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The Telework Pet Scale: Development and psychometric properties

Ana Junça-Silva [a,b,*]

[a] Instituto Universitário de Lisboa (ISCTE-IUL), Lisboa, Portugal
[b] Business Research Unit – BRU (UNIDE-IUL)

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ABSTRACT

This study intended to develop and validate the Telework Pet Scale (TPS). This measure aims to evaluate relevant aspects of the e-working experience related to the human-animal bond. We conducted four studies. First, we conducted a study to develop the scale, then we conducted another one to explore its factorial structure ($N = 359$). A third study served to analyze its internal validity and reliability ($N = 290$). A fourth study analyzed the criterion validity of the TPS, by exploring its correlations with measures of health, affect, satisfaction, and performance ($N = 320$ teleworkers). The findings revealed that the 8-item scale accounted for a unique factor and that it is a reliable measure. Moreover, the results also showed that the scale was significantly related to measures of health, affect, satisfaction, and performance. The cross-sectional nature of the four studies is a limitation. The TPS completes a gap in the research by providing a measure that may support organizations to evaluate and support teleworkers' needs and their subsequent satisfaction while teleworking. This research gives a step forward in the knowledge about telework and pet owners perceived experience of it.

Introduction

Telework is not a new organizational practice, however, since the COVID-19 pandemic crisis, it has been increasingly adopted. It was originally proposed by Jack Nilles in 1973, who defined it as a model of work that allows workers to work from their homes, or other locations, through the use of information and communication technologies. Organizations are adopting this model of work due to diverse factors such as employees' preferences, ICTs development and the reduction of costs and increased availability, work-life balance issues, a tendency toward outsourcing activities, changes in employment types, less commuting time and pollution, economic pressures in the business environment and unpredictable changes resulting from the global competition (Lim and Teo, 2000; Kerrin and Hone, 2001; Taskin and Bridoux, 2010; Athanasiadou and Theriou, 2021). Moreover, organizations have already recognized that this model of work is a way to improve work engagement, performance, and happiness (e.g., Lunde et al., 2022).

Telework has been, increasingly, valued by individuals who have pets on their own because working from home allows them (1) to be more time with their pets, (2) avoid leaving their pets many hours alone, and (3) as such minimize the concerns with their pets during the working day which also allows for a better concentration on the tasks at hand (Junça-Silva et al., 2022), and makes them happier (Junça-Silva, 2022).

Even though telework has been increasingly recognized as an important strategy to motivate and retain pet owners (Kazekami, 2020), so far as we know, there is no measure that assesses the perception of telework experience regarding pet ownership. In other words, it is essential to uncover how pet owners perceive teleworking regarding the effects of this work practice on their relationships with their pets.

There are some reasons why developing such a measure would be relevant. First, the number of families with pets is increasing. Second, the social representation of pets is also changing as families tend to see their pets as "furry babies" and family members, and not merely as means to an end (e.g., serving to bark as an alarm). Third, telework has been associated with increased well-being specifically for those who have pets (Junça-Silva et al., 2022); however, no measure assesses how pet owners perceive telework. Hence, no instrument provides a holistic overview of the attitudes toward teleworking for pet owners. Moreover, previous studies assessing the experience of teleworking for pet owners are limited and available measures have focused on ad-hoc surveys as opposed to validated scales (Junça-Silva et al., 2022).

From a practical standpoint, organizations and managers may benefit by creating a measure that assesses how their workers (those

* Address for reprint requests and correspondence: Ana Junça-Silva, Avenida das Forças Armadas, 1649-026 Lisboa, Portugal.
E-mail address: ana_luisa_silva@iscte-iul.pt.

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who own pets) perceive and experience teleworking regarding some benefits, including their well-being and health.

Therefore, this study intends to fill this gap by presenting the newly developed Telework Pet Scale (TPS), a measure created to evaluate how pet owners perceive teleworking. The composite variable – TPS – can provide a holistic view of teleworking and develop knowledge on the attitudes toward this working arrangement by pet owners and serve as a way to delineate organizational strategies that match workers' preferences and at the same time that may support them. This is particularly important, for example, for workers who have pets and who may have the opportunity to work from home, albeit in a hybrid mode, or to increase the perceived support of their superiors if they own some autonomy and flexibility to manage their working schedule, and/or working models, which in turn, may result in higher work-related well-being and better performance rates. Further, the TPS clarifies potential issues related to how pet owners experience teleworking, helping organizations to identify strategies that may improve the work-related well-being of these workers.

Theoretical background

The concept of telework

Telework was developed in 1857 when Egdar Thompson, a business owner in the United States, discovered that he could use a private telegraph system to manage teams that could not be physically together (Pyöriä, 2011). Later, in the 1950s, remote work received greater attention from organizations, when communication and information technologies were developed further (Junça Silva and Coelho, 2022). Coupled with technological development, there were changes in the labor market due to the oil crisis that hit the United States in the 70s. It had significant repercussions worldwide, forcing the implementation of strategies, such as the development of programs that would allow for saving energy (Nilles, 1997). In this way, Nilles proposed the reduction of home-work trips, giving rise to the substitution of physical displacement, by the transmission of information.

Nilles (1975) proposed the terms telecommuting and teleworking to contextualize telework. The difference is that teleworking is more comprehensive than telecommuting, since teleworking means any form of work, through information technologies, other than in the workplace, which can be from any point (e.g., home, or another branch of the company; Nilles, 1998). On the other hand, telecommuting just means working from home, without any kind of displacement (Grant et al., 2019). Telework is also different from remote work, e-work, or agile work (Gillies, 2011). All of these refer to the ability to work flexibly using remote technology to communicate with the workplace (Grant et al., 2019); and thus replace the physical commute to work (Kazekami, 2020).

Telework has been identified as a well-established organizational strategy, associated with autonomy, flexibility and agility in business management (Bailey and Kurland, 2002). Indeed, the purpose of teleworking has been, first, to offer an effective response to organizations to face market pressures and, secondly, to constitute a key element for the strategic development of organizations. Adopting telework, within the recommended standards, should become an instrument that benefits both the company, the employee and society (Eurofound, 2017).

Research has shown that teleworking has benefits not only for employees (e.g., satisfaction) but also for organizations (e.g., productivity) (e.g., De Vries et al., 2019; Buomprisco et al., 2021). Indeed, teleworking has been associated with flexible approaches to work, a higher balance between work and non-work domains, and improved well-being (Grant et al., 2019; Lunde et al., 2022), in part due to the absence of commuting time that may be spent with other domains (e.g., family activities, pets), and also to the autonomy and flexibility that teleworking promotes (e.g., Grant et al., 2013, 2019; De Vries et al., 2019). Notwithstanding, there are also studies showing that teleworking has also pervasive effects such as decreased satisfaction, work overload, and more interruptions during work (e.g., virtual meetings) that could, in turn, influence workers' performance due to their over-working and pressure (e.g., Fonner and Roloff, 2010; Grant et al., 2013; Barber and Santuzzi, 2015). These inconsistent findings point to the need for further investigation of the perceived impact of teleworking on well-being.

Teleworking and pets: the perspective of human-animal interactions at work

The number of families with pets has increased in recent years (e.g., Aruah et al., 2019). Moreover, their social representation of pets has changed significantly. Nowadays, pet owners tend to see their pets, not as mere objects (e.g., a barking alarm), but as their "furry babies," family members, and truly friends (McConnell et al., 2019; Junça-Silva et al., 2022). Hence, pets are conquering a time and a special space in the heart of modern families.

This can be noted in many social changes. For instance, there is an increase in the familiar budget spent on pets (e.g., Love, 2021), which also led to the increase and diversification of products/services in the pet market (e.g., pet school, pet clothes) (Stearns, 2022). There is also an increasing number of movies and series with pets as the central character of history (see, for instance, "A Dog's Journey," "The Art of Racing in the Rain," or "After Life," just to name a few examples). These changes have been noticed by advertisers who took advantage by starting to involve pets in their advertising campaigns as a suitable strategy to touch the heart of customers (e.g., Michelin or Chicco).

Even, in organizational life, some scholars and practitioners have recognized that pets intersect with daily life at work in many ways (e.g., Kelemen et al., 2020; Wagner and Pina e Cunha, 2021; Sousa et al., 2022). Following this, we can notice that the number of organizations with pet-friendly practices has increased all over the world (Sousa et al., 2022) as they recognized its importance to improve the levels of work engagement, happiness, and performance (Kelemen et al., 2020). For example, Amazon is known as one of the best workplaces due to its pet-friendly practices, such as pet insurance, the "take your pet to work day," the conceived days for the pet's grief, and telework, among other practices.

One of the most common pet-friendly practices is telework, in part because many organizations are not physically prepared to receive their workers' pets (Pina e Cunha et al., 2019; Junça-Silva, 2022;). Moreover, as described before, telework appears to enhance workers' levels of well-being, health, and performance (e.g., Kazekami, 2020; Lunde et al., 2022). Concerning this, some studies showed that a great number of participants would like to telework more often, in particular those who had pets on their own (Hoffman, 2021).

Indeed, pets may improve the experience of teleworking because teleworkers may work nearby their pets and interact with them which improves endogenous oxytocin concentrations – a hormone that has been linked to positive affective states (Marshall-Pescini et al., 2019; Powell et al., 2019), reduce heart rate and blood pressure (Powell et al., 2020), and improves the level of concentration (Barker et al., 2012). Some studies have shown that organizations that allow their workers to take their pets to work, reduce occupational stress, emotional exhaustion, and anxiety (Wagner and Pina e Cunha, 2021), and improve their health (Mueller et al., 2018). The "pet-day at work" also reduces negative affective states and increases positive ones (Barker et al., 2012). Likewise, this pet-friendly practice appears to improve workers' health and the quality of the perceived work climate (Wells and Perrine, 2001), as well as ameliorate the quality of interpersonal interactions (Cloutier and Peetz, 2016). On the opposite, Barker et al. (2012) demonstrated that

Table 1
Identification of the main benefits of working nearby pets (evidence from the literature review).

Benefits of working nearby pets	Reference
Health benefits	Wells and Perrine, 2001
Well-being and positive affective states	Junça-Silva, 2022; Linacre, 2016; Wagner and Pina e Cunha, 2021
Stress reduction	Barker et al., 2012; Wells and Perrine, 2001
Performance and concentration on the tasks	Junça-Silva et al., 2022; Pina e Cunha et al., 2019
Work engagement, organizational identification and organizational commitment	Junça-Silva, 2022; Sousa, et al., 2022
Fewer concerns about the pets/peace of mind by having them nearby	Barker et al., 2012; Linacre, 2016

when workers left their pets at home, and they were working at the office, their distress increased during the working day, which was not observed when they worked nearby their pets. This may occur because as time passes, workers tend to become more concerned with their pets which may distract them from their work tasks increasing their levels of stress (Barker et al., 2012). In telework this does not occur, as workers do not have the need to be apart from their pets, which may enable them to focus on what they have to do, making them feel better.

Indeed, pet owners appear to be happier and more productive when teleworking when compared to working at the office (Junça-Silva et al., 2022). By being allowed to work nearby their pets, individuals tend to feel more identified with their organization which in turn increases their well-being (Junça-Silva, 2022) and performance (Junça-Silva et al., 2022). This might also be due to the norm of reciprocity that rises the sense of obligation and gratitude towards the organization, as explained by the social exchange theory; Blau, 1964). However, what these studies have in common is that they have relied on ad-hoc measures instead of validated scales which highlights the need for a measure that may assess how pet owners experience teleworking.

The present study

This study was divided into four studies that aimed to develop and validate a new scale that assesses teleworking experience among pet owners – the TPS – an instrument to measure pet owners' attitudes toward telework. We followed scale development best practices (e.g., Worthington and Whittaker, 2006; Zickar, 2020) across multiple samples to describe the development and validation of the TPS, assessing the extent to which pet owners perceive benefits in telework. In study 1, we use three methods (literature review, interviews, surveys) and two samples to develop items and refine the measure to a practical 8-item scale. In study 2, we rely on a large sample of teleworks to validate the factorial structure of the scale and its reliability. Finally, in studies 3 and 4, we further assess the convergent, discriminant, and criterion-related validity of the scale, as well as support its psychometric properties.

Study 1: scale development

Item generation

The TPS was developed in several stages (McCoach et al., 2013). First, an extensive literature review was performed to analyze studies that were focused on the benefits of telework for pet owners. Due to the scarcity of studies, we also included studies focused on the presence of pets in organizations and their resultant benefits (Wells and Perrine, 2001; Barker et al., 2012; Linacre, 2016; Pina e Cunha et al., 2019; Wagner and Pina e Cunha, 2021; Junça-Silva, 2022; Junça-Silva et al., 2022; Sousa et al., 2022). At this stage, we identified six outcomes associated with the presence of pets during the working day (summarized in Table 1).

The second stage involved the conduction of 16 interviews with teleworkers (11 women, and 5 men, mean age: 37.58 years old; mean tenure: 12.32 years; mean pets: 2.14; type of pets: dogs (100%) and cats (18.75%). These interviews aimed to understand the main benefits of teleworking for pet owners. The analyses generated nine dimensions of benefits (see Figure 1): (1) more positive affect (e.g., "I feel joy and happiness while teleworking and have them (pets) by my side") and (2) higher well-being and satisfaction (e.g., "I really

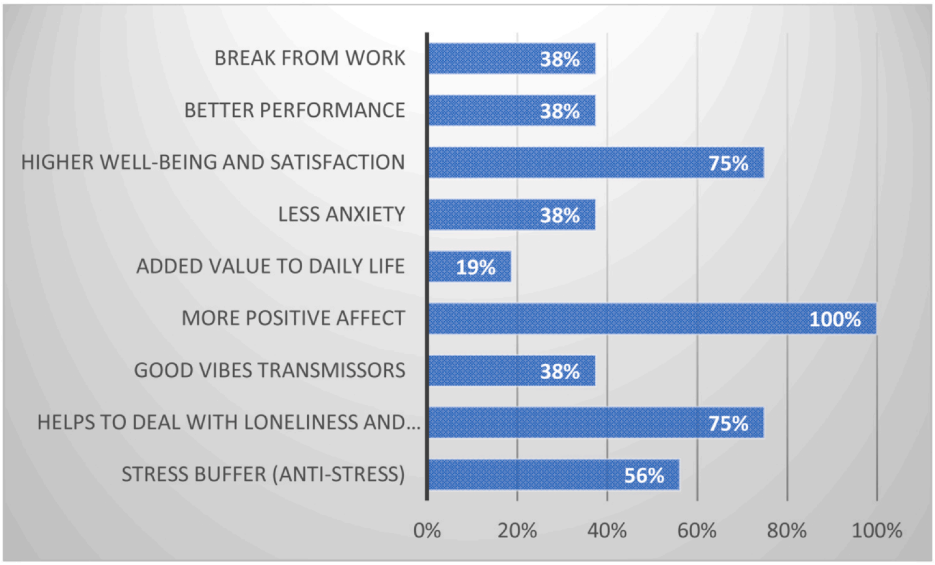

Figure 1. Benefits of teleworking for pet owners – dimensions identified in the 16 interviews with teleworkers (study 1).

appreciate working from home, because I can be with my companies (pets) and feel better with that"), (3) reduce the sensation of loneliness and isolation (e.g., "they (pets) make me feel understood and comfortable" (…) "Usually, I talk to them while working"), (4) reduce stress (anti-stress) (e.g., "they (pets) are my natural anti-stress"), (5) contaminate with good vibes (e.g., "they have a good energy and contaminate me with such positive vibe"), (6) lessen anxiety (e.g., "working from home, near my pets, allow me to be less anxious even when my day is demanding"), (7) improve performance (e.g., "I can concentrate more on what I have to do, while I am working from home, and I feel I am more productive (…) I do not have to worry with the hours that my pets spend alone"), (8) are a break from work (e.g., "interacting with my pets helps me to create breaks from work, and recover energy"), and (9) an added value to daily life (e.g., "they are an added value in my daily life").

Item refinement

Based on the six dimensions identified in the literature review and the nine ones categorized in the qualitative analysis of the interviews, two independent researchers identified 15 items related to the benefits of teleworking for pet owners. They grouped the items into one category of benefits. Subsequently, a third investigator read the items and suggested removing five items with similar content or expression. After removing those items with similar content or expressions, 10 items were retained for further evaluation. Second, an expert panel (comprised of two psychologists, one veterinary, a manager, a human resources manager, and a coach) evaluated the 10 items, and two items were excluded based on the redundancy with other items as expert panel's suggested, leaving eight items. Third, the eight retained items were sent to a different expert panel (comprised of an expert in human resources, management, organizational psychology, two veterinaries, and a labor sociologist) for review. This panel recommended maintaining the eight items.

Item relevance and clarity

At last, the final 8-item scale was tested on 60 teleworkers from the researcher's network (22 men and 38 women, mean age of 38.12 years and seniority = 10.34 years; mean pets: 2.05; pets: dogs (96.6%) and cats (36.6%) to obtain the initial assessment of it. A 5-point Likert scale was used to test whether participants understood the items. The results showed that all respondents understood it ($M = 4.33$, $SD = 0.42$). In addition, an individual cognitive telephone interview was conducted with the same participants in the pilot study to explore their thoughts about each item on the scale and their responses. Participants indicated that no additional changes were required. Overall, the final version of the scale comprised eight items.

Discussion

This first study develops the new TPS to assess how pet owners experience teleworking and which benefits can be retrieved from that. After conducting a thorough literature review, six categories of benefits were identified. These categories were then coupled with the results of 16 interviews; then, two panels of specialists and a sample of teleworkers refined the final item solution. Overall, the final version of the scale includes eight items. The second study aims to validate the reliability of the scale, as well as its factorial structure.

Study 2: validation of the factorial structure of the TPS

Following the best practices procedure, study 2 aimed to evaluate the factorial structure of the TPS, and its reliability, on a sample of teleworkers (Worthington, and Whittaker, 2006). By doing so, results may then be generalized across populations, even though we do not rely on a representative sample.

Method

Participants

We collected data from a sample of 359 teleworkers that covered several professional occupations in educational (58%), financial (31%), and management (11%) areas. Of the total sample, 63% were female, 46% were graduated, and 34% had high school completed. They had a mean age of 33.70 years old ($SD = 12.71$) and a mean organizational tenure of 13.38 years ($SD = 4.75$). On average, they worked 35.48 hours per week ($SD = 13.76$). All of them had pets ($M = 2.95$; $SD = 4.10$), of which 79% lived in the house (against 21% who lived outside the house). The pets included dogs (76%) and cats (34%). Participants reported having a pet, on average, at 12 years ($SD = 10.41$).

Exclusion/inclusion criteria

We had two major criteria for the inclusion/exclusion of participants. First, they had to be teleworking (either in a hybrid model or in a full model of telework, because the specific amount of time they spent teleworking was not a criterion. Second, they had to own pets (the type of pet was not a criterion nor was the location of the pet).

Procedure

We collected data on the TPS online. We emailed the survey link to participants, who were teleworking, from our professional networks. In that email, we also sent the informed consent for them to sign, and we assured them of the confidentiality and anonymity of the data. It was also noted that they could withdraw from the study at any time. After answering the survey, they were asked to send the link to other contacts, using a snowball procedure. Ethical approval was obtained from the University Ethics Committee prior to the study's conduction. Data were collected between May and July of 2021.

Measures

We collected socio-demographic information regarding gender, age, tenure, education, and pets (number, type of pets, years of pet ownership).

The TPS included the eight items identified in study 1 (see Table 1). The items were rated on a 5-point Likert scale (1 = *strongly disagree*, 5 = *strongly agree*) ($\alpha = 0.94$).

Data analyses

First, we performed an exploratory factor analysis (EFA) in SPSS (version 28), and then we conducted a confirmatory factor analysis (CFA) in JASP (Love et al., 2019). We evaluated the factor structure with common indices and their cut-off points, in which an adequate and model fit Tucker-Lewis index (TLI) and comparative fit index (CFI) should score above 0.90 and 0.95, respectively (Hu and Bentler, 1999). In addition, standardized root mean square residual (SRMR) and root mean square error of approximation (RMSEA) should be below 0.10, 0.08, or 0.05 in order to achieve an acceptable, adequate, and good fit of the model, respectively (Hu and Bentler, 1999; Kline, 2015). We also estimated the internal consistency reliability of the TPS.

Results

Table 2 presents the descriptive statistics for the eight items of the TPS.

Table 2
Descriptive statistics for the eight items of TPS (study 2).

Items (α = 0.94)	*M*	*SD*	loadings
Your pet's well-being.	4.23	0.84	0.921
Your pet's health.	4.08	0.89	0.872
The relationship with your pet.	4.21	0.86	0.852
Your happiness, for being able to be closer to your pet during the day.	4.27	0.79	0.836
Your health, as you can be closer to your pet during the day.	4.13	0.88	0.817
Being close to your pet.	4.34	0.88	0.814
Interact with your pet while working.	4.08	0.94	0.795
Do not be worried about your pet during the day.	3.90	1.12	0.749

N = 359.

EFA

We followed the recommendations of Hayton et al. (2004), and we performed EFA using parallel analysis in order to determine the appropriate number of factors to extract. Results from the EFA showed that there was only one factor to extract; however, as this method only identifies the number of factors that should be extracted, and does not allocate the items onto factors, we performed an additional EFA using maximum likelihood estimation with varimax rotation. This factor explained 70% of the variance.

Following the best practices procedures, we analyzed the items' loadings to search for those who were < 0.45. As all the loadings ranged between 0.74 and 0.92, we did not eliminate any item on the scale (see Table 2). The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was 0.87, which indicated that the data was appropriate for the analysis (Kaiser, 1974). Moreover, the reliability analysis supported acceptable internal consistency for the overall scale (α = 0.94).

CFA

A CFA was performed and gave support for the unifactorial solution of the TPS. The resulting model fit the data well; $\chi^2(28) = 186.27$, $P < 0.01$, CFI = 0.99, TLI = 0.99, SRMR = 0.06. The standardized factor loadings were all statistically significant with a $P < 0.01$ and ranged from 0.83 to 0.99 (Figure 2).

Discussion

This study analyzes the scale's factorial structure and reliability through the conduction of EFA, CFA, and an inspection of Cronbach's alpha. The results evidence a good fit solution for the unifactorial structure. Moreover, the scale also presents evidence for internal consistency. The next study intends to assess the convergent and discriminant validity of the scale.

Study 3: convergent and discriminant validity of the TPS

To assess the 8-item TPS convergent and discriminant validity, we conducted the analysis in an independent sample of teleworkers, because this procedure has been identified as a best practice to validate measures (e.g., Worthington and Whittaker, 2006), and thus provides more reliable evidence for generalizability that go beyond populations from which the studies draw their conclusions.

To analyze the convergent validity of the TPS we explored its relationship with the levels of individuals' attachment to their pets, and their interactions together. It is likely that pet owners while teleworking feel closer to their pets. Hence, the TPS should be positively related to pet attachment. Likewise, the TPS is expected to be positively related to their interactions together in telework (Junça-Silva et al., 2022).

At last, as evidence of discriminant validity, the TPS should show no significant association with age, sex, or organizational tenure.

Method

Participants and procedure

We collected data from 290 teleworkers, of which 56% were female. The mean age was 34.43 years old (*SD* = 12.72), and the mean organizational tenure was 14.33 years (*SD* = 53.89). On average, the participants reported working 35.70 hours per week (*SD* = 14.10). All of them had pets (as this was a criterion for their inclusion in the study; *M* = 3.10, *SD* = 4.45), and about 93% had their pets living inside the house. Most participants reported having dogs (99%) and cats (34%). They had pets on average at 12.26 years (*SD* = 10.19).

To gather data, we placed an advertisement on social media (Facebook and LinkedIn) asking teleworkers, with pets, to participate in a study about attitudes to pets at work. the ad had a hyperlink to the questionnaire. Before answering, they had to sign the informed consent, which also described the anonymous and confidential nature of the data collection. It was also highlighted that they could withdraw from the study at any time. Data were collected between October and December of 2021.

Measures

TPS

We used the TPS used in study 1 (α = 0.94).

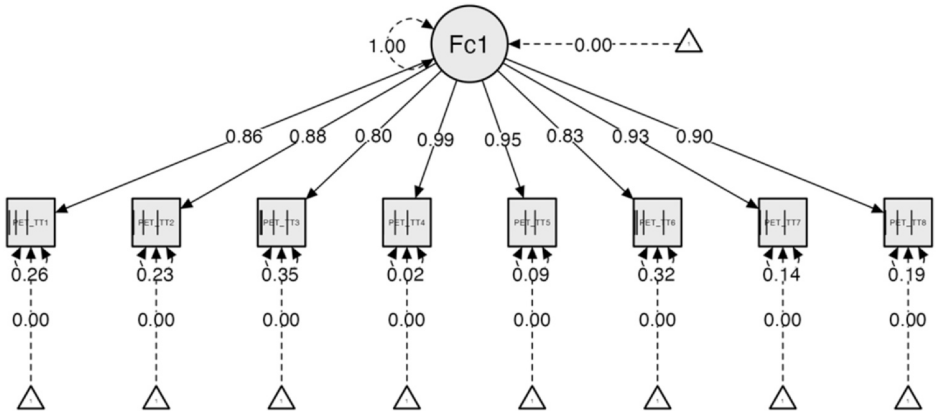

Figure 2. Confirmatory factor analysis and respective standardized factor loadings of the scale (study 2).

Table 3
Means, standard deviations, and correlations among the TPS and related constructs (study 3).

Variables	*M*	*SD*	1	2	3	4	5	6
1. TPS	4.12	0.77	–					
2. Pet attachment	4.45	0.56	0.51**	–				
3. HAI	1.60	1.05	0.36**	0.12**	–			
4. Age	34.43	12.72	0.08	−0.02	0.04	–		
5. Sex	–	–	0.02	0.26**	0.12**	0.03	–	
6. Tenure	14.33	5.89	−0.08	−0.09*	0.01	0.21**	0.02	–

$N = 290$. HAI = human-animal interaction. *$P < 0.05$, **$P < 0.01$. Code sex: 1: male, 2: female.

Human-animal interactions

We used three items to assess how close were the participants to their pets while teleworking (Junça-Silva et al., 2022) (e.g., "In telework, I usually take breaks to interact with my pet."). Participants rated it on a 5-point Likert scale (1 = *never*, 5 = *always*) (α = 0.96).

Pet attachment

We used the attachment to pet scale (Zasloff, 1996) to measure how close were the participants to their pets. It included 11 items (e.g., "I get comfort from touching my pet") answered on a 5-point Likert Scale (1 = *totally disagree*; 5 = *totally agree*) (α = 0.93).

Results

Table 3 shows the pattern of relationships found. Reliability analysis showed a good internal consistency for the scale (α = 0.94). A CFA also supported the one-factor solution, as the resulting model fit the data well ($\chi^2_{(14)} = 107.52$, $P < 0.01$, CFI = 0.99, TLI = 0.99, SRMR = 0.05).

As expected, the TPS showed positive and significant associations both with the levels of pet attachment and human-animal interactions, which supported the convergent validity of the scale. Moreover, it was not significantly related to age, sex, or tenure. This gave support for the discriminant validity of the scale.

Discussion

This study complements evidence from the previous two studies and supports the reliability of the TPS, as well as its factorial validity. Moreover, the TPS also showed good behavior regarding its convergent and discriminant validity, as it shows positive correlations with measures of pet attachment and human-animal interactions (convergent validity), but no relations with age, tenure, or sex (discriminant validity). The following, and last study will test the criterion validity of the scale.

Study 4: an inspection of the criterion validity of the TPS

This last study aimed to test the criterion validity of the new scale – TPS with a new sample of teleworkers. Research has shown that working nearby pets (e.g., pet-friendly practices or pet-friendly workplaces) leads to positive outcomes for the individual (e.g., job satisfaction, health, and affect) and organizations (e.g., performance) (e.g., Wagner and Pina e Cunha, 2021; Junça-Silva et al., 2022; Sousa et al., 2022;); hence, the TPS must be positively related to performance, health, job satisfaction, and positive affect, and negatively related to negative affect, thereby evidencing criterion-related validity.

Method

Participants and procedure

In this study, participated 320 teleworkers, of which 55% were female, with a mean age of 33.48 years old (*SD* = 12.50), and a mean organizational tenure of 13.23 years (*SD* = 9.41). Participants reported working about 35.65 hours per week (*SD* = 13.73). They had on average 2.97 pets (*SD* = 4.24), of which 89% were dogs, and 33% were cats. Most of them lived in the house (79%), and on average, participants reported having pets at 12 years (*SD* = 10.18).

We followed the same procedure as the third study; we collected data between February to April of 2022.

Measures

TPS

To measure attitudes toward telework from pet owners, we used the TPS from the previous studies (α = 0.93).

Job satisfaction

We used three items from Sharma and Stol (2020). An item example is: "I would say that I am satisfied with my job." Participants rated their answers on a 5-point Likert scale (1 = *totally disagree*; 5 = *totally agree*) (α = 0.69).

Performance

We measured adaptive (Griffin et al., 2010), contextual, and task performance (Koopmans et al., 2013). To measure adaptive performance, we used three items that asked participants to identify how often, in the past week, they had adapted to change (e.g., "I adapted well to changes in core tasks"). They answered on a 5-point Likert scale (1 = *very little*, 5 = *a great deal*) (α = 0.78). To measure contextual and task performance, we used eight items from the individual work performance questionnaire (Koopmans et al., 2013). We assessed task performance with four items (e.g., "I managed to plan my work so that it was done on time") (α = 0.68) and contextual performance with the other four items (e.g., "I started new tasks myself when my old ones were finished") (α = 0.71). Participants indicated how often they had such behaviors in the past week at work on a 5-point Likert scale (1 = *seldom*; 5 = *always*).

Affect

To measure affect, we used the 16-item Multi Affect Indicator (Warr et al., 2014). We measured positive affect with eight items (e.g., "joyful"; α = 0.83) and negative affect with the other eight items (e.g., "dejected"; α = 0.85). Participants rated how often they have experienced such affective states while teleworking in the past week (1 = *never*, 5 = *always*).

Health

We used one item, from the SF-36 Health Survey (Ware et al., 2001), to measure the participants' general health perceptions We

Table 4
Means, standard deviations, and correlations among the TPS and related constructs (study 4).

Variables	*M*	*SD*	1	2	3	4	5	6	7
1. TPS	4.20	0.72	–						
2. Adaptive performance	4.03	0.66	0.35**	–					
3. Contextual performance	4.15	0.63	0.16**	0.73**	–				
4. Task performance	3.99	0.70	0.47**	0.59**	0.50**	–			
5. Positive affect	3.49	0.68	0.19**	0.36**	0.40**	0.34**	–		
6. Negative affect	2.65	0.75	−0.14*	−0.18**	−0.20**	−0.19**	−0.54**	–	
7. Job satisfaction	3.64	0.83	0.41**	0.52**	0.46**	0.36**	0.46**	−0.26**	
8. Health	3.80	0.76	0.15**	0.36**	0.33**	0.27**	0.47**	−0.38**	

$N = 320$. *$P < 0.05$, **$P < 0.01$. Code sex: 1: male, 2: female.

asked participants to indicate how well they rated their health (1-*very bad*, 5-*very good*).

Results

CFA

We performed CFA using JASP. Which evidenced the one-factor solution found in previous studies. The model fit proved to be adequate to the data ($\chi^2_{(20)} = 119.74$, $P < 0.01$, CFI = 0.99, TLI = 0.99, SRMR = 0.05). Likewise, reliability analysis showed a good internal consistency for the scale ($\alpha = 0.93$).

Descriptive statistics and correlations

Table 4 shows the descriptive statistics and the correlations between the variables. As expected, the TPS correlated significantly and positively with measures of general health, job satisfaction, performance (adaptive, contextual, and task performance), and positive affect, and negatively with negative affect, which evidenced the criterion validity of the scale.

Discussion

The results of this study are consistent with previous ones in what concerns to reliability and factorial structure. Moreover, the results also evidence that the scale presents criterion validity as it shows to be closely related to several positive indicators, such as performance, health, satisfaction, and affect.

General discussion

Recent research has demonstrated that working nearby pets, either by taking the pet to the office, or by working from home nearby them, led to several positive outcomes for the individual (e.g., well-being; Wagner and Pina e Cunha, 2021) and for organizations (e.g., performance; Sousa et al., 2022). Given the recent increase in the adoption of telework – due to the COVID-19 crisis – pet owners got used to working close to their pets (e.g., Junça-Silva et al., 2022), hence it is relevant to understand how pet owners perceive this working arrangement. However, the studies, so far, have used ad-hoc measures instead of validated scales for this purpose. Hence, the set of four studies aims to deepen the knowledge about the way pet owners perceive telework, thereby filling this gap in the literature (Kelemen et al., 2020).

First, the TPS presents a consistent one-factor structure that aims to evaluate how teleworkers who own pets perceive telework. This factor structure is demonstrated across studies 2, 3, and 4. This consistency demonstrated suggests that the scale may be applied in different research models (e.g., cross-sectional, diary, or longitudinal designs). Moreover, the evidence of reliability – across the studies – makes TPS a reliable measure to evaluate the attitudes of pet owners toward telework.

At last, the results show that the scale has convergent, discriminant, and criterion-related validity, as it is shown by (1) the significant relationships with several indicators and by (2) the non-significant associations with age, sex, and tenure, which in turn shows its applicability across different populations. This result highlights that the TPS may be a suitable indicator of how well pet owners experience telework. The associations between the TPS and indicators of performance, health, affect, and job satisfaction is in line with recent demonstrations that working nearby pets enhances the workers' focus on the tasks which in turn improves performance (e.g., Linacre, 2016). This is explained, in part, because when individuals work close to their pets, they do not need to worry about leaving them home alone, which may result in higher concentration on the tasks to be done (Barker et al., 2012). Moreover, recent studies also showed that working with pets nearby also improves positive attitudes at work, such as organizational identification and work engagement (e.g., Junça-Silva et al., 2022), and well-being indicators, such as positive affect, job satisfaction, and perceived health (Pina e Cunha et al., 2019; Powell et al., 2020).

Overall, the TPS appears to be a reliable and valid instrument to measure the attitudes of pet owners regarding telework and thus may be helpful to deepen the understanding of this topic and its related consequences.

Limitations and future research directions

This set of studies has some limitations. The first is related to the sample as we do not have a representative sample of the pet owners who telework. However, we must consider that we have different studies that rely on different samples which is an added value to the study and thus strengthens these conclusions.

Future studies should explore the perceptions of teleworkers who own pets regarding relevant organizational outputs, such as performance, through a daily design. Daily designs are particularly important when is important to consider daily fluctuations, as performance levels tend to have (Griffin et al., 2007). Moreover, future research should also investigate the extent to which working nearby pets when teleworking may predict health-related indicators (e.g., mental health). At last, future research could consider using objective measures (e.g., heart rate variability) or behavioral measures (e.g., task completion rates) to supplement self-report data and provide a more comprehensive understanding of the e-working experience related to the human-animal bond.

Practical implications

The findings provide evidence of the TPS' psychometric properties. Hence, the scale can be used to measure how pet owners experience telework regarding some aspects, including the bond between them and their pets, and personal outcomes such as health and happiness. The findings provide evidence of the TPS' psychometric properties. Hence, the scale can be used to measure how pet

owners experience telework regarding some aspects, including the bond between them and their pets, and personal outcomes such as health and happiness.

From a practical standpoint, the TPS might be useful for both scholars and practitioners. First, it might be relevant for research purposes to advance knowledge in the field of (a) organizational behavior and human resources management and (b) human-animal interactions in the work context. Using a validated measure to understand pet owners' attitudes toward teleworking, might open new research venues about the intersection between pets and daily work routines, including its benefits and drawbacks – which so far is unexplored.

Second, it might be relevant for organizational and managerial purposes. For instance, managers may use the TPS as a tool to diagnose who can be more suitable for teleworking by assessing the existence of positive or negative attitudes to telework. Further, telework may also be used as a strategy to attract and retain talented workers – especially those who own pets as these appear to be at the top of the list of those who prefer to telework (Junça-Silva, 2023). At last, even when a full mode of telework is not possible, managers may opt to implement a hybrid mode giving priority to those who are happier and more productive in telework, such as pet owners.

Conclusion

The increasing popularity of telework – due to the recent pandemic crisis – together with the increasing concern of families about their pets – as their family members (Kelemen et al., 2020) – makes the TPS a measure long overdue and sorely needed. This overdue has contributed to the field's incomplete understanding of how pet owners perceive teleworking. The TPS matches this need as it evidences good psychometric properties regarding its factorial structure, reliability, and validity (convergent, discriminant, and criterion-related).

Informed consent

Informed consent was obtained from all individual participants involved in the study.

Data availability

The data is available only upon reasonable request to the authors.

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Ethical considerations statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. Further, the ethics committee of the university approved the study prior to its conduction.

Conflict of interest

The authors declare that they have no conflicts of interest.

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