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Daily recovery experiences of Japanese small business owners and the link with well-being and ill-being

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Abstract

Numerous studies deal with the link between daily recovery experiences (DRE) and mental health for employees. Hardly any studies exist for small business owners. This is surprising, given that their health is important not only to them but also to their environment (including employees, clients, suppliers, and networks). In the present cross-sectional study, we analyse whether this link also works for some 2,400 Japanese small business owners. Next to overall DRE, four dimensions of DRE are distinguished (detachment, relaxation, mastery, and control). Mental health is captured using well-being (psychological well-being and job satisfaction) and ill-being (burnout and stress). *First*, we compare our DRE levels with those reported in many other (employee) studies. *Second*, controlling for many phenomena, including participating in *nomikai* (a typical Japanese custom of getting together after office hours), both linear regressions and structural equation modelling show that for Japanese small business owners, the quality of overall DRE is positively linked to psychological well-being and job satisfaction, and negatively to burnout and stress. *Third*, like the quality of overall DRE, *nomikai* activities of the owner are positively linked to their psychological well-being and job satisfaction, and negatively linked to burnout and stress. Its role seems to be independent of that of the quality of DRE. *Fourth*, surprisingly, we find that the detachment dimension is negatively correlated with psychological well-being and job satisfaction, while the other three dimensions show the expected positive links. *Fifth*, and surprisingly, unlike the relaxation and mastery dimensions, the detachment and control dimensions do not show the expected negative links with burnout and stress. Many implications are discussed.

Keywords Small business owners/managers · Entrepreneurs · Daily recovery experiences · *Nomikai* · Well-being · Job satisfaction · Burnout · Stress · Japan

JEL Classification I12 · I31 · L26

Extended author information available on the last page of the article

1 Introduction

Small business owners play an important role in the economy (Van Praag & Versloot, 2007). By creating jobs and innovating, they not only absorb economic risks but also serve as employers and play a role in their ecosystem alongside colleagues, suppliers, clients, and many others. Obviously, their health is a crucial concern to themselves, but given their interactions with the agents in their ecosystem, from co-working family members to suppliers, their health has spillover effects (Torrès & Thurik, 2019).

After being neglected for a long time, the scholarly field of the (mental) health of small business owners (including small business managers, entrepreneurs, and self-employed individuals) is rapidly developing (Stephan & Roesler, 2010; Stephan, 2018; Torrès & Thurik, 2019; Wiklund et al., 2020). Multiple strategies have been studied to improve mental health. These include reducing work hours (Kamerāde et al., 2019; Voglino et al., 2022), enhancing skills (Belloni et al., 2022), increasing work efficiency, incorporating playful elements into work (Hunter et al., 2010; Sørensen & Spoelstra, 2012; Mukerjee et al., 2026), improving sleep (Guiliani & Torrès, 2018; Scott et al., 2021), avoiding stress-inducing activities (Sonnentag et al., 2012; Breevaart et al., 2020), recovery interventions (Williamson et al., 2021), and practicing mindfulness exercises (Althammer et al., 2021; Fazia et al., 2023).

Daily recovery experiences (DRE) for mental health are hardly investigated for small business owners. There are only two recent studies: Bennett et al. (2025) and Le Moal et al. (2026), both using the well-known approach of the quality of DRE. They use the four dimensions of DRE (detachment, relaxation, mastery, and control) proposed by Sonnentag and Fritz (2007) as the Recovery Experience Questionnaire (REQ).

The present study takes Le Moal et al. (2026) as a starting point and aims to first replicate it using a cross-sectional survey of Japanese small business owners and then to extend it with two more mental health measurements (job satisfaction and stress) and with analysing the influence of *nomikai* (飲み会), a specific Japanese custom of getting together after office hours. *Nomikai* can be conceived as a form of regular recovery. We will also extend it with a wider set of controls. Apart from these extensions, replication is not straightforward because Japanese perceptions of recovery may not be comparable with Western perceptions. We not only conduct an empirical investigation of an underexplored topic (namely, small business owners' mental health in relation to DRE) but also address contextual differences. Taken together, we perform a so-called constructive replication (Block et al., 2022) while also considering the Western-centric approach to mental health and work studies.

In sum, we investigate the relationships between DRE after work and mental health using a cross-sectional survey of approximately 2,400 Japanese small business owners. DRE are captured using the four dimensions proposed by Sonnentag and Fritz (2007) (detachment, relaxation, mastery, and control), and mental health is captured using well-being (psychological well-being and job satisfaction) and ill-

being (burnout and stress).¹ Both linear regressions and structural equation modelling (SEM) are used to present our results. We will use the Japanese version of the DRE questionnaire (Shimazu et al., 2012), which was validated for employees. In the results section of the present paper, we report on the validation of this questionnaire for Japanese small business owners.

First, we find that Japanese small business owners' recovery experience levels across all four dimensions are comparable to those of US early-stage entrepreneurs and employees in general. *Second*, we find that—as in France, the US, and among employees in general—experiences of detachment after work show the lowest scores among DRE for Japanese small business owners, while experiences of control show the highest. *Third*, controlling for multiple factors, both linear regressions and SEM analyses show that, for Japanese small business owners, the quality of overall DRE is positively associated with psychological well-being and job satisfaction, and negatively associated with burnout and stress. The same is found in France for well-being and burnout. Even after including participation in *nomikai* (a typical Japanese custom of after-hours bonding with a recovery aspect), these results stay intact. *Fourth*, the owner's *nomikai* activities are positively linked to psychological well-being and job satisfaction, and negatively linked to burnout and stress. Their role seems to be independent of the quality of overall DRE. *Fifth*, we find that the detachment dimension is negatively correlated with psychological well-being and job satisfaction, while the other three dimensions show the expected positive links with well-being. A similar result is found in France, where detachment is the only DRE dimension that shows no link to well-being. *Sixth*, the detachment and control dimensions do not show the expected negative links with burnout and stress, while the relaxation and mastery dimensions do.

Our study is organized as follows: in the second section, we provide a brief review of the literature on recovery and *nomikai*. We refer to Le Moal et al. (2026) for a more comprehensive outline of small business owners' health. Next, we describe the methodology used, including the data collection, measurement tools, and a comparison of Japanese, US, and French DRE measures. The third section presents the results of our analyses, highlighting the relationships between DRE and mental health outcomes, specifically psychological well-being, job satisfaction, burnout, and stress. Finally, we discuss the implications of our findings, propose intervention strategies, acknowledge the limitations of our study, and outline directions for future research. In Sect. 4.1, we validate the DRE scales for Japanese small business owners.

¹ The literature about DRE uses the word “daily” in a between-person cross-sectional sense (by registering recovery behaviour for many respondents once), and in a per-person day-to-day sense (for instance, by using diaries for registering day-to-day variations). See Sonnentag (2001) and Mojza et al. (2010) for examples of a diary study. In the present study, we focus on a between-person comparison rather than within-person differences over time.

2 Theory and hypotheses

In the present section, we briefly clarify Sonnentag's framework, address the gap in the literature that small business owners are rarely studied, and explain the typical Japanese phenomenon of *nomikai* and why it should play a role in explaining daily recovery. While discussing *nomikai*, we touch on two elements of East Asian work culture: collectivism and the centrality of work. Finally, we present our four dependent variables followed by our eight hypotheses.

2.1 Sonnentag's framework and the gap in the literature

Sabine Sonnentag is a central figure in occupational health psychology, particularly known for her research on DRE from work-related stress. Her work has shaped our theoretical and empirical understanding of how employees recuperate during non-work hours and how this affects well-being and performance. Her early diary studies demonstrated that recovery is a daily process, showing that successful detachment from work during off-job time is associated with lower fatigue, better mood, and enhanced job performance (Sonnentag, 2001; Sonnentag & Bayer, 2005). She argued that recovery experiences are not merely the absence of work but involve psychological mechanisms that make non-work time useful for counteracting the potentially negative effects of stress accumulated during work time.

A major contribution is the development of the DRE framework, a psychometric tool that identifies four core recovery experiences: psychological detachment (mentally switching off from work), relaxation (engaging in calming, low-effort activities), mastery (engaging in non-work challenges), and control (autonomy over leisure time, or time in general). This framework was operationalized in the Recovery Experience Questionnaire (REQ), validated by Sonnentag and Fritz (2007), which has become a standard instrument in recovery research.

Sonnentag's work also emphasizes the contextual and individual differences in recovery, highlighting factors such as workload, job demands, leisure activities, and personality traits that influence how and to what extent recovery occurs (Sonnentag & Fritz, 2015). It also emphasizes the importance of recovery not only after long breaks, but as a daily necessity. Taken together, Sonnentag's contributions provide a robust foundation for understanding recovery as a key process in managing occupational stress and promoting sustainable performance. How the field of recovery from everyday work may advance is outlined in Sonnentag et al. (2022).

In the present study, we aim to broaden this understanding of recovery by investigating small business owners, as there are only two prior studies. Bennett et al. (2025) use work engagement, emotional exhaustion, and sleep quality as indicators of mental health, and Le Moal et al. (2026) use psychological well-being and burnout. Both studies show that, in general, DRE is beneficial for mental health, but that detachment does not seem to contribute much. A disadvantage of both studies is that they do not analyse multicollinearity among the four DRE dimensions, which may distort the identification of the link to mental health measures. An additional shortcoming of Bennett et al. (2025) is its small sample size ($N=247$), which comprises only early-stage entrepreneurs. A peculiarity of the dataset of Le Moal et al. (2026) is

the surprisingly low levels across the four DRE dimensions. A strong point is that the dataset ($N=1043$) comprises four slightly different subsets that yield similar results. This implies some form of internal replication. Another strong point is that the internal consistency and validity of the questionnaire for French small business owners are explicitly assessed in Le Moal et al. (2026).

Taken together, we will broaden our understanding of recovery by using a dataset of some 2,400 Japanese small business owners and the Japanese version of the DRE questionnaire (Shimazu et al., 2012), originally validated for employees. We examine its validity for Japanese small business owners in Sect. 4.1 of the present paper. As far as we know, we are the third after Bennett et al. (2025) and Le Moal et al. (2026) to study the impact of DRE on the mental health of small business owners, and the second to use the Shimazu et al. (2012) version. The Japanese data set allows us to go beyond a simple replication in two ways. *First*, by analysing the influence of *nomikai* (飲み会), a specific Japanese custom of getting together after office hours. *Nomikai* can be conceived as a form of regular recovery, and in that sense, it serves as a ‘competitor’ for Sonnentag’s four dimensions. *Second*, Japanese perceptions of recovery may not be comparable to Western perceptions because the entire work culture is well-documented to differ between Western and East Asian contexts. Below, we will describe *nomikai* and its role in Japanese work culture as a starting point to underline that cultural differences may affect recovery behaviour.

2.2 *Nomikai* and other elements of East-Asian work culture

In Japanese workplaces, people traditionally have informal after-work social drinking gatherings, known as *nomikai*. It is not unusual for *nomikai* to be held several times a week or to continue late into the night. High- and low-ranking individuals are expected to socialize after work as part of *nomikai* (Gobel & Miyamoto, 2024). Managers may see *nomikai* as an important opportunity to interact with their employees in a more relaxed setting, so they can hear frank opinions they might not normally hear in the office. It has been shown that *nomikai* plays an important role in strengthening solidarity among members of the workplace, relieving stress, and building cohesion in Japanese workplaces, especially among middle-aged men (Kobayashi et al., 2014). If managers participate more often in employee-hosted *nomikai*, communication between them would improve. In addition, the fact that employees are holding and inviting managers to *nomikai* itself would mean that communication between them in the workplace is going well. As a result, managers may be able to reduce their stress levels and increase their job satisfaction.

However, in practice, employees often find it difficult to decline invitations to *nomikai* from their superiors, even when fatigued, which may be interpreted as presenteeism. This aligns with Cooper and Lu (2016), who argue that employees may push themselves to attend work even while feeling unwell to maintain a favourable image. Similar dynamics apply to invitations from colleagues: employees may feel obliged to accept as a sign of loyalty, reciprocity, or to avoid disrupting group harmony (Yuki, 2003; Cooper & Lu, 2016). As a result, older generations—more than younger ones—often find it particularly difficult to refuse *nomikai*, reducing the time that could otherwise be used for rest and recovery. Moreover, work-related

conversations often take place during *nomikai*, potentially impeding psychological detachment (Shimazu et al., 2012; Hu et al., 2014). Apart from productivity and organisational effects of *nomikai* which may influence mental health, there may also be direct mental health effects (Hagihara et al., 2000). Drinking with colleagues in *nomikai* has been shown to affect stress and job satisfaction (Hagihara et al., 2000), which is consistent with earlier findings that moderate alcohol consumption reduces stress (Baum-Baicker, 1985) and impairs work performance (Mangione et al., 1999). These practical constraints raise a broader cultural question: whether there are differences across societies in their acceptance of the blurring of boundaries between work and leisure. In Western countries, work tends to promote individual self-realization and personal growth, and the value of leisure is highly emphasized (Hu et al., 2014). However, reality is increasingly complex. The pursuit of autonomy enabled by new technologies, such as smartphones, allows people to work anywhere, anytime. This “*autonomy paradox*” arises because individuals’ choices to use technology for flexibility unintentionally intensify collective expectations of constant availability, leading to a *spiral of escalating engagement* (Mazmanian et al., 2013). On the other hand, in East Asian cultures, particularly in Japan, contributions to the group and self-sacrifice are highly valued, and there is a strongly ingrained perception that “*work is life*” (Hu et al., 2014). Such fundamental cultural differences can influence motivation both to work and to participate in *nomikai*. Yuki (2003) argues that East-Asian collectivism emphasizes cooperative behaviour and the preservation of relational harmony within groups, which may encourage employees to attend even when not fully recovered from the workday. Informal norms, such as expectations of presenteeism, can thus blur the boundary between work and leisure, undermining the possibility of true recovery. These dynamics may further contribute to a perceived moral obligation to engage in after-hours social activities as an extrinsic motivation for social approval in cultures that value group contribution and self-sacrifice (Hu et al., 2014). While the underlying motivations differ—Western professionals tend to focus on professional autonomy and accountability (Mazmanian et al., 2013), whereas Japanese employees prioritize relational harmony (Yuki, 2003) both cultures face a similar consequence: the erosion of personal time.

We use *nomikai* as a ‘competitor’ of DRE to better establish the role of these experiences. Obviously, we surmise that there will be a positive link between participating in *nomikai* and the business owner’s mental health. There may be substitution effects between participating in *nomikai* and DRE. Moreover, controlling for *nomikai* is a necessary condition for comparing the remaining coefficients between Japan and France.

2.3 Our dependent variables and our hypotheses

We refer to Le Moal et al. (2026) for a comprehensive overview of small business owners’ health and recovery, including extensive supporting literature, in part based on the conservation of resources (COR) theory and existentialism. According to the COR model, individuals strive to retain, protect, and build resources but experience stress because of resource loss. In this logic, recovery periods are crucial for replenishing depleted resources, supporting sustained productivity, and reducing vulner-

ability to stress. Moreover, the strong commitment of owners to their businesses makes them particularly prone to burnout, especially since entrepreneurs are often described as having an existentialist nature, viewing their business undertakings as a personal mission that reflects their core values and life purpose (Torrès et al., 2022).

We introduce four dependent variables. We include psychological well-being and burnout because Le Moal et al. (2026) use these two measures, and we aim to confront our results with theirs. We value the distinction between well-being and ill-being because the entrepreneurial journey is characterized by high levels of both (Torrès & Thurik, 2019; Stephan et al., 2023). However, we do not want to rely on a single measure of well-being and ill-being. A common framework in psychology differentiates between hedonic (pleasure and happiness) and eudaimonic (meaning and self-realisation) measures (Ryan & Deci, 2017). So, next to the eudaimonic psychological well-being measure, we use the hedonic job satisfaction measure. Moreover, we supplement perceptions of burnout with those of its probable precursor, work stress.

Taking the above into account, we posit the following hypotheses:

H1a. The quality of DRE is positively related to small business owners' psychological well-being.

H2a. The quality of DRE is positively related to small business owners' job satisfaction.

H3a. The quality of DRE is negatively related to small business owners' perception of burnout.

H4a. The quality of DRE is negatively related to small business owners' perception of stress.

H1b. Involvement in *nomikai* is positively related to small business owners' psychological well-being.

H2b. Involvement in *nomikai* is positively related to small business owners' job satisfaction.

H3b. Involvement in *nomikai* is negatively related to small business owners' perception of burnout.

H4b. Involvement in *nomikai* is negatively related to small business owners' perception of stress.

We have no well-founded priors about the relative effects of the four DRE dimensions on our four measures of mental health. The exception is the effect of detachment which may be weaker than that of the other three. This result is established in Le Moal et al. (2026) and explained using the concept of existentialism. This result is also reported in Bennett et al. (2025), who state that entrepreneurial passion may be at odds with the desire to detach.

3 Data and measurement

3.1 Our survey

We commissioned Intage Inc., one of Japan's major marketing research companies, to conduct an online survey titled "Survey on the Labor of Business Owners and

Employees” from July 11 through July 13, 2024.² This survey was targeted at owners/managers of small businesses with 4 to 99 employees (excluding the owner/manager). We received 2,458 valid responses out of 5,079 survey targets (a response rate of 48.4%).³ After removing missing observations for the education variable, our estimation sample consists of 2,379 observations. To screen out business owners/managers, we first asked, “*Are you an owner or (and) manager of a business (independent, subsidiary, franchise, etc.)?*” Then, we asked respondents to answer about the business of their ‘main organization,’ since they may be involved in multiple businesses.

To address potential sampling bias concerns, we provide details on the panel’s recruitment process and representativeness by comparing them with external government benchmarks.

First, the recruitment process. The data were collected via “Mighty Monitor,” an online panel managed by Intage Inc.⁴ To reduce bias, Intage recruited respondents through diverse channels, including web advertisements and a partnership with NTT DOCOMO (Japan’s largest mobile carrier), targeting both PC and smartphone users across a wide range of attributes.

Second, the representativeness of our survey. Regarding gender, the relevant benchmark is the population of business owners rather than the general population. In Japan, the representation of women among company presidents is inherently low. According to the *National “Female President” Analysis Survey (2025)*⁵, which covers 1.2 million incorporated firms (excluding sole proprietorships), only 8.6% of company presidents are women. Our survey result (with approximately 7% female respondents) is therefore broadly consistent with the gender composition of the population of business leaders.

With respect to age, Japanese company presidents are predominantly in their 50s and 60s, with a substantial share also in their 70s and relatively few under 40. See the *National “Female President” Analysis Survey (2025)*. The age distribution of the Intage monitor pool shows a similar pattern, being dominated by respondents in their 50s and 60s, although it includes somewhat greater representation of individuals in their 30s and 40s. Overall, the age structure of our sample—with the majority of business owners in their 50s and 60s—does not substantially deviate from that of the population of company presidents.

3.2 Daily recovery experiences

Our measure of DRE is based on Sonnentag and Fritz (2007), distinguishing between four dimensions (detachment, relaxation, mastery, and control). Each dimension is

² Studies using surveys conducted by Intage have been published in a wide range of fields (Diamond et al., 2020; Kikuchi et al., 2023).

³ Online surveys conducted by marketing research companies such as Intage typically achieve high response rates, as they are distributed to large panels of pre-registered respondents who have agreed in advance to participate. These panelists are often incentivized with small monetary rewards or points for each completed survey, which helps maintain engagement and encourages consistent participation.

⁴ See https://www.intage.co.jp/lp/service/mighty_monitor/ (Japanese only).

⁵ This survey is conducted by Teikoku Databank (<https://www.tdb.co.jp/report/economic/20251126-womanpres2025>, Japanese only).

measured using four items. The list of 16 items is preceded by the statement “Please indicate to what extent the following statements describe your behaviour after working hours.” Sample items include “I forget about work” for detachment, “I decompress and relax” for relaxation, “I learn new things” for mastery, and “I feel like I can decide what to do for myself” for control. Responses were provided on a 5-point scale ranging from “completely disagree” to “completely agree”. A higher score reflects a higher level of daily recovery. The Cronbach alpha values are 0.77 for detachment, 0.87 for relaxation, 0.84 for mastery, 0.82 for control, and 0.89 for overall DRE. The Cronbach alpha values in the French data set of Le Moal et al. (2026) are higher, with 0.88 for detachment as the lowest.

3.3 Nomikai

We add a measure of *nomikai* using the question “I never participate in the *nomikai* of my employees” on a 7-point scale ranging from “completely disagree” to “completely agree.” We reverse the scores so that a higher value indicates greater participation in *nomikai*. As stated above, *nomikai* is a Japanese custom of getting together after office hours and can be conceived as a form of regular recovery.

3.4 Dependent variables

Mental health is captured by two measures of well-being (psychological well-being and job satisfaction) and two measures of ill-being (burnout and stress). For *psychological well-being*, we use the six-item scale from Culbertson et al. (2010), which is a short version of the scale developed by Ryff (1989). Example items are “I had positive and satisfying relationships with those at work today” (reflecting positive relationships) and “My work today challenged me and made me grow as a person” (reflecting personal growth). The remaining items reflect four other dimensions of eudaimonic well-being, including self-acceptance, purpose in life, environmental mastery, and autonomy (Ryff, 1989).⁶ Responses were given on a 5-point scale ranging from “strongly disagree” to “strongly agree”. Cronbach’s alpha is 0.64.⁷

Job satisfaction was measured using the three-item Michigan Organizational Assessment Questionnaire Job Satisfaction Subscale (MOAQ-JSS), developed by Cammann et al. (1979). Example items are “All in all, I am satisfied with my job” and “In general, I don’t like my job” (reverse coded). Responses were on a 7-point scale ranging from “strongly disagree” to “strongly agree”. Cronbach’s alpha is 0.84, lower than that reported for the French data set (0.91).

Burnout was measured with 10 questions (as developed by Malach-Pines, 2005). Respondents were asked about their feelings in terms of, for example, being tired,

⁶ The items are “I feel positive about myself and the events that happened at work today” for self-acceptance, “I did not have a sense of purpose and meaning in my work today” for purpose in life (reverse coded), “I had difficulty managing my daily affairs and controlling events at work today” for environmental mastery (reverse coded), and “Social pressures and the expectations of others made me act and think in certain ways at work today” for autonomy (reverse coded).

⁷ Alpha increases to 0.73 when the autonomy dimension is excluded from the scale. Results with this 5-item psychological well-being scale are qualitatively similar to that of the 6-item scale.

hopeless, and depressed as a response to the following question: “*When you think about your work overall, how often do you feel the following?*” Responses were provided on a 7-point scale ranging from “never” to “always”. Cronbach’s alpha is 0.92, similar to that in the French data set.

Stress at work was measured with four items (Motowidlo et al., 1986) of which examples are “*I feel a great deal of stress because of my job*” and “*My job is extremely stressful.*” Responses were provided on a 7-point scale ranging from “strongly disagree” to “strongly agree”. This 4-item scale has a Cronbach’s alpha of 0.87.

3.5 Controls

We control for several variables at the business owner level including gender (female = 1; male = 0), age in years, the presence of a life partner (yes = 1; no = 0), educational attainment (high school, vocational, junior college, university, master, doctoral), experience as a manager in years, industry experience in years, and whether the owner is the founder of the business (yes = 1; no = 0). Control variables at the firm level include size (number of employees), business age in years, family business (yes = 1; no = 0), sector (we aggregated the sector variable into 12 categories: construction, manufacturing, ICT, transport, wholesale/retail, finance/insurance, real estate, science, consumer/leisure, education, health, other sectors/services) and location of the business (47 Japanese prefectures)⁸. We refrain from formulating separate hypotheses about the above controls, as this is not the focus of the present study. However, in the discussion, we will comment on their effects, which often provide confidence in the results.

3.6 Comparing DRE for Japanese and French small business owners

Table 1 provides descriptive statistics for overall DRE, the four DRE dimensions, *nomikai*, the four dependent variables, and the control variables.

Table 1 Means, standard deviations, and minimum/maximum values for overall DRE, DRE dimensions, *nomikai*, dependent variables, and control variables.

Variable	Mean	SD	Min.	Max.
Overall DRE (Daily Recovery Experiences)	3.49	0.53	1	5
Detachment	3.06	0.74	1	5
Relaxation	3.55	0.72	1	5
Mastery	3.47	0.68	1	5
Control	3.89	0.67	1	5
<i>nomikai</i>	4.33	1.58	1	7
Psychological well-being	3.39	0.51	1	5
Job satisfaction	5.01	1.18	1	7
Burnout	3.30	1.01	1	7
Stress	4.28	1.22	1	7
Female	0.07	0.25	0	1

⁸ According to Motohashi et al. (2013), residents in urban areas have approximately three times higher risk of mental illness due to stress than residents in non-urban areas.

Table 1 Means, standard deviations, and minimum/maximum values for overall DRE, DRE dimensions, *nomikai*, dependent variables, and control variables.

Variable	Mean	SD	Min.	Max.
Age	58.28	9.08	23	84
Life partner	0.76	0.43	0	1
Education: High school	0.22	0.42	0	1
Education: Vocational	0.11	0.31	0	1
Education: Junior college	0.04	0.19	0	1
Education: University	0.52	0.50	0	1
Education: Master	0.06	0.23	0	1
Education: Doctoral	0.05	0.22	0	1
Manager experience (years)	16.68	10.93	0	54
Industry experience (years)	25.70	12.32	0	60
Business size (# of employees)	16.83	17.76	4	99
Business age	34.78	27.40	0	366
Family business	0.32	0.47	0	1
Founder	0.53	0.50	0	1

Based on 2,379 observations. SD=standard deviation; Min.=minimum value; Max.=maximum value. The means of the location and sector dummies are available from the authors.

Given that the results of Bennett et al. (2025) are based on a sample of early-stage entrepreneurs (who founded a business in the previous three years) – and the fact that only a small subset of our current sample (<2%) consists of early-stage entrepreneurs – we focus on the results of Le Moal et al. (2026) to compare our numbers with.

Interestingly, we find that the average values for the four recovery dimensions are higher in Japan than in France. See Table 6 below (in Sect. 5). For the current Japanese sample, we observe average values above 3 for each dimension, whereas for the French sample, only the control dimension exceeded 3, at 3.26. The difference between the French and Japanese samples is largest for detachment (3.06 in Japan versus 2.28 in France), followed by relaxation (3.55 in Japan versus 2.80 in France), control (3.89 in Japan versus 3.26 in France), and mastery (3.47 in Japan versus 2.93 in France). We will return to these findings in the discussion. The Japanese data set contains just 7% women, whereas this figure is 49% in the French data set by Le Moal et al. (2026).⁹ The average age in the Japanese data set is 58 years, while it is 50 in the French one.

Table 2 shows the Pearson correlation coefficients between overall DRE, the four DRE dimensions, *nomikai*, and the four dependent variables.

Among the four dimensions of DRE, the correlations between relaxation and detachment, and between relaxation and control are the highest. See Table 2. The same is observed in France. The correlations between *nomikai* and DRE, and between DRE and its four dimensions, seem low. Hence, there is no reason to suppose that there are substitution effects between them. Even more reason to establish its influence on well-being and ill-being, next to that of the four DRE dimensions. As may be

⁹ The percentage of female executives in Japanese companies is extremely low. See also our remarks above on the representativeness of our survey. Of the 1,643 companies listed on the Tokyo Stock Exchange's Prime Market, only 13 are headed by a female CEO, accounting for just 0.8% of the total. Gender equality in Japan is among the lowest in the world (World Economic Forum, 2022).

expected, the correlations between the two dimensions of well-being (psychological well-being and job satisfaction) and the two dimensions of ill-being (burnout and stress) are high, at 0.63 and 0.52, respectively. The correlations between DRE and psychological well-being and between DRE and burnout are lower in an absolute sense in Japan (0.38 and -0.30 , respectively) than in France (0.52 and -0.56 , respectively). We will return to these findings in the discussion.

Table 2 Pearson correlations overall DRE, DRE dimensions, *nomikai*, and dependent variables.

	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Overall DRE	1.00								
2. Detachment	0.70	1.00							
3. Relaxation	0.87	0.62	1.00						
4. Mastery	0.70	0.22	0.45	1.00					
5. Control	0.73	0.24	0.53	0.47	1.00				
6. <i>nomikai</i>	0.04	-0.06	0.03	0.06	0.09	1.00			
7. Psych. well-being	0.38	0.04	0.34	0.36	0.44	0.26	1.00		
8. Job satisfaction	0.38	0.03	0.33	0.40	0.40	0.21	0.63	1.00	
9. Burnout	-0.30	-0.14	-0.31	-0.25	-0.22	-0.15	-0.51	-0.46	1.00
10. Stress	-0.22	-0.18	-0.22	-0.22	-0.05	-0.06	-0.28	-0.31	0.52

Based on 2,379 observations. All correlations have $p < .01$ except for the overall DRE-*nomikai* ($p = .06$), relaxation-*nomikai* ($p = .12$), detachment-psychological well-being ($p = .05$), and detachment-job satisfaction ($p = .12$) pairs.

4 Analyses and results

First, we report on the validation of the Japanese version of the DRE questionnaire. Second, we perform linear regressions (OLS) with the measures of well-being (psychological well-being and job satisfaction) and ill-being (burnout and stress at work) as the dependent variables, with the DRE dimensions and *nomikai* as the independent variables. Third, we perform structural equation modelling (SEM).

4.1 Validation of DRE questionnaire among Japanese business owners

We started by examining the correlation matrix of all sixteen DRE items. Within each of the four dimensions, we found statistically significant inter-item correlations ($p < .001$), indicating internal consistency.

Next, we conducted an exploratory factor analysis (EFA), retaining all factors with eigenvalues greater than 1. This resulted in a three-factor solution accounting for 84% of the total variance. After applying promax rotation and considering all factor loadings greater than 0.40, we identified the following structure: the first factor comprised all eight items related to detachment and relaxation; the second factor included the four items associated with control; and the third factor encompassed the four items related to mastery. Table 3 presents the factor loadings for this three-factor solution. Although this three-factor structure diverges from the original four-factor model, it aligns with previous findings from a validation study of the Japanese version of the DRE among employees (Shimazu et al., 2012).

Subsequently, we performed a series of confirmatory factor analyses (CFAs) to compare the fit of one-, three-, and four-factor models. The four-factor model yielded the following goodness-of-fit indices statistics: RMSEA=0.099, CFI/TLI=0.88/0.86, SRMR=0.081, $\chi^2(98)=2,374$, $p < .001$. The three-factor model showed somewhat poorer fit: RMSEA=0.111, CFI/TLI=0.85/0.82, SRMR=0.086, $\chi^2(101)=3,048$, $p < .001$. The one-factor model demonstrated the weakest fit: RMSEA=0.170, CFI/TLI=0.63/0.58, SRMR=0.128, $\chi^2(104)=7,263$, $p < .001$. Importantly, likelihood ratio tests indicated that the four-factor model fits the data significantly better than both the three-factor model ($\Delta\chi^2(3)=674$, $p < .001$) and the one-factor model ($\Delta\chi^2(6)=4,889$, $p < .001$). Furthermore, in the four-factor model, all items loaded significantly on their respective latent constructs ($p < .001$). Hence, the four-factor model is preferred based on the CFA analyses. Note that the Cronbach alpha values for the four dimensions indicate acceptable to high internal consistency, ranging from 0.77 to 0.87 (see Sect. 3.2).

In conclusion, the findings provide support for the validity of the DRE questionnaire as a measure of recovery experiences among business owners in the Japanese context. They support the broad applicability of the Japanese version of the DRE (Shimazu et al., 2012).

Table 3 Rotated factor loadings resulting from exploratory factor analysis (promax rotation)

Item	Factor 1 (D+R)	Factor 2 (C)	Factor 3 (M)
I forget about work. D	0.63	-0.16	0.03
I don't think about work at all. D	0.66	-0.38	0.03
I distance myself from my work. D	0.79	-0.12	-0.06
I get a break from the demands of work. D	0.70	0.17	-0.03
I kick back and relax. R	0.59	0.22	0.04
I do relaxing things. R	0.61	0.35	0.02
I use the time to relax. R	0.65	0.35	-0.02
I take time for leisure. R	0.63	0.15	0.07
I learn new things. M	-0.06	0.14	0.63
I seek out intellectual challenges. M	0.0003	-0.12	0.88
I do things that challenge me. M	-0.06	0.02	0.83
I do something to broaden my horizons. M	0.19	0.11	0.60
I feel like I can decide for myself what to do. C	-0.002	0.64	0.05
I decide my own schedule. C	-0.02	0.70	-0.006
I determine for myself how I will spend my time. C	0.08	0.77	-0.02
I take care of things the way that I want them done. C	0.29	0.56	0.01

Based on 2,379 observations. Loadings with an absolute value larger than 0.40 are in bold. D=Detachment; R=Relaxation; M=Mastery; C=Control.

4.2 DRE and mental health: Linear regressions (OLS)

First, we include overall DRE as the independent variable in our regression framework. Standard errors robust to heteroskedasticity are used. The OLS results presented in Table 4 indicate that overall DRE is significantly associated with all four measures of mental health and in the expected directions. Specifically, small business owners reporting higher levels of DRE exhibit significantly greater psychological

well-being ($\beta=0.343$; $p < .001$) and job satisfaction ($\beta=0.779$; $p < .001$), and significantly lower levels of burnout ($\beta = -0.538$; $p < .001$) and stress ($\beta = -0.481$; $p < .001$), compared to those reporting lower levels of DRE.

We also find that *nomikai* participation is significantly related to three of the four mental health measures, again in the expected directions. That is, small business owners who more frequently participate in *nomikai* with their employees report significantly higher psychological well-being ($\beta=0.073$; $p < .001$) and job satisfaction ($\beta=0.131$; $p < .001$), and lower levels of burnout ($\beta = -0.072$; $p < .001$), than those who participate less frequently.

Among the control variables, individual age shows consistent relationships across all four dependent variables. Older small business owners report significantly higher levels of well-being and lower levels of ill-being than younger owners ($p < .001$ for each dependent variable). Additionally, gender is significantly and positively associated with both ill-being measures, indicating that female business owners experience significantly higher levels of burnout ($\beta=0.283$; $p = .001$) and workplace stress ($\beta=0.296$; $p = .01$) than their male counterparts.

Second, we replace overall DRE with the four dimensions (detachment, relaxation, mastery, and control). The OLS results are in Table 5. For relaxation and mastery, the results are consistent with those for overall DRE: significantly and positively related to both measures of well-being, and significantly and negatively related to both measures of ill-being.

The results differ—and are not entirely in line with our expectations—for both detachment and control. Detachment does not show the expected relationships with any of the dependent variables. That is, detachment is significantly and *negatively* related to both measures of well-being ($\beta = -0.141$, $p < .001$ for psychological well-being; $\beta = -0.344$, $p < .001$ for job satisfaction), significantly and *positively* related to burnout ($\beta=0.098$; $p = .006$), and *not* significantly associated with stress ($\beta = -0.085$; $p = .09$). Control does not show the expected relationships with ill-being. That is, we do not find a significant association between control and burnout ($\beta = -0.039$; $p = .31$), and we find an unexpected significant positive association between control and stress ($\beta=0.273$; $p < .001$).¹⁰ Unexpected results for Japanese business owners may be due to collinearity among the dimensions of DRE or to a theoretical or clinical effect. Our research strategy is to first assess the likelihood that collinearity is at play.

As noted above, the correlations among the DRE dimensions are substantial in some cases. That is, Table 2 shows correlations of 0.62 between relaxation and detachment ($p < .001$), 0.53 between relaxation and control ($p < .001$), and 0.45 between relaxation and mastery ($p < .001$). To detect the role of collinearity, we apply so-called *residualisation* to mitigate multicollinearity (García et al., 2020). We repeat the exercise in Table 5, but replace the detachment variable with the residuals from a regression in which detachment is the dependent variable and all other DRE dimensions and control variables are independent variables. While the results for detachment are, by definition, unaltered (García et al., 2020), we are specifically interested

¹⁰ The results for French business owners are mostly in line with the expectations with the exception that the links between detachment and well-being and that between mastery and burnout are not significantly different from zero. See Table 4 of Le Moal et al. (2026).

in the results for control. Importantly, control still does not show the expected relationships with ill-being. That is, control is not significantly related to burnout ($\beta = -0.065, p = .09$) while being significantly and positively related to stress ($\beta = 0.279, p < .001$; full set of results available from the authors). In separate exercises, we also replace the other DRE variables with their residuals resulting from similar auxiliary regressions as we did for detachment. Two observations from these additional exercises remain. *First*, detachment is significantly and negatively related to both measures of well-being in each auxiliary regression.¹¹ *Second*, control is significantly and positively associated with stress in each auxiliary regression.¹² Hence, after mitigating multicollinearity, the unexpected associations in our Japanese dataset remain intact.¹³ In our discussion, we will return to these interesting findings with some ideas based on the psychology of the entrepreneur.

Existing literature shows a gender effect in measures of well-being and ill-being.¹⁴ In our Japanese data set, gender differences are relatively small for DRE: using *t*-tests we cannot reject the null hypothesis of equal averages for our general DRE measure and for three out of the four separate dimensions. Control is an exception, with a significantly higher average among women than among men. For *nomikai*, and for the two well-being measures, we cannot find differences between women and men either. For burnout and stress, however, we find that women experience significantly higher levels of ill-being than men. In our regression setting, including interaction terms, we cannot find significant differences across gender in how DRE (dimensions) relate to well-being and ill-being. This is an interesting observation, but at the same time a tentative one given the small female sample size, which—as stated above—is in accordance with the population.

4.3 DRE and mental health: SEM analysis

We also performed structural equation modelling (SEM) via maximum likelihood with standard errors robust to non-normality using the Satorra-Bentler adjustment. The SEM approach allows us to model latent variables—the four DRE dimensions and the four mental health dimensions—explicitly and to incorporate a covariance structure among them, specifically among our four mental health dimensions.

¹¹ Regarding the estimated coefficients for detachment, residualisation of relaxation leads to $\beta = -0.072, p < .001$ for psychological well-being and $\beta = -0.174, p < .001$ for job satisfaction; residualisation of mastery leads to $\beta = -0.162, p < .001$ for psychological well-being and $\beta = -0.390, p < .001$ for job satisfaction; residualisation of control leads to $\beta = -0.180, p < .001$ for psychological well-being and $\beta = -0.409, p < .001$ for job satisfaction.

¹² Regarding the estimated coefficients for control, residualisation of relaxation leads to $\beta = 0.161, p < .001$ for stress; residualisation of mastery leads to $\beta = 0.164, p < .001$ for stress.

¹³ In additional analyses, we do not find evidence for the presence of quadratic relationships as a possible explanation for the unexpected signs in Table 5.

¹⁴ Kaiser et al. (2025) review the literature on a possible gender gap and report two paradoxes. First (p. 9), “[a]lthough women consistently report higher life evaluations and happiness, they also experience significantly worse outcomes in mental health, negative affect, and physical pain.” Second (p. 10), “... despite the notable advancements in women’s societal and economic conditions, such as higher labor force participation and educational attainment, women’s subjective well-being has not improved to the same extent, particularly in terms of negative affect and physical pain.”

In our set-up, the four DRE dimensions and the four mental health dimensions are modelled as latent variables, and overall DRE is modelled as a second-order latent variable. The SEM results, that is, the standardized coefficients for DRE and *nomikai*, are shown in Fig. 1. Note that Fig. 1 does not show the full set of results. That is, the coefficients of the control variables and all items related to the latent variables (DRE and mental health), as well as the correlations among the four mental health variables, are available from the authors. Figure 1 shows that higher DRE levels are significantly related to higher levels of psychological well-being and job satisfaction, and lower perceptions of burnout and stress at work among business owners. *Nomikai* is significantly and positively related to psychological well-being and job satisfaction, and significantly and negatively related to burnout and stress at work. This model provides a satisfactory fit to the data: RMSEA=0.040, CFI/TLI=0.55/0.73, SRMR=0.042, $\chi^2(5871)=28,269$, $p<.001$.

To assess the relationships between the four DRE dimensions and mental health in a SEM setting, we also ran a model without the second-order latent variable. Thus, we removed overall DRE from our model, and added direct paths from detachment, relaxation, mastery, and control to the four mental health variables. The results are displayed graphically in Fig. 2. We observe that detachment is significantly and negatively related to psychological well-being and job satisfaction, significantly and positively related to burnout, and not significantly related to stress. Relaxation and mastery are significantly and positively related to both well-being measures and significantly and negatively related to both ill-being measures. Furthermore, control is significantly and positively related to both well-being measures, not significantly related to burnout, and significantly and positively related to stress. Finally, *nomikai* is significantly and positively related to both well-being dimensions and significantly and negatively related to both ill-being dimensions. This model provides a somewhat better fit to the data than the model in Fig. 1: RMSEA=0.039, CFI/TLI=0.57/0.74, SRMR=0.039, $\chi^2(5857)=27,236$, $p<.001$.

Among the control variables (not shown), we arrive at the same conclusions as in Table 5. That is, older business owners report significantly higher levels of well-being and lower levels of ill-being than younger owners. Also, female business own-

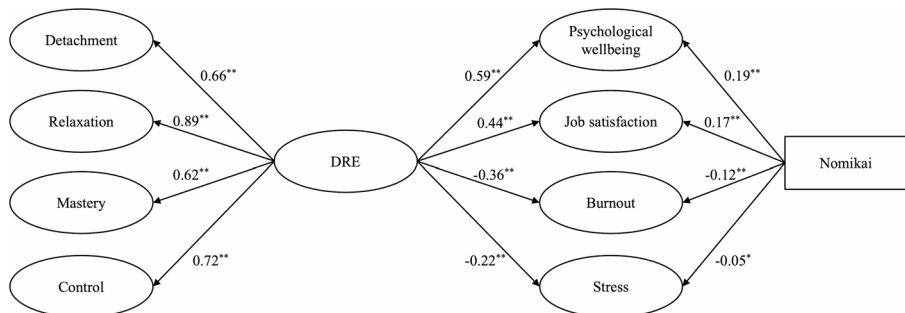


Fig. 1 Standardized coefficients resulting from SEM analysis with DRE as a second-order construct. Based on 2,379 observations. ** $p < .001$; * $p < .05$. Correlations among the mental health variables, and coefficients of control variables and items related to the latent variables (DRE and mental health) are not shown for brevity reasons and are available from the authors

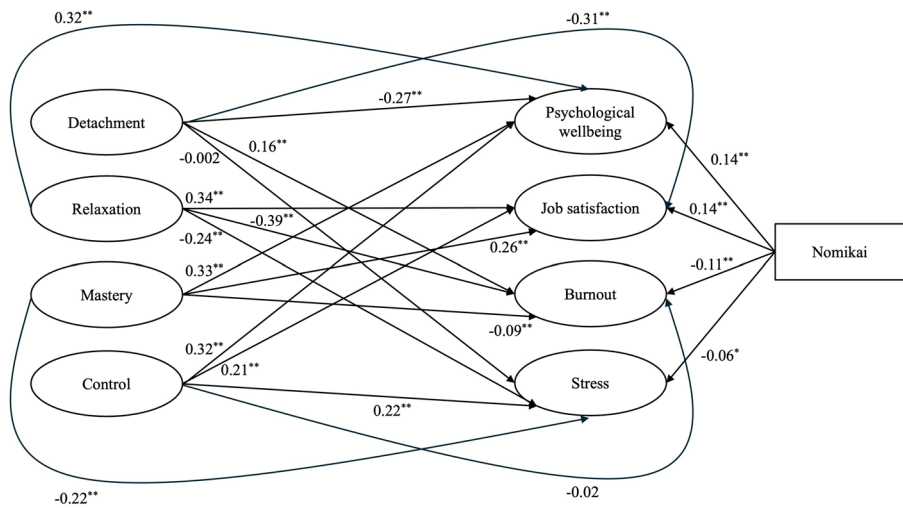


Fig. 2 Standardized coefficients resulting from SEM analysis with direct paths from DRE dimensions to mental health. Based on 2,379 observations. ** $p < .001$; * $p < .05$. Correlations among the DRE and mental health variables, and coefficients of control variables and items related to the latent variables (DRE and mental health) are not shown for brevity reasons and are available from the authors

ers experience significantly higher levels of burnout and workplace stress than male business owners.

4.4 Summary of OLS and SEM results

The results from the linear regression models and the SEM analyses show substantial consistency. Specifically, Table 4 (linear regression) and Fig. 1 (SEM) both indicate that overall DRE is positively associated with psychological well-being and job satisfaction, and negatively associated with burnout and stress. Similarly, findings from Table 5; Fig. 2 reveal that the dimensions of relaxation and mastery are positively related to both well-being indicators and negatively related to both ill-being indicators.

Consistent patterns also emerge for detachment and stress across both analytic approaches. Somewhat surprisingly, detachment is negatively associated with psychological well-being and job satisfaction, and positively associated with burnout. While control exhibits the expected positive associations with both well-being outcomes, it is also positively associated with stress—again contrary to expectations.

Taken together, the findings from both the linear regression and SEM analyses support hypotheses H1a through H4a for overall DRE. When examining the specific dimensions of DRE, we find support for hypotheses H1a and H2a for relaxation, mastery, and control, but not for detachment. Hypotheses H3a and H4a are supported for relaxation and mastery, but not for detachment and control.

Finally, both methods yield similar conclusions regarding *nomikai* involvement. Participation in *nomikai* is positively associated with psychological well-being and job satisfaction, and negatively associated with burnout among small business own-

ers, supporting hypotheses H1b through H3b. Additionally, the SEM analysis provides evidence that *nomikai* participation is negatively related to perceived stress among business owners, supporting hypothesis H4b.

Table 4 OLS regressions with well-being, job satisfaction, burnout, and stress as dependent variables; overall DRE and *nomikai* are the independent variables.

	Psych. wellbeing		Job satisfaction		Burnout		Stress	
Overall DRE	0.343	**	0.779	**	-0.538	**	-0.481	**
	(0.020)		(0.046)		(0.045)		(0.055)	
<i>nomikai</i>	0.073	**	0.131	**	-0.072	**	-0.023	
	(0.007)		(0.016)		(0.014)		(0.019)	
Female	0.006		-0.045		0.283	*	0.296	*
	(0.039)		(0.091)		(0.087)		(0.108)	
Age	0.007	**	0.012	**	-0.013	**	-0.013	**
	(0.001)		(0.003)		(0.003)		(0.003)	
Life partner	0.037		0.054		-0.152	*	-0.185	*
	(0.023)		(0.053)		(0.048)		(0.058)	
Manager experience	-0.001		-0.002		-0.001		-0.006	*
	(0.001)		(0.003)		(0.003)		(0.003)	
Industry experience	0.003	*	0.010	**	-0.0003		0.007	*
	(0.001)		(0.002)		(0.002)		(0.003)	
Business size	0.001		0.002		0.0003		-0.001	
	(0.001)		(0.001)		(0.001)		(0.002)	
Business age	-0.0004		-0.002		0.002		0.003	*
	(0.0004)		(0.001)		(0.001)		(0.001)	
Family business	-0.015		0.048		0.013		-0.050	
	(0.021)		(0.050)		(0.044)		(0.054)	
Founder	0.039		0.163	*	-0.060		-0.061	
	(0.025)		(0.062)		(0.056)		(0.069)	
Observations	2,379		2,379		2,379		2,379	
R-squared	0.25		0.23		0.17		0.11	

Estimated coefficients are shown, with robust standard errors between parentheses. Gender: male = 0, female = 1; Life partner: yes = 1, no = 0; Experience variables are in years; Business size = number of employees; Business age in years; Family business: yes = 1, no = 0; Founder: yes = 1, no = 0. Education, location, and sector dummies are included; results are available from the authors.

** $p < .001$, * $p < .05$.

Table 5 OLS regressions with well-being, job satisfaction, burnout, and stress as dependent variables; DRE dimensions and *nomikai* are the independent variables.

	Psych. well-being		Job satisfaction		Burnout		Stress	
Detachment	-0.141	**	-0.344	**	0.098	*	-0.085	
	(0.018)		(0.039)		(0.036)		(0.051)	
Relaxation	0.169	**	0.393	**	-0.401	**	-0.304	**
	(0.022)		(0.050)		(0.044)		(0.059)	
Mastery	0.105	**	0.381	**	-0.137	**	-0.323	**
	(0.020)		(0.044)		(0.037)		(0.051)	
Control	0.204	**	0.339	**	-0.039		0.273	**
	(0.019)		(0.045)		(0.039)		(0.051)	

Table 5 OLS regressions with well-being, job satisfaction, burnout, and stress as dependent variables; DRE dimensions and nomikai are the independent variables.

	Psych. well-being		Job satisfaction		Burnout		Stress	
<i>nomikai</i>	0.061	**	0.102	**	-0.065	**	-0.028	
	(0.007)		(0.015)		(0.014)		(0.019)	
Female	-0.014		-0.082		0.285	*	0.264	*
	(0.036)		(0.085)		(0.086)		(0.105)	
Age	0.007	**	0.014	**	-0.013	**	-0.012	**
	(0.001)		(0.003)		(0.002)		(0.003)	
Life partner	0.049	*	0.076		-0.152	*	-0.165	*
	(0.021)		(0.050)		(0.048)		(0.057)	
Manager experience	-0.001		-0.003		-0.001		-0.006	
	(0.001)		(0.003)		(0.002)		(0.003)	
Industry experience	0.002		0.008	**	0.001		0.006	*
	(0.001)		(0.002)		(0.002)		(0.003)	
Business size	0.001	*	0.002		0.0002		-0.001	
	(0.001)		(0.001)		(0.001)		(0.002)	
Business age	-0.0002		-0.001		0.001		0.003	*
	(0.0004)		(0.001)		(0.001)		(0.001)	
Family business	-0.016		0.034		0.021		-0.023	
	(0.020)		(0.048)		(0.043)		(0.054)	
Founder	0.041		0.153	*	-0.071		-0.046	
	(0.023)		(0.059)		(0.055)		(0.067)	
Observations	2,379		2,379		2,379		2,379	
R-squared	0.34		0.32		0.19		0.14	

Estimated coefficients are shown, with robust standard errors between parentheses. Gender: male = 0, female = 1; Life partner: yes = 1, no = 0; Experience variables are in years; Business size = number of employees; Business age in years; Family business: yes = 1, no = 0; Founder: yes = 1, no = 0. Education, location, and sector dummies are included; results are available from the authors.

** $p < .001$, * $p < .05$.

5 Discussion

Advising small business owners to work less may be useful, but it has little effect because they tend to develop an existential relationship with their work (Torrès et al., 2022). A promising solution to reduce the threat of burnout—or ill-being in general—may be to develop better recovery experiences. Thus, studying the link between mental health (defined in terms of both well-being and ill-being) and recovery activities is justified by the potential benefits to both individual business owners and their environments, given the role they play for their employees, suppliers, clients, and entire networks.

Small business owners and employees operate in fundamentally different work environments, which can influence the extent and impact of their recovery experiences. Small business owners often face greater autonomy but also bear considerable financial and emotional risks, with blurs boundaries between work and personal life (Blanchflower & Oswald, 1998). Also, they may experience greater demands for self-regulation and time management (Unger et al., 2011). Employees, on the other

hand, typically operate within more structured organizational environments, with clearer divisions between work and leisure, as well as formal recovery opportunities such as paid leave and regulated working hours (Sonnetag & Fritz, 2007). Indeed, Le Moal et al. (2026) find that small business owners have fewer recovery experiences than employees in all four DRE dimensions. However, Bennett et al. (2025) show that recovery experiences among a sample of 247 early-stage entrepreneurs are similar to those of employees; the small sample size and the specificity of the early-stage entrepreneur population limit the generalizability of their findings. Hence, acknowledging that there are no universal recovery experiences implies that different contexts (business owner versus employee; early-stage business owner vs. experienced; demographic and geographic context) may lead to different results (Wach et al., 2021). Sonnetag et al. (2022, p. 47) also note that little attention has been paid to whether the size and effect of recovery processes differ between demographic and occupational groups.

Our results clearly show that Japanese small business owners have more recovery experiences across all four dimensions than their French counterparts (Le Moal et al., 2026), which was the initial reference point for our analyses. The differences range from 0.54 for mastery to 0.78 for detachment. There are similarities, on the other hand: control has the highest score while detachment has the lowest. This pattern can also be seen in the nine studies on employees reported upon by Le Moal et al. (2026). If we compare our results for small business owners with those of Shimazu et al. (2012) for Japanese employees, we observe that the values for the four DRE dimensions are largely similar. The same conclusion applies to the US early-stage entrepreneurs of Bennett et al. (2025).¹⁵ This would suggest that the French data set is an outlier.

To establish whether the French small business owners are indeed outliers across the various datasets, we gathered information from additional datasets, which we summarize in Table 6. We are particularly interested in Asians despite the warning of Sonnetag et al. (2022, p. 48) that recovery studies from Asian countries are rare. We clearly see that DRE levels for Asian and European employees, as well as for the US and Japanese datasets of small business owners, are consistently higher than those of the French dataset of small business owners. It is beyond the scope of the present paper to consider why this is the case.

Two conclusions can now be drawn. *First*, the level of overall DRE (unweighted average of all four dimensions) of our dataset of Japanese business owners is comparable to that of Japanese employees, US early-stage entrepreneurs and a large collection of employee studies (Table 6). The exception is the French dataset of Le Moal et al. (2026) which has a considerably lower overall DRE. Assuming there is a specific reason for the low values among French business owners, it is fair to conclude that, in general, DRE levels for small business owners are not different from those for employees. This is a surprising finding because small business owners and employees operate in fundamentally different work environments.

¹⁵ Values in Bennett et al. (2025) with mainly young businesses are somewhat larger for 3 out of 4 dimensions. Also in our sample, we find that business owners of young businesses have higher values for each dimension than business owners of older businesses.

Second, consistently and irrespective of context, detachment shows the lowest level, and control the highest, among the four DRE dimensions. This is true for the three small business owners' datasets (of Table 6) as well as for most of the employee datasets. Several reasons are mentioned for the low values of detachment (=refraining from job-related activities while mentally "switching off" during non-job hours) for employees: information and communication technology (ICT) use at home for work purposes (Barber & Jenkins, 2014), curvilinearity of the effect of detachment (Fritz et al., 2010), difficulty of "switching on" after detachment (Shimazu et al., 2012), non-work hassles and household chores (Demerouti et al., 2013), the *nomikai* effect (Shimazu et al., 2012; Hu et al., 2014) and job stressors leading to low levels of detachment (Sonnentag & Fritz, 2015). Control is close to the concept of autonomy (which refers to being able to decide on one's after-work schedule and activities) and stands above the other three dimensions because it enables choice, generates psychological resources, and acts as a stable platform upon which relaxation and mastery can be built (Newman et al., 2014). This would justify the high level of control.

Table 6 Overview of some studies reporting values of overall DRE and its four dimensions of the Recovery Experience Questionnaire (REQ) proposed by Sonnentag & Fritz (2007).

Study	Respondents	N	Detachment	Relaxation	Mastery	Control	Overall DRE
Shimazu et al. (2012)	Employees (Japan)	2,520	3.44	3.69	3.16	3.93	3.56
Mori et al. (2024)	Employees (Japan)	1,278	3.44	3.47	4.03	3.70	3.66
Panthee et al. (2020)	Employees (Nepal)	438	2.29	2.83	4.04	4.03	3.30
Hao et al. (2024)	Employees (China)	2,152	3.25	3.58	2.63	3.71	3.29
Meng Xuan Zhang et al. (2022)	Employees (China gaming)	205	2.67	4.30	3.90	4.33	3.80
Nasharudin (2023)	Employees (Malaysia)	353	2.86	3.74	3.92	3.81	3.58
Hamsyah et al. (2024)	Employees (Indonesia)	740	3.40	3.86	3.48	3.83	3.64
Unweighted average for ASIAN employees		7,686	3.05	3.64	3.59	3.91	3.55
Kinnunen et al. (2011)	Employees (Finnish workers)	527	3.10	3.56	3.43	3.74	3.46
Virtanen et al. (2020)	Employees (Finnish teachers)	909	2.83	3.93	3.34	3.93	3.51
Kazlauskas et al. (2023)	Employees (Lithuania)	471	2.69	3.29	3.16	3.58	3.18
Almén et al. (2025)	Employees (Sweden)	481	2.44	2.35	3.50	3.48	2.94

Table 6 Overview of some studies reporting values of overall DRE and its four dimensions of the Recovery Experience Questionnaire (REQ) proposed by Sonnentag & Fritz (2007).

Study	Respondents	N	Detachment	Relaxation	Mastery	Control	Overall DRE
Albulescu et al. (2024)	Employees (Romania)	264	3.05	3.85	3.48	3.90	3.57
Collen & Zijlstra (2019)	Employees (Dutch nurses)	323	2.89	3.26	3.00	3.64	3.19
Collen & Zijlstra (2019)	Employees (Turkish nurses)	333	2.89	3.44	3.49	3.72	3.38
Nine studies (Le Moal et al., 2026)	Employees (various countries)	3,158	3.00	3.60	3.42	3.73	3.44
Unweighted average for <i>EURO-PEAN</i> employees		6,466	2.86	3.41	3.35	3.71	3.33
The present study	Small business owners (Japan)	2,379	3.06	3.55	3.47	3.89	3.49
Bennet et al. (2023)	Small business owners (US)	247	2.84	3.79	3.63	4.00	3.57
Le Moal et al. (2026)	Small business owners (France)	1,043	2.29	2.87	3.01	3.32	2.87
Unweighted average for small business owners		3,669	2.73	3.40	3.37	3.74	3.31

The justifications mentioned in the previous paragraph may also be valid for small business owners. Next to these justifications, there may be specific arguments for small business owners: existentialism (Le Moal et al., 2026) and entrepreneurial passion (Bennett et al., 2025) are mentioned as reasons that make it difficult to mentally detach, and control-oriented work style spilling over to non-work activities (Le Moal et al., 2026) as a reason for control to be high. The similarity between business owners and employees in terms of empirical outcomes is again striking. A first remark is that the effect of existentialism and passion among small business owners is not so strong that their level of detachment is lower than that of employees. Alternatively, existentialism and passion also play a role for employees and keep their detachment low. Lastly, there is the option of a psychological state at the intersection of workaholism and work engagement: highly engaged employees, such as entrepreneurs, are driven by the fulfilment and meaning that work provides (Shimazu et al., 2012), thereby reducing the perceived need for detachment. Existential values, passionate involvement, and East-Asian collectivist culture (Yuki, 2003; Hu et al., 2014) may thus contribute to low detachment in both groups, warranting further research across occupational contexts.

We find support for all our hypotheses (H1a through H4b). The quality of DRE is positively related to our two measures of well-being (psychological well-being and job satisfaction) and negatively related to our two measures of ill-being (perception of burnout and stress). The same holds true for *nomikai*. The results for DRE are not

surprising since there is a large amount of material that shows the same for employees, irrespective of the context, and the results for French small business owners (Le Moal et al., 2026) show the same for psychological well-being and burnout.

The results for *nomikai* are very interesting since they are novel. The effects of *nomikai* in the workplace on the well-being, job satisfaction, burnout, and stress of managers/owners have rarely been examined (Hagihara et al., 2000). In this sense, the finding that holding *nomikai* positively impacts the well-being of managers/owners offers important insights and implications for future management practices.

Nomikai can be considered a potential source of social support in the workplace. Garmendia et al. (2023) revealed that social support contributes to increased job satisfaction and reduced emotional exhaustion, and that relaxation is a crucial mediator in this relationship. In East Asian cultures, where behaviour is supported by interpersonal networks among members (Yuki, 2003), *nomikai* aligns with the unique East-Asian values of deepening interpersonal knowledge, strengthening a sense of personal connection, and maintaining group harmony (Yuki, 2003).

Therefore, it can be hypothesized that comfortable social interaction and a cooperative atmosphere fostered through *nomikai* lead to psychological relaxation among employees (Garmendia et al., 2023), which in turn promotes the business owner's mental well-being. This may offer a new perspective on existing recovery models, given that relaxation is achieved within a workplace social context.

Furthermore, the positive effects of *nomikai* demonstrated in this study should be recognized as a unique practice for maintaining mental health in collectivistic cultures. While traditional well-being strategies often focus on individual recovery (DRE), the findings highlight the potential for culturally embedded social interaction opportunities to contribute to employee well-being. Managers could, therefore, actively encourage informal social gatherings like *nomikai* to create a playful environment (Mukerjee et al., 2026) where employees feel comfortable and relaxed, thereby increasing the likelihood for employees of supporting each other, developing novel and creative ideas, and adopting healthier coping strategies.

Moreover, the link between *nomikai* and mental health seems to be independent of that between DRE and mental health. It may be that these links represent entirely different perspectives on social recovery and interpersonal harmony/cohesion. While DRE focuses on individual psychological recovery, *nomikai* may facilitate well-being through relational or cultural aspects, such as perceived inclusion, team trust fostered by psychological safety (Edmondson, 1999), or social identity reinforcement, particularly in collectivist work cultures like Japan. (Hofstede, 1980). More research is certainly required. The good news is that studies of the link between DRE and mental health can be compared regardless of whether *nomikai* is considered.

Partitioning the overall DRE into its four dimensions yields some interesting results (Table 5). Detachment seems to have a perverse effect on well-being and no effect on stress. The weak influence of detachment activities on mental health is also noted in the two earlier studies concerning small business owners. In Le Moal et al. (2026), reference is made to the concept of existentialism. In Bennett et al. (2025) it is noted that entrepreneurial passion may be at odds with wanting to detach. Small business owners do not devote much time to detachment: their deep emotional and

cognitive involvement with their business makes it difficult to mentally disconnect.¹⁶ And when they do disconnect, it does not seem to lead to affect mental health: the unique demands and responsibilities inherent to small business ownership diminish the effectiveness of this recovery dimension. The Japanese data show us even more. Detachment activities do not reduce ill-being and even have a perverse effect on well-being. This may be explained as follows: high levels of well-being, due to whatever determinant, may lead to a low inclination to “switch off” after working hours into a detachment mode, that is, refraining from job-related activities or thoughts. Professional success as a business owner may be such a determinant and a direct determinant for this low inclination. Another confounder may be work engagement. Shimazu et al. (2012) show that the level of detachment of Japanese workers was negatively correlated to their work engagement. They mention that “switching on” after detachment may impair work engagement. It may also be that a high level of work engagement lowers the need to detach. So, direct and confounding effects may be at play here. These reasons are closely aligned with the stressor-detachment model for employees, which posits that the difficulty of detachment increases with the level of job stressors (Sonnentag & Fritz, 2015). See Sonnentag et al. (2022) for more sources of the negative link between job stressors and recovery experiences. The question remains: why do we find only this negative link for the detachment dimension? In sum, the existentialism/passion effect may not be represented by a low level of detachment experiences but rather by a perverse effect of these experiences on mental health. There is ample room for further research into the measurement and role of existentialism/passion in mental health, moderated by DRE.

A second surprising result from partitioning the overall DRE into its four dimensions is the positive link between control and stress. Above, we established that multicollinearity is unlikely to be at play here. Our assumption about this surprising effect is based on the effect of stress on control. The reasoning would run as follows: stress perception triggers coping efforts, including re-establishing control, in the hope that these efforts directly buffer stress and elevate well-being. This is a well-established phenomenon in psychology: when individuals perceive heightened stress, they often seek greater control—whether through actions or cognitive shifts—to reduce it. For instance, Bandura (1977), with his self-efficacy theory, and Lazarus and Folkman (1987), with their transactional theory of stress and coping, laid the groundwork for this phenomenon. In our data, we find no link between burnout and control. So, the question then arises: why does the perception of burnout not trigger this coping mechanism as much as the perception of stress does? We must bear in mind that, while stress is perceived as a temporary state, burnout is a deeper, more persistent state (Cartwright & Cooper, 1997). Probably, control experiences may be perceived as insufficient when there is a risk of burnout. An obvious question is whether the mechanisms of coping through control in cases of high perceived stress and burnout are similar for small owners and employees. Follow-up research may answer this question.

¹⁶ Being a founder and percentage of ownership can be viewed as proxies of involvement. Indeed, both phenomena (percentage of ownership is not available for the entire data set) correlate positively with all four DRE dimensions. Correlations with detachment are the lowest.

We use many controls in our analyses of the link between mental health and DRE, for which we did not have a priori hypotheses about their effects. Controlling for many factors in general may provide credibility while establishing such a link. Additional credibility is given if the controls behave as expected from the literature. Below, we will only discuss some effects. *Gender differences* can influence mental health due to the greater work–family conflict situations for women than for men. For instance, a recent study indicates that women entrepreneurs may experience higher levels of stress due to work–family conflicts, which can adversely affect their well-being (Brieger et al., 2024). In our analysis, women show higher levels of ill-being than men. We use *age* as a control because, as people grow older, they often report greater mental health. A recent example of such a report is Kibler et al. (2024), which shows that entrepreneurs experience less emotional exhaustion due to their enhanced psychological capital and their use of fewer entrepreneurial strategies focused on creating new market opportunities and developing new products and services.¹⁷ In our analysis, age has the expected relationships with all four measures of mental health; that is, older business owners experience more well-being and less ill-being than younger business owners. We use a *life partner* because recent research shows that a life partner contributes positively to the life satisfaction of entrepreneurs and wage earners (El Shoubaki & Stephan, 2018). We find that having a life partner significantly reduces ill-being. See also Park and Fritz (2015) for an analysis of spousal recovery support. Being a *founder* or having taken a business is reported to influence not just the success of a business but also the mental health of the owner (Honjo & Kato, 2022). We find a positive relationship between being a founder and job satisfaction, but non-significant associations for the other outcomes. When focusing on Table 5, we hardly find any effects for *manager experience*, *business size*, *business age*, and *family business*. We controlled for six levels of education and 47 prefectures (=regions). We refrain from interpreting the size, sign, and significance of these coefficients.

To account for potential temporal biases (due to when questionnaires are completed), we added day-of-week and time-of-day controls to Tables 4 and 5; Fig. 1. The main results for DRE (dimensions) and *nomikai* remain qualitatively unchanged when these controls are added, indicating that the findings are not driven by the distribution of responses across days of the week or moments of the day.

By and large, the effects of the controls are as expected, not relevant, or simply zero. This provides confidence in our results. However, there is one exception: *industry experience* is positively related to both well-being and stress. First, we could not find studies reporting the effects of industry-specific experience on mental health. However, a broad study (Jara-Figueroa et al., 2018) found that industry-specific experience positively predicts start-up survival, as owners benefit from valuable domain knowledge. Supposing that such knowledge may reduce cognitive/strategic stress through domain mastery, it is reasonable to assume that industry experience positively influences mental health. Why it then also positively influences stress remains

¹⁷ Separate regressions for three age groups (<49 years; 49 to 67 years; >67 years) do not show important differences. There is some evidence of a smaller negative coefficient for detachment among the oldest individuals.

unclear. However, two somewhat speculative research avenues are worth mentioning here. *First*, the cognitive entrenchment perspective of Dane (2010), which suggests that flexibility decreases as domain expertise increases. Decreasing flexibility may impact perceptions of stress. *Second*, increased domain experience may be associated with feelings of positive stress. For instance, see O'Sullivan (2011).

Several shortcomings of the present study are worth mentioning. *First*, while sleep is widely recognized as a fundamental component of recovery, our study specifically focuses on psychological recovery experiences, which are directly influenced by entrepreneurs' choices and behaviours during their free time. Sleep can also be a consequence of recovery experiences. The dynamics among DRE, sleep (which repairs and consolidates memories, cells, and the immune system), and mental health are worth investigating. *Second*, our cross-sectional research does not allow us to disclose the temporal or bidirectional dynamics between DRE and mental health. The stressor-detachment model (Sonnentag & Fritz, 2015), which we mentioned above and which suggests that detachment impairment increases with the level of job stressors, is just one example of reversed causality that we cannot consider. Also mentioned above are the effects of stress on control and of control on other dimensions of DRE. These dynamic effects are not modelled and are definite candidates for further research (Sonnentag, 2018). Detachment and control are candidates for further investigation using longitudinal data and more refined modelling. *Third*, the effects of life partners at home and professional partners at work are ignored and warrant investigation. Our analysis showed that having a life partner is beneficial for mental health, but the dynamics of partnership are probably more complex than can be modelled as a control. Dual-earner couples may differ from single-earner couples in recovery dynamics. For instance, see Park and Fritz (2015). The effects of family composition (particularly, the number and age of children) and the professional activities of the members (particularly, if they are self-employed or not) is a fascinating terrain to be investigated. *Fourth*, in the present study, we were able to hint at only some cross-cultural differences, mainly regarding the concept of *nomikai*. A broader approach focusing on cross-cultural differences would not only move away from a focus on Western cultures but also provide new learning (Sonnett et al., 2022). *Fifth*, the interplay with other health behaviours, such as physical training and eating habits, may play a role. Moreover, there is likely much to gain from controlling for personality traits such as affect, extraversion, and neuroticism. *Sixth*, from the point of view of omitted phenomena, of which we already mentioned several above, there are some promising individual (the small business owner) and environmental (the business and socio-economic context) candidates for further investigation. Sonnett et al. (2022) discuss many ways to advance the literature on organizational recovery. Given our specific focus on small business owners and on how we can learn from the differences between the self-employed and the employed, certain phenomena warrant research attention. We provide two examples. First, one's perception of the workday can influence the impact of recovery experiences. Since the self-employed are reported to be more optimistic than employees, we should include this perception in future research. Second, a well-established phenomenon in psychology is that when individuals perceive heightened stress, they often seek greater control (Bandura, 1977; Lazarus & Folkman, 1987). In our data, we find no link between burnout and control. So,

the question then arises: why does the perception of burnout not trigger this coping mechanism as much as the perception of stress does? Differences in coping mechanisms between individuals and between self-employed and employees would help improve our understanding of the link between DRE and mental health.

We conclude our discussion section with some remarks about intervention strategies for small business owners. There is much literature about it in general (Hahn et al., 2011; Sonnentag et al., 2017, 2022). Several intervention strategies have already been suggested to enhance DRE among small business owners. Le Moal et al. (2026) refer to Williamson et al. (2021). They point at a cocktail of activities aiming at respite (taking breaks from work for tangible relief through activities such as spending time in nature, socializing, and listening to music), at mental relief (mindfulness and positive reflections), at reappraisal (cognitive-behavioural therapy, stress optimization, positive thinking, and experimental disclosure), and at fostering structure (sleep hygiene, exercise routines, and regular breaks). Given our findings, we would put less emphasis on respite and more on reappraisal, since respite is close to detachment (which plays hardly a role) and reappraisal is close to control (which plays a major role both directly and through its possible influence on the other dimensions of DRE).

6 Conclusion

Daily recovery experiences are crucial for helping individuals restore mood and replenish energy depleted during work (Sonnentag et al., 2017). There are many studies showing their role in employees' mental health. Le Moal et al. (2026) investigate their role in the mental health of some 1,000 French small business owners. Bennett et al. (2025) did a similar investigation for a small sample of 247 US early-stage entrepreneurs, which may not be representative of the entire population of small business owners. Other recent studies also have limitations: Battisti et al. (2025) primarily examined resilience, whereas Obschonka et al. (2023) examined only psychological detachment. The common denominator, however, is that all these studies show that DRE are crucial for small business owners' mental health (irrespective of the way it is measured).

The present study uses a survey of some 2,400 Japanese small business owners. It uses two well-being measures (psychological well-being and job satisfaction) and two ill-being measures (burnout and stress). Moreover, it uses the four DRE dimensions (detachment, relaxation, mastery, and control) as well as *nomikai* (飲み会), a specific Japanese custom of regularly getting together after office hours, as a 'competitor to DRE' investigating their links with the two well-being and the two ill-being measures.

The results are clear and mostly strong. They support our replication and extension strategy: results align with the literature, and when they do not, they yield novel insights. *First*, we find that the average values of the four recovery dimensions are largely consistent with those reported in many other studies, both for employees and small business owners (except for French small business owners, who show lower DRE values). *Second*, we find that experiences of detachment after work have the

lowest scores among the four DRE dimensions for Japanese small business owners. The same result is found in practically all other studies concerning both employees and small business owners. Many reasons are suggested for this phenomenon. The most compelling aspect is a high level of emotional and cognitive involvement, which is at odds with experiences of detachment. For small business owners, this may be referred to as entrepreneurial passion (Bennett et al., 2025) or existentialism (Le Moal et al., 2026). *Third*, controlling for many factors, including participation in *nomikai*, we show that, for Japanese small business owners, the quality of overall DRE is positively linked to psychological well-being and job satisfaction, and negatively linked to burnout and stress. This is fully in line with the existing literature on employees and small business owners. *Fourth*, the owner's *nomikai* activities are positively linked to psychological well-being and job satisfaction, and negatively linked to burnout and stress. Its role seems to be independent of that of the quality of overall DRE. This novel result points to a situation that one often encounters in Japan studies (Hagihara et al., 2000): universal behaviour (influence of DRE) and specific Japanese customs (*nomikai*) are both relevant. *Fifth*, we find that the detachment dimension is negatively correlated with psychological well-being and job satisfaction, while the other three dimensions show the expected positive links. This points again to an existentialist interpretation where detachment is ineffective or even detrimental to the entrepreneurial drive. It can also point to a strong obligation to keep working beyond office hours, leading to feelings of guilt if one doesn't. *Sixth*, the control dimension does not show the expected negative link with stress. This can be explained by a reversed causality effect: high stress levels may hamper the inclination to pursue autonomy during leisure time.

Taken together, we contributed to the large literature of small business owners' health in that we point at an antecedent which has been largely overlooked. We expect that DRE (or other recovery activities) will become an essential element in studies of small business owners' health going forward. We contributed to the equally large literature of DRE, showing that small business owners are hardly different from employees and that Japanese employees and small business owners are hardly different from their counterparts elsewhere. This was not our initial expectation, given the distinctive roles owners and employees play in their business and beyond, and given the peculiarities of Japanese (business) culture. We aimed to contribute to recent calls for more replication by continuously comparing our results with earlier ones on employees and small business owners.

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Data availability Available from M. Kato.

Declarations

IRB The survey was conducted anonymously by a reputable marketing research company, Intage, and did not involve issues related to human rights or participant safety. This study was approved by the Institutional Review Board (IRB) of Kwansei Gakuin University (Approval No. 2025-80).

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