative meaningful relationship between psychological ownership of a coworking space and sustainable coworking behavior.

Given the identified relationship between psychological ownership and sustainable coworking behavior, this paper makes several important theoretical and practical contributions. Theoretically, it addresses a previously unexamined relationship by exploring whether, and to what extent, psychological ownership of a coworking space influences members' engagement in sustainable behaviors. In doing so, it extends psychological ownership theory to the unique and increasingly relevant context of coworking spaces, which differ fundamentally from traditional workplaces in terms of structure, culture, and user roles. Practically, members are often regarded as customers rather than contributors to sustainability efforts. This study shows, however, that by cultivating psychological ownership, providers may activate an underutilized resource, the members themselves, as actors of sustainable behavior.

For future research, it would be interesting to investigate certain factors that could potentially moderate the relationship between psychological ownership and sustainable coworking behavior. For example, to investigate whether "Office type" or different kinds of "Main motivation" moderates the relationship between the two.

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Further reading

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Table A1. Items used for measuring sustainable coworking behavior

The following statements concern your behavior as a coworking member during the last six months (if you have been a member for less than six months, this concerns the entire time of your membership). Please indicate your behavior on a scale between 1 and 7 for each statement.

Dimension	Item
Task performance	<i>While inside the coworking space I...</i>
	Can work without interruption (*)
	Can work without being noticed (*)
	Can concentrate while I work (*)
	Can perform work of high quality (*)
	Can complete tasks efficiently (*)
	Can focus on core activities (*)
	Meet formal short-term targets at my job (*)
	Meet formal long-term targets at my job (*)
Creative performance	Progress towards formal targets at my job (*)
	Can create new ideas (*)
	Can think outside the box (*)
Prosocial behavior	Can become inspired (*)
	Share content with other members on the coworking space's online platforms
	Take a personal interest in other members
	Introduce new members to each other
	Help orient new members even though it is not required
	Keep other members updated with important information
	Share experiences that may help other members avoid risks and trouble
	Share my possessions with other members
	Willingly help other members who have work-related problems
	Help other members who have heavy workloads
	Help other members who have been absent
	Try to be caring towards other members if I see them going through a difficult time
	Like to be there for other members in times of difficulty
	Take time to listen to other members' problems and worries
	Volunteer for things that are not required for my work
	Attend functions not required for my work
	Say positive things about this coworking space
	Make constructive suggestions on how to improve the coworking space's services
	Inform the employees if I notice a problem, even if it does not affect me
	Let the employees know if they give me good service
Responsible space-sharing behavior	Challenge other members if I think something is done wrong
	Use the coworking space's equipment and material sparingly
	Properly dispose my waste
	Discuss environmental issues with other members
	Help to keep this coworking space clean
	Conserve and protect the property of this coworking space
	Am aware if I invade other members' workspaces (*)
	Am aware if I invade other members' workspaces (*)
	Obey the coworking space's rules and policies even when no one is watching
	Protect my sensitive information from being used by other members
Carefully observe the rules and policies (*)	

(continued)

Table A1. Continued

The following statements concern your behavior as a coworking member during the last six months (if you have been a member for less than six months, this concerns the entire time of your membership). Please indicate your behavior on a scale between 1 and 7 for each statement.

Dimension	Item
	Am mindful of how my behavior affects other members' job (*)
	Adhere to informal rules devised to maintain order
	Try to avoid creating problems for other members
	Speak up and encourage other members to get involved in issues that affect all members
	Tell the employees if I see something that is done wrong

Note(s): (*) indicate a response scale based on agreement (1: Strongly disagree, 4: Neutral, 7: Strongly agree). Remaining items use a response scale based on frequency (1: Never, 4: Sometimes, 7: Always)

Source(s): Authors' own work

Table A2. Standardized parameter estimates for the different models of SCB

	CEA			ESEM			Bifactor CFA			Bifactor ESEM		
	SF λ	TP λ	CP λ	PB λ	RB λ	SF λ	GFA	TP λ	CP λ	PB λ	RB λ	GFA
TP1	0.560	0.571	0.048	0.068	-0.025	0.485	0.428	0.420	-0.004	-0.012	-0.145	0.480
TP2	0.001	0.326	0.084	-0.261	-0.092	0.459	-0.090	0.305	0.063	-0.210	-0.112	0.029
TP3	0.753	0.752	-0.001	-0.086	0.228	0.573	0.586	0.535	-0.043	-0.128	0.055	0.641
TP4	0.765	0.591	0.084	-0.074	0.335	0.536	0.606	0.524	0.081	-0.054	0.200	0.595
TP5	0.770	0.629	0.032	-0.024	0.280	0.514	0.611	0.522	0.026	-0.022	0.139	0.605
TP6	0.749	0.559	0.102	0.013	0.251	0.465	0.610	0.433	0.077	-0.029	0.118	0.611
TP7	0.689	0.328	0.441	0.106	0.078	0.236	0.597	0.039	0.307	-0.120	0.008	0.643
TP8	0.808	0.438	0.421	0.129	0.094	0.288	0.697	0.177	0.294	-0.077	0.002	0.719
TP9	0.808	0.353	0.416	0.132	0.188	0.263	0.704	0.083	0.279	-0.092	0.084	0.730
ω	0.883	0.760				0.668		0.546				
CP1	0.825	0.288	0.546	0.159	0.097	0.532	0.674	0.091	0.428	-0.037	0.049	0.675
CP2	0.861	0.311	0.615	0.184	0.030	0.530	0.699	0.128	0.495	-0.014	-0.002	0.688
CP3	0.844	0.300	0.512	0.196	0.084	0.380	0.700	0.166	0.418	0.032	0.036	0.658
ω	0.881		0.576			0.476		0.429				
PB1	0.679	0.095	0.125	0.692	-0.165	0.469	0.501	-0.113	0.066	0.413	-0.197	0.543
PB2	0.550	-0.135	0.171	0.576	0.018	0.424	0.379	-0.158	0.132	0.394	0.004	0.397
PB3	0.713	0.067	0.035	0.725	-0.081	0.500	0.518	-0.109	-0.009	0.461	-0.132	0.550
PB4	0.654	-0.002	0.060	0.729	-0.133	0.540	0.428	-0.188	0.012	0.458	-0.162	0.488
PB5	0.789	0.083	0.020	0.674	0.126	0.439	0.634	-0.011	-0.010	0.458	0.032	0.626
PB6	0.778	-0.050	0.040	0.680	0.122	0.446	0.622	-0.052	0.005	0.456	0.036	0.618
PB7	0.789	-0.106	0.095	0.627	0.020	0.395	0.395	-0.031	0.080	0.483	-0.013	0.388
PB8	0.789	-0.134	-0.005	0.771	0.201	0.578	0.556	0.092	-0.003	0.652	0.107	0.496
PB9	0.722	-0.192	-0.050	0.844	0.039	0.696	0.403	0.113	-0.050	0.727	-0.049	0.374
PB10	0.692	-0.248	-0.071	0.826	0.085	0.678	0.376	0.050	-0.068	0.714	0.005	0.344
PB11	0.784	-0.196	0.054	0.675	0.374	0.493	0.602	0.016	0.052	0.570	0.281	0.530
PB12	0.786	-0.221	0.026	0.736	0.318	0.551	0.568	-0.017	0.022	0.613	0.228	0.508
PB13	0.776	-0.210	0.074	0.820	0.120	0.624	0.624	-0.032	0.054	0.657	0.057	0.479
PB14	0.605	0.082	0.118	0.713	-0.319	0.551	0.367	-0.140	0.046	0.420	-0.326	0.456
PB15	0.453	0.101	0.118	0.561	-0.342	0.449	0.260	-0.161	0.050	0.291	-0.337	0.362
PB16	0.730	0.281	0.137	0.403	0.149	0.152	0.704	0.128	0.066	0.211	0.034	0.667

(continued)

Table A2. Continued

CFA	ESEM			Bifactor CFA		Bifactor ESEM						
	SFA	TP λ	CP λ	PB λ	RB λ	SF λ	GF λ	TP λ	CP λ	PB λ	RB λ	GF λ
PB17	0.689	0.279	-0.081	0.554	0.005	0.310	0.591	-0.016	-0.154	0.281	-0.117	0.623
PB18	0.700	0.239	-0.050	0.559	0.038	0.339	0.590	0.032	-0.110	0.322	-0.079	0.607
PB19	0.679	0.278	-0.036	0.419	0.174	0.198	0.637	0.064	-0.097	0.212	0.035	0.635
PB20	0.502	0.290	-0.222	0.519	-0.178	0.313	0.388	-0.096	-0.282	0.235	-0.275	0.449
ω	0.947			0.939		0.847				0.841		
RB1	0.414	-0.033	0.043	0.143	0.384	0.277	0.377	-0.016	0.022	0.096	0.295	0.338
RB2	0.442	0.258	-0.093	-0.113	0.512	0.401	0.391	-0.031	-0.178	-0.247	0.320	0.487
RB3	0.677	0.144	-0.083	0.569	0.061	-0.207	0.676	-0.048	-0.131	0.341	-0.042	0.543
RB4	0.535	0.007	-0.035	0.191	0.488	0.312	0.490	-0.161	-0.090	0.040	0.340	0.492
RB5	0.666	0.092	0.052	0.210	0.495	0.294	0.620	-0.115	-0.028	0.024	0.335	0.621
RB6	0.404	0.020	0.063	-0.039	0.521	0.498	0.340	0.034	0.032	-0.049	0.410	0.350
RB7	0.465	0.120	-0.021	-0.096	0.619	0.504	0.398	0.179	-0.037	-0.056	0.474	0.386
RB8	0.615	0.120	0.095	0.058	0.544	0.383	0.559	0.049	0.044	-0.021	0.396	0.539
RB9	0.573	0.141	-0.126	0.158	0.500	0.309	0.525	0.040	-0.172	0.058	0.319	0.506
RB10	0.703	0.295	0.063	-0.001	0.565	0.384	0.650	0.215	0.014	-0.055	0.394	0.614
RB11	0.593	0.057	0.143	0.009	0.612	0.460	0.531	0.105	0.111	-0.002	0.485	0.487
RB12	0.428	0.153	-0.034	0.146	0.259	0.143	0.408	-0.040	-0.084	0.012	0.141	0.417
RB13	0.419	-0.093	0.143	-0.034	0.590	0.459	0.355	0.007	0.120	-0.016	0.493	0.332
RB14	0.708	0.332	-0.193	0.550	0.010	-0.282	0.714	-0.036	-0.263	0.259	-0.132	0.629
RB15	0.737	0.351	-0.195	0.511	0.084	-0.199	0.740	-0.099	-0.276	0.192	-0.076	0.686
ω	0.874			0.768		0.516					0.565	

Note(s): SF = Specific factor, GF = Global factor, **Bold**: target loading, *ursive*: $p < 0.05$, Gray: $|\lambda| \leq 0.3$

Source(s): Authors' own work

Table A3. Standardized inter-factor correlations for CFA (below the diagonal) and ESEM (above the diagonal)

	TP	CP	PB	RB
TP	–	0.289 ($p < 0.001$)	0.418 ($p < 0.001$)	0.405 ($p < 0.001$)
CP	0.828 ($p < 0.001$)	–	0.190 ($p < 0.001$)	0.327 ($p < 0.001$)
PB	0.565 ($p < 0.001$)	0.574 ($p < 0.001$)	–	0.362 ($p < 0.001$)
RB	0.758 ($p < 0.001$)	0.666 ($p < 0.001$)	0.757 ($p < 0.001$)	–

Source(s): Authors' own work

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