Should I pet or should I work? Human-animal interactions and (tele)work engagement: an exploration of the underlying within-level mechanisms

Abstract

Aims: Human-animal interactions (HAI) have been found to have an extensive and significant influence on individuals' well-being and health-related outcomes. However, there are few studies that examine this influence on work-related contexts, such as teleworking. In the current study, we relied on the affective events theory to examine the effect of daily HAI on employee daily work engagement and the underlying mechanisms (daily affect ratio and state mindfulness), by resorting to a daily diary study.

Method: To test our hypotheses, we collected daily data during five consecutive working days with pet owners (N=400*5=2000).

Findings: Multilevel results showed that interacting with pets during the working day was positively associated with daily work engagement, but this positive relationship was stronger for individuals with lower levels of mindfulness. Further analyses showed that the daily affect ratio mediated the moderating effect of mindfulness on the relationship between daily interactions with pets and daily work engagement.

Practical implications: These findings provide strong support for the proposed mediated moderation model; indeed, positive affect and mindfulness help to explain the positive effect of human-animal interactions on work engagement. Hence, managers may consider the adoption of teleworking, even in a hybrid format for those workers who own pets, because interacting with pets may be a strategy to make them feel more positive affect and, in turn, more enthusiastic, dedicated, and absorbed in their work.

Originality: This study is one of the first studies to demonstrate the importance of adopting pet-friendly practices, such as allowing pet owners to telework, as a way to promote daily work engagement.

Keywords: Human-animal interaction; affect; work engagement; mindfulness; multilevel analyses.

Introduction

"*Pets do not care if you are in a brand-new car, or in an old one; if you are dressed in fancy branded clothing, or even if you have some pounds more. What really matters for them is being on your side, your friendship; the purer and true friendship that a human being can ever have!*" (Jesse Koz)

This quotation represents what pets can be for human beings, and what these represent for pets. Indeed, human-animal interactions (HAIs) are not a recent concern for researchers who have consistently demonstrated how much it may impact diverse health-related outcomes (e.g., McCardle et al., 2011; Mellor et al., 2020; Wilson & Barker, 2003). For instance, there is evidence that pets are a source of emotional support that helps individuals to minimize their anxiety levels and depression symptoms (Esposito et al., 2011; McCardle et al., 2011); they are also companions that help individuals to reduce their physical and psychological loneliness and help them to cope with stressful conditions or unexpected events (e.g., Wilson & Barker, 2003); therefore, pets have a therapeutic value as regarded in themselves for those who spend time with them. Despite this evidence so far, few studies have considered extending HAIs studies to other contexts, such as the working one (for an exception see Junça-Silva, 2022).

Due to the COVID-19 pandemic crisis, many organizations resorted to telework - a flexible model of work in which employees are allowed to perform their tasks from

home (Grant et al., 2019) - as a way to assure their productivity and profitability during the lockdowns. However, even after the mandatory lockdown ended there are still many organizations that maintained telework as a performance-related strategy, even in a hybrid way (Chambel et al., 2022). While working from home, employees who own pets may benefit from working nearby them. From a social exchange perspective (Blau, 1964), it is likely that by being allowed to work from home, pet owners feel a sense of duty and gratitude to their organization, which in turn may lead to positive work-related outcomes, such as work engagement - a positive affective-motivational attitude that includes vigor, dedication, and absorption toward work (Bakker et al., 2014). In the few exceptions of studies exploring HAIs at work, they have shown the benefits of interacting with pets during work as a way to recover energy and other resources needed to work (Junça-Silva, 2022). For instance, Junça-Silva (2022a) showed that organizations that had in their strategy pet-friendly practices – that included allowing workers to take their pets to work – increased their level of organizational identification and in turn their well-being at work improved. Moreover, Junça-Silva et al. (2022) demonstrated that during the pandemic of COVID-19, those who were teleworking had the benefit of working nearby their pets, and this increased both positive affect and performance levels. More recently, Junça-Silva (2022) showed that HAIs in telework served as a way to recover self-regulatory resources needed to focus on the tasks, and in turn, this served to improve teleworkers' performance.

In addition, research has shown that mindfulness - an active mindset that allows the individual to be focused on the present moment, and thus be more sensitive and acceptant of the context (Langer & Moldoveanu, 2000; Pirson et al., 2018) – contributes to intensify or attenuate the impact of daily events/occurrences on diverse attitudes, such as work engagement (e.g., Junça-Silva et al., 2021). Conceiving HAIs as a daily

event, we thereby suggest that mindfulness will moderate the relationship between daily HAIs and daily work engagement. Hence, we expect that when workers are mindful (focused on what is happening in the present moment) it may lead them to, not only be aware of the HAI in its essence but also of the perk that the organization is granting by allowing teleworking. Therefore, for mindful individuals, HAIs will likely intensify the way they react to daily HAIs, during telework, and thus contribute to improving their work engagement. Furthermore, we relied on the affective events theory (Weiss & Cropanzano, 1996 – affective events (HAIs) influence affective (affect) and attitudinal outcomes (work engagement) to propose that this moderating effect will be mediated by the experience of affect during the workday. That is, we expect that mindfulness will be a moderator but only if HAIs trigger some kind of affective reaction – that will serve to signalize and make teleworkers aware of it. These triggered affective reactions will thereby justify how HAIs contribute to improving tele(work engagement).

Despite the relevance and benefits of HAI for individuals (e.g., Friedman & Krause-Parello, 2018), so far organizational studies have disregarded their role at work (Kelemen et al., 2020). Indeed, only recently HAI has started to call the attention of scholars who acknowledged the importance on daily work routines (Junça-Silva, 2022). As Kelemen et al. (2020) noted, there is a need to further explore how pets intersect daily life at work, and how they may influence attitudes and work-related outcomes (Junça-Silva et al., 2022). By doing so, scholars may help managers and organizations to delineate strategies that may include pet-friendly practices relevant to deliver positive results, such as improved levels of affective well-being and work engagement.

As such, answering the call of Keleman et al. (2020) this study aims to expand knowledge regarding the impact of HAI on work-related outcomes, such as work engagement in the context of teleworking. Moreover, we aim to demonstrate that

teleworking may be a suitable strategy for organizations that want to improve their employees' work engagement and that this one may be a good starting point for the implementation of pet-friendly practices. Thereby, by allowing their workers to work from home, even in a hybrid model, organizations may achieve healthier and more engaged employees through the impact of HAI on both positive affect and work engagement during teleworking.

Theoretical framework

The human-animal interactions

Although individuals have lived near animals for thousands of years, research in the field of Human-Animal Interaction (HAI) is relatively new. It started with the aim of understanding how the individual's relationships with animals could influence both human and animal health (McCune et al., 2014).

The science of HAI emerged from the theoretical perspectives on human-animal bonds (HABs), proposed by Konrad Lorenz, and started effectively in the 1980s (Hines, 2003). It refers to any manner of relationship or interaction between an individual and an animal. However, this definition has evolved over time. For instance, Hinde (1987) suggested that HAI is a "relationship then involves a series of interactions over time between two individuals known to each other" (p. 24). Estep and Hetts, in 1992, emphasized that HAI are mutual behaviors arising from mutual perceptions, and these form the foundation for a relationship that has a feedback effect on the nature and perception of future interactions between each part.

More recently, however, Griffin and colleagues (2012) suggested that HAI are "the mutual and dynamic interactions between people and animals and how these interactions may affect physical and psychological health and well-being" (p. 6-7); we

can note that in this definition, it is not the interaction *per se,* but how this kind of interaction affects the individual in terms of physical, psychological and well-being-related outcomes. This definition complements the pet-effect hypothesis proposed by Herzog (2011). Accordingly, the pet-effect hypothesis states that the presence of a pet may buffer against negative affect, while interacting with pets trigger positive affect (Herzog, 2011).

There are three types of HAIs: (1) visual contact (e.g., watching the animal playing with a bone); (2) physical contact (e.g., passing the hand in the animal's fur, or petting his/her head), and (3) looking at images of animals (e.g., looking at cute pictures of animals, or watching a movie with animals) (Junça-Silva, 2022).

In support of this, several studies have shown that the influence of animal companions and their interaction with persons influence their behaviors, attitudes, and health-related outcomes (e.g., Fine, 2015). For instance, HAIs have been associated with lower blood pressure, lower heart rate, and efficient strategies to cope with stressful situations (Allen et al., 2001, Friedman et al., 2013); it has also been associated with higher levels of happiness, well-being, reduced anxiety, depression, and distress (e.g., Bures, 2021; Janssens et al., 2020; Wells, 2019). Despite these benefits, HAIs have been disregarded in other contexts, such as the working one. However, as Kelemen et al. (2020) emphasized, there is a need to expand the research on HAI to working settings.

The human-animal interactions as a predictor of affect at work

With the COVID-19 pandemic crisis, telework was one strategy recommended to organizations, as a way to promote social distance between workers, and at the same time, ensure their productivity. Telework is a flexible working model that allows the

individual to work from home; and while working from home, individuals who own pets may benefit from working near them, or from interacting with them during the workday (Junça-Silva, 2022). Recently Junça-Silva (2022) demonstrated that HAIs during telework could be viewed as a micro-break (e.g., stop working to head the pet of the furry friend) that served to recover energy and other resources needed for concentration and performance. In a similar vein, but in the organizational face-to-face context, the same author evidenced that workers who were allowed to take their pets to work not only felt more grateful to their organization but also felt more identified with it, and this in turn improved their work-related well-being. Additionally, Junça-Silva and colleagues (2022) and Wagner and Pina-Cunha (2021) showed that interacting with a dog at work (both teleworking and at the office) aroused oxytocin which was responsible for making workers experience positive affect, and this improved positive behaviors at work. As such, we may conclude that independent of the working context (teleworking or face-to-face) interacting with a pet may be beneficial in some ways.

Other studies conducted outside the working context have shown that the level of interaction with a pet was positively related to positive affect – the pet-effect hypothesis – and thus to affective well-being (Janssens et al., 2020). Friedman et al. (2013) also showed that pets not only promote positive affect but are also a source of social support providing a mechanism for nurture. Hence, based on the pet-effect hypothesis and on the literature explored, we expected the following:

Hypothesis 1: Daily interaction with pets will positively influence the daily affect ratio, at the within-person level.

The emergence of HAIs in the teleworking settings: their relationship with work engagement

The number of families with pets is increasingly higher. Plus, the representation of pets for modern families is also changing, and they are being considered not merely as a form of defense or an alarm living outside the house or in the backyard; instead, individuals consider them as family members, best friends, or “fur babies” (Maddox, 2021). This change in the representation of pets for individuals has made families include their pets in other contexts, rather than only their family house. For instance, families with pets increasingly take those "fur babies" on holidays, and consider taking them on Sunday walks, among other examples. Therefore, we are assisting a mindset change regarding pets, and we can conclude that pets increasingly intersect other contexts rather than merely the house one.

In line with this, scholars, organizational practitioners, and individuals have recognized the benefits of having a pet for their health, happiness, and several positive behaviors, such as cooperation (e.g., Janevic et al., 2020; Krueger et al., 2021; Love, 2021). For that reason, it is of crucial importance to understand the intersection of pets in daily life at work, and their impact on work attitudes, as highlighted by Kelemen and colleagues, in 2020.

The social exchange theory prosed by Blau (1964) may support the relationship between HAIs, in the context of teleworking, and positive work attitudes, such as work engagement. Accordingly, an individual’s attitudes and behaviors arise from the judgment that s/he does about the fairness of the relationship between what s/he gives to the organization and what receives in return, either through tangible goods (e.g., salary)

or intangible ones (e.g., telework) (Vander Elst et al., 2017). Hence, by being allowed to work from home, pet owners may judge this allowance as a caring strategy and a privilege given by their organization which, as explained by the reciprocity norm of the social exchange theory, may make them feel compelled to give more in return and as a result, improve their work engagement.

Indeed, among the individuals who mostly prefer teleworking are the ones who own pets because while working from home they do not have to be worried about leaving their pets home alone for so many hours and because they can work with a furry co-worker and thus interacting with them during the working day (Junça-Silva, 2022; Sousa et al., 2022). Additionally, working nearby pets may be viewed as a resource due to their caring, supportive and calming nature. Empirical evidence has shown that pets are a source of companionship (Sable, 2013) and that interacting with them makes individuals happier and capable of facing work-related daily hassles (e.g., dealing with someone with a rotten mood) – the pet effect (e.g., Friedman & Krause-Parello, 2018; Janssens et al., 2020). Interacting with pets during work time (both at the office or at home) triggers energy and the concentration needed to work (Junça-Silva, 2022; Wagner & Pina-Cunha, 2021). Thus, when individuals work close to their pets, they may become in a better position to feel better and engaged in their work. Therefore, based on the social exchange perspective and we defined the following hypothesis:

Hypothesis 2: Daily interaction with pets will positively influence daily work engagement, at the within-person level.

Affect as a mediator

In addition to limited research about the within-person association between HAIs and work attitudes, little is known about the mechanisms that may explain it. The affective events theory (Weiss & Cropanzano, 1996) has explored how affect (i.e., core affects, moods, emotions) emerges within the working context, and how this, in turn, influences work attitudes (e.g., work engagement). The theory proposes that the working environment is filled with conditions (e.g., flexible work arrangements such as telework) that promote the occurrence of affective events (e.g., daily HAI), known as daily hassles (tiny little things that upset the worker – e.g., a pet barking when the worker is in a meeting) and uplifts (micro-positive experiences of pleasure and satisfaction – e.g., head petting the furry friend) (Ashkanasy et al., 2014; Junça-Silva et al., 2022). These are affective because they trigger affective reactions and, in turn, influence attitudes, such as work engagement (e.g., Junça-Silva et al., 2017; Nimon et al., 2021).

Accordingly, we argue that HAIs may be conceived as affective daily events because (1) pets have nurturing and caring characteristics, (2) the bond between pets and their humans is inherently affective, and (3) pets have the gift of emotionally influencing their owners helping them to relieve their emotional pains or stress symptoms. Hence, HAIs can be affective events that trigger positive affect (e.g., happiness, satisfaction).

Affect is a process, and a function regarded as valuable in itself (Diener et al., 2020); it is a crucial resource for workers as it influences key-related outcomes (Ohly & Schmitt, 2015). A positive ratio of daily affect means that individuals experienced more positive affective experiences than negative ones, which can further increase work engagement. Moreover, a positive ratio of affect can also serve to broaden and build

other resources at work (Fredrickson, 2003; Hobfoll, et al., 2018) and these can further stimulate work engagement (Bledown et al., 2011; Rusu & Colomeischi, 2020). Therefore, by promoting affect, and making their owners experience positive emotions while working, such as enthusiasm or satisfaction, HAIs are likely to influence attitudes toward work, such as work engagement – a positive affective motivational attitude divided into vigor (energy levels), dedication (enthusiasm when working), and absorption (focus and concentration on the task) (Bakker et al., 2014). Relying on previous works on HAI, we argue that when interacting with his/her pet, the individual will tend to experience satisfaction or other positive emotional states, that will serve to contribute to their levels of enthusiasm while working (Wagner & Pina-Cunha, 2021). Moreover, daily HAI will also tend to trigger other positive affective states that are an added value for concentration on the tasks at hand (Junça-Silva, 2022). In addition, the interaction with the pet *per se* will increase the individual's pride and awareness about his/her privilege of being able to work from home, which will naturally increase his/her dedication to their work and organization. As such, affect will serve to explain how HAIs during work influence work engagement (Janssens et al., 2020; Junça-Silva, 2022).

Building on the aforementioned discussion and the above hypotheses, we hypothesized:

Hypothesis 3

Daily affect ratio will mediate the relationship between daily interaction with pets and daily work engagement.

Mindfulness as a moderator

The research on mindfulness in the workplace is increasing (Good et al., 2016), as researchers have recognized its importance for key-related outcomes such as work attitudes (e.g., Pirson et al., 2018). Mindfulness is defined as the "state of being attentive to and aware of what is taking place in the present" (Brown & Ryan, 2003, p. 822); that is, it is a cognitive style characterized by flexibility, and acceptance (Pirson et al., 2018). It allows the individual to actively construct novel categories and distinctions (Langer, 1989; Baer et al., 2008) that help the individual to be more (1) focused on the present moment; (2) context-sensitive; and (3) guided by rules and routines (Junça-Silva & Caetano, 2021; Pirson et al., 2018). These characteristics lead individuals to be more aware of what happens (both positive and negative), making them more active in the search for opportunities, solutions, and alternatives for stressful situations or conditions, and at the same time taking advantage of the positive events (e.g., HAIs) that happen to them (Helm & Subramaniam, 2019; Lee & Jang, 2021).

Therefore, we argue that mindfulness will moderate the relationship between HAIs and work engagement because as an active mindset, mindfulness will allow the individual to be more focused on what happens (HAIs), that is on the interaction itself with their pets. This focus may make the individual more aware of the interaction per se and about the privilege of working from home – a privilege warranted by the organization – which may make him/her compelled to give in return and thus intensify the benefits of HAIs on work engagement

Even though there are no studies exploring how mindfulness may facilitate the relationship between HAIs and work attitudes, other studies have demonstrated that mindful individuals can get more benefits from what happens around them, even in stressful conditions (e.g., Feltman et al., 2009; Saavedra et al., 2010). For instance, Oliva and Johnston (2021) showed that mindfulness explained why interacting with

dogs reduced stress, depression, and loneliness. Similarly, Spruin et al. (2021), in an experimental study, demonstrated that therapeutic dogs reduced anxiety levels especially for mindful individuals. As such, based on these empirical findings, we expect the following:

Hypothesis 4:

The positive relationship between daily interaction with pets and daily work engagement will be moderated by mindfulness, such that the relationship will be stronger for individuals with higher levels of mindfulness than those with lower levels of mindfulness.

Moreover, previous studies have shown that affect influences work engagement, and that mindfulness may intensify this relationship (e.g., Junça-Silva et al., 2021). For instance, in a study conducted in 2021, Junça- Silva and colleagues showed that mindful individuals got more benefits from a positive ratio of daily affect and thus become more engaged in their work, even when they faced a negative ratio of daily affect, their levels of work engagement did not decrease, as happened to mindless individuals (Junça-Silva, et al., 2021). In contrast, mindless individuals did not have increases in work engagement levels, even when they had experienced a positive affect ratio.

Hence, building on these findings, we argue that individuals with higher levels of mindfulness may be more aware of the affective reactions prompted by the interaction with their pets, which may lead to increases in work engagement. Therefore, based on this logic, we propose the following hypotheses:

Hypothesis 5

The positive relationship between daily affect ratio and daily work engagement will be moderated by mindfulness, such that the relationship will be stronger for individuals with higher levels of mindfulness than those with lower levels of mindfulness.

Hypotheses 6

Mindfulness will moderate the mediated effect between HAIs and work engagement via affect, such that the indirect effect will become stronger for mindful individuals (versus mindless individuals) (moderated mediation hypothesis) (see Figure 1).

--FIGURE 1--

Method

Participants and procedure

We collected data from 400 Portuguese participants who were teleworking, of which 58.2% were female. They worked in different occupations, among them were advertisers (28%), marketing specialists (26%), informatic engineers (25%), and architects (21%). All of them were full-time workers who were fully teleworking. The mean age was 33.7 years old (*SD*=12.71) and the mean organizational tenure was 13.38 years (*SD*=7.56). Mos of them had, at least, a superior graduation (89%). On average, participants had 2.95 pets (*SD*=4.10), and they had them at least for 11.83 years (*SD*=10.41). Most participants had dogs (55%) followed by cats (33%).

We published an advertisement in two Facebook groups. We asked for the collaboration of pet owners in a study about teleworking and attitudes toward pets. In the advertisement, we warranted the anonymity and confidentiality of the data and participants had a hyperlink directing them to a short survey (with information about

their socio-characterization and asking them for their email). Those who answered this short survey were later contacted by the researcher via e-mail. That e-mail clarified the procedure of the study, a five-daily diary study, that would start on the next working day and would be continued for five consecutive working days. Participants signed the informed consent. Moreover, participants were clarified about the anonymity and confidentiality of the data. Researchers also reminded that their participation could be withdrawn at any moment in the study. They were reminded every day, at the end of the working day, to answer the daily survey (they had to answer by 10 p.m. of that day). From 523 participants that answered the initial short survey, we obtained 400 valid daily responses across the five days (response rate: 76.4%). The overall number of observations was 2000. Data were collected between March and April 2022.

All methods were carried out in accordance with relevant guidelines and regulations, and all experimental protocols were approved by our institution.

Measures

HAIs. We used three items to assess the daily interactions between humans and their pets during work time (Junça-Silva, 2022). An item example was "You took breaks from work to interact with your pet". Participants answered on a 5-point Likert scale, ranging from 1 (*never*) to (*more than six times per day*). Multilevel reliability tests were good ($\alpha_{between} = 0.93$, $\omega_{between} = 0.93$; $\alpha_{within} = 0.96$, $\omega_{within} = 0.96$).

Affect. We used the 16-item Multi-Affect Indicator (Warr et al., 2014), to assess the frequency of daily affect (e.g., "happy", "sad"). We computed the ratio by dividing the frequency of positive affect by the frequency of negative affect (Diehl, et al., 2011). Participants answered on a 5-point scale (1–*never*; 5–*always*). Multilevel reliability tests were good ($\alpha_{between} = 0.84$, $\omega_{between} = 0.85$; $\alpha_{within} = 0.83$, $\omega_{within} = 0.83$).

Work engagement. To measure work engagement, we used the three items from Ultra-short Measure for Work Engagement (Schaufeli, et al., 2017), of which an example item is: "Today, at my course I felt bursting with energy". All items were answered on a five-point scale (1= never, 5 = always). Multilevel reliability indices were good ($\alpha_{between}$ = 0.86, $\omega_{between}$ = 0.87; α_{within} = 0.84, ω_{within} = 0.85).

Mindfulness. We used the Langer Mindfulness Scale (Pirson et al., 2018). It included 14 items that assessed novelty seeking (e.g., "I like to investigate things."), novelty producing, (e.g., "I make many novel contributions."), and engagement (e.g., "I am rarely aware of changes."). Participants answered on a five-point scale (1= *totally disagree*; 5 = *totally agree*) ($\alpha_{between}$ = 0.69, $\omega_{between}$ = 0.69; α_{within} = 0.82, ω_{within} = 0.82).

Control variables. The time of data collection (from Monday to Friday) was a daily-level control variable once it was found that it influences emotional reactions and work-related behaviors (Fisher, 2003). We also used sex and trait affectivity as individual-level control variables once they may influence work attitudes such as work engagement (Bakker et al., 2014).

Data analyses

This study used multi-level analyses with nested data to examine the underlying hypothesized model. First, we calculated the analysis of the variance components. The ICC results demonstrated 50% between-group variance (differences between individuals) and 23% within-group variance (differences between the days nested within the individual) for mindfulness, and 83% between-group variance and 55% within-group variance for daily affect. Moreover, analyses evidenced that 84% of the total variance of daily work engagement could be explained by between-group differences

and 64% by within-group differences. For pet interactions, this was respectively 96% (between-group) and 88% (within-group). Thus, as a large percentage of the total variance was explained at the within-group level, we conducted multilevel analyses.

Then, we used the MLmed macro in SPSS to test the multilevel hypotheses. MLmed is a suitable macro to calculate mediation and moderated mediation models as it decomposes Level 1 variables into inter-and intra-cluster parts. The MLmed macro uses Monte Carlo simulation to calculate unbiased confidence intervals for indirect effects in the context of multilevel modeling (Hayes & Rockwood, 2020), and it allows the inclusion of a moderator (mindfulness) to test its influence on the direct effect (daily HAIs → daily work engagement) and also on the indirect effect (daily HAIs → daily affect → daily work engagement). That is, we tested whether the direct effect of daily HAIs on daily work engagement was similar across individuals or differed according to their levels of mindfulness. We also tested whether the indirect effect of HAIs on daily work engagement via daily affect was moderated by mindfulness, or in other words whether the indirect effects were similar depending on whether participants were more mindful (versus mindlessness) (moderated mediation). For that, it calculates the index of MCCIs and conditional indirect effects (Hayes & Rockwood, 2020).

Results

Multilevel Confirmatory Factor Analysis

To test for common method bias, we ran a multilevel confirmatory factor analysis. The results showed that the four-factor model (HAIs, daily affect, mindfulness, and daily work engagement) fitted the data well (at both within-and-between-person levels: RMSEA = .08, CFI = .85 TLI = .82, $SRMR_{within}$ = .06, $SRMR_{between}$ = .07). On the other hand, the single factor-model (at both within-and-between-person level) showed an unacceptable fit to the data (RMSEA = .11, CFI = .61 TLI = .58, $SRMR_{within}$

= .09, $SRMR_{between}$ = .10). Thus, these results showed additional evidence for the validity of our measures.

Descriptive Statistics and Correlations

Table 1 shows the descriptive statistics and correlations between the variables, both at the within, and at the between-person level. At the day level, we calculated the correlations with the within-person-centered variables. At the between-person level, correlations of daily variables were calculated through their mean value across measurement occasions. All the variables were positive and significantly related to each other, both at the between and within-person level.

TABLE 1 ABOUT HERE

Hypotheses Testing

As we mentioned before, to test our hypotheses, we considered the hierarchical structure of the data, in which daily data was nested within individuals. As shown in Table 2, after controlling for time of data collection, sex, and trait affectivity, the results at the individual level are as follows.

The direct effect of HAIs on affect and work engagement

First, the human-animal interactions had a significant predictive effect on daily affect, both at the within and between-person level; which supported H1 ($B_{within} = 0.11$, $p < 0.01$; $B_{between} = -0.29$, $p < 0.001$).

Second, the human-animal interactions were significantly associated with work engagement ($B_{within} = 0.07$ $p < 0.05$; $B_{between} = 0.14$, $p < 0.001$), both at the within and between-person level; lending support to H2.

The indirect direct effect of HAIs on work engagement via affect

With 20,000 Monte Carlo replications, the results indicated a positive indirect effect of HAIs on work engagement via affect (indirect $effect_{within} = 0.04$, 95% bias-

corrected bootstrap CI [0.01, 0.08]; indirect effect$_{between}$ = -0.11, 95% bias-corrected bootstrap CI [-0.16, -0.05]), which supports our third hypothesis (see Table 2).

TABLE 2 ABOUT HERE

The moderating role of mindfulness

First, the interaction between HAIs and mindfulness was significantly associated with work engagement (B_{within}=-0.09, $p < 0.01$; $B_{between} = -0.04$, $p > 0.05$), which means the moderating effects were significant at the individual level; hence, H4 was supported by the data. We plotted this interaction as conditional values of mindfulness (one standard deviation below, and one above the mean), as proposed by Dawson and Richter (2006). A simple slope test showed that the positive relationship between HAIs and work engagement was stronger for mindless individuals (vs. mindful) ($B_{lower} = 0.34$, $p < 0.001$; $B_{higher} = 0.26$, $p < 0.001$). As Figure 2 shows, when daily interactions with pets increased, daily work engagement also increased, in particular for individuals who scored lower on mindfulness (versus mindful individuals), even though the level of work engagement appeared to be higher for mindful pet owners.

FIGURE 2 ABOUT HERE

Second, the results also evidenced a significant interaction between affect and mindfulness in predicting work engagement (B_{within}=-0.05, $p < 0.05$; $B_{between} = -0.03$, $p > 0.05$), lending support for H5.

The moderated mediation effect

Moreover, to test the hypothesized moderated mediation model, we performed a 20,000 Monte Carlo analysis. The findings revealed that, as expected, mindfulness significantly moderated the indirect effect, indicating a significant moderated mediation model (Estimate$_{within} = -0.01$, 95% bias-corrected bootstrap CI [−0.02, −0.003]) at the

within-person level, and at the between-person level ($Estimate_{between} = 0.01$, 95% bias-corrected bootstrap CI [0.00, 0.02]). Thus, H6 was supported (see Figure 3).

FIGURE 3 ABOUT HERE

A simple slope test showed that affect was positively related to work engagement at both lower and higher levels of mindfulness ($B_{lower} = 0.57$, $p < 0.001$; $B_{higher} = 0.52$, $p < 0.001$); when the ratio of affect increased, daily work engagement also increased, in particular for those who scored lower on mindfulness, even though the levels of work engagement were higher for mindful participants (see Figures 4 and 5 for a summary of within and between-person effects).

FIGURES 4 AND 5 ABOUT HERE

Discussion

The study of HAIs has gained recognition recently; however, despite the evidence of the importance of human and animal interactions in daily life for diverse key-outcome (e.g., Friedman et al., 2013; Janssen et al., 2020), the work context has been disregarded so far. As emphasized by Pina-Cunha et al. (2019), pets "are mostly ignored by organization theory despite the existence of a rich literature on human-animal studies that help theoretical extension in the direction of organization studies" (p. 778). Thereby aiming to expand the knowledge about the intersection of pets in daily life at work, this study intends to develop a framework that explains how and when HAIs in daily (tele)work-life influence work engagement. Specifically, this research shows that when individuals who own pets are teleworking, they tend to interact frequently with their pets throughout the working day and this in turn makes them more engaged with their work due to the experienced positive ratio of affect. Moreover, individuals who score lower on their mindfulness trait appear to benefit more from these relations. Hence, this research adds scientific contribution by exploring affective (ratio

of affect) and cognitive mechanisms (mindfulness) through which daily interactions with pets influence work engagement, in the context of telework. Hence, we disentangle, how and when, this influence tends to occur.

First, the findings reveal that interacting with pets during the workday, positively predicts affect and work engagement. That is, pet owners benefit from working from home because it allows them to interact with their companion animals leading them to feel better and become more engaged in their work. Even though the study of HAIs has not been expanded to the work settings, other studies have consistently demonstrated the benefits of HAIs for affective (e.g., Maddox, 2021), cognitive (e.g., Junça-Silva, 2022), and behavioral outcomes (e.g., Love, 2021). For instance, recently Junça-Silva (2022) showed that employees who worked in organizations that allowed them to take their pets to work, felt more identified with the organization and, as a result, were happier (than workers who were not allowed to take their pets to work). Zimmerman (2016) also evidenced that pet-friendly workplaces had a more positive employer branding and thus, were more attractive to the generation Y, known as Millennials – known for their compassion and love for pets (Graham et al., 2019).

Theoretical Contributions

In line with the affective events theory, certain events are causes of affective reactions that influence the individual's attitudes (Nimon, et al., 2021; Ohly, & Schmitt, 2015). What has been disregarded so far are the daily interactions with pets during work time. However, this study adds evidence on the role of HAIs for work attitudes via affect, supporting the idea that HAIs are affective events, and thus a proximal cause for affective reactions and a distal cause for work engagement, both at the within and between-person level. By affecting the individual's daily affective experiences, HAIs

can improve the energy levels to accomplish work, the individual's concentration to do it, and their enthusiasm while performing the tasks at hand.

So, firstly, this study develops knowledge within the affective events theory by demonstrating that daily interactions with pets, in telework, may be conceived as daily uplifts – positive daily experiences that uplift the individuals' satisfaction (Junça-Silva, et al., 2021). Second, the findings suggest that interacting with the pet during the workday may lead to personal (a positive affective ratio) and organizational benefits, as work engagement has been associated with higher levels of productivity and performance (Bakker et al., 2014; Rusu, & Colomeischi, 2020).

Telework seems to be an increasingly adopted strategy by organizations (Chambel et al., 2022), hence pet owners may benefit from this, as it may allow them to interact with their pets. These interactions may be forms of micro-breaks that enable recovery during the working day. For instance, recently, Junça-Silva (2022) demonstrated that HAI were micro-breaks that served to recover workers' cognitive resources due to this relaxing and in-control moment that, in turn, contributed to performance increases. Moreover, micro-breaks have been associated with improved levels of positive affect, job satisfaction, and work engagement (Kim, et al., 2018). In consonance with this evidence, HAIs may be a resource that enables the individual to face daily work life. Hobfoll et al. (2018) suggested that when a person is full of resources becomes less vulnerable to resource loss, and at the same time, is more able to conquer more resources. Therefore, if one perceives being losing certain resources, one may get more or avoid losing more resources, for instance, by taking a break to interact with his/her pet. Creating actions to acquire resources is the only thing that may counteract resource loss and build engagement (Hobfoll et al., 2018). Thus, in

consonance with this, pets and interacting with them are relevant resources for affective and attitudinal purposes.

The third contribution is related to the moderating role of mindfulness, both in the direct effect of HAIs to work engagement and also in the indirect effect of HAIs to work engagement via affect. Even though the hypotheses have been supported, the direction of the interaction is not in line with expectations. That is, while mindfulness appears to be a condition that influences how individuals react to their interaction with pets, it amplifies the positive effect of HAIs on work engagement, directly and indirectly via affect, but for those who are less mindful. In other words, it seems that being mindful is beneficial until a certain point, as those who are less mindful appear to get more benefits from interacting with their pets, regarding work engagement (even though the mindful ones are those who have higher levels of work engagement). This may be explained because we measured socio-cognitive mindfulness (and not meditative mindfulness). The concept of socio-cognitive mindfulness is more applied to working settings as it is built in three dimensions that represent how individuals pay attention to what surrounds them (Pirson et al., 2018). Accordingly, mindful individuals are those who actively search for novel and innovative ideas, by paying attention to the environment, and by means of transforming hassles into opportunities. Plus, mindful individuals not only recognize opportunities and search for novelty but also develop efforts to implement it, as well as become highly engaged in the process itself (Junça-Silva & Caetano, 2021). On the opposite, mindless individuals are those who do not always pay attention to what is happening around them, but in terms of innovation-seeking and implementation. In this case, these individuals may not be completely immersed in an innovation-seeking-implementation process, but they may be focused on what is occurring to them (the interaction with their pet). In addition, these effects

may be explained by the strength of human-animal bonds (Barker & Barker, 1988; Nagasawa et al., 2015), which makes the individual become immersed in the pet and the interaction itself. Thus, this may explain why these individuals are the ones that see the relationship between HAIs and work engagement (directly and indirectly) become stronger.

In sum, interacting with pets during telework may be viewed as an affective event that positively influences affective reactions, and as a consequence, improves work engagement. Moreover, mindfulness is a condition that amplifies these effects, in particular for those less mindful.

Practical Contributions

The findings of this study are useful for managers who want to see their workers' engagement improved. First, the implementation of telework (even though the end of the mandatory lockdowns inherent to the pandemic crisis of COVID-19), even in a hybrid format, appears to be a reliable strategy to improve affective well-being and work engagement, on a daily basis. Moreover, this appears to be enhanced if we consider pet owners as, by being allowed to work from home, they can regularly interact with their pets, which is beneficial during the workday. Hence, from a HRM perspective, it should be useful to identify the cases that would benefit from teleworking as a strategy to improve work engagement and affective responses during work time. This can be particularly useful for those who have lower levels of work engagement; for those ones, it should be relevant to encourage pet interaction (whenever they own or like pets).

Additionally, telework may be framed within the pet-friendly policies framed in the HRM policies. Managers must acknowledge that, by working from home, pet owners do not need to be worried about (1) leaving their pets alone for long hours

(considering a working day with at least seven hours), or (2) their pets with special needs (such as aged pets, pets with some kind of health condition that implies the need of medicine during the day). Hence, allowing telework may minimize those concerns, and thus individuals can become more immersed and focused on their work tasks. The inclusion of pet-friendly policies is associated with positive and happy workplaces (Goffee & Jones, 2013; Pina-Cunha et al., 2019) and can lead to positive outcomes in the long run, such as talent attraction and retention (Wilkin et al., 2016), organizational productivity, competitive advantage, and creativity (Barker et al., 2012; Graham et al., 2019). Moreover, pet-friendly policies must be gradually framed into the HRM as it may be a suitable strategy consistent with the AMO model (Appelbaum et al., 2020). Accordingly, HRM aims to enhance employees' abilities (A), motivate them (M), and provide opportunities for them to contribute (O), and in the long run contribute to their performance and well-being (Xerry et al., 2021). Thereby, pet-friendly policies could assist HRM to attain these organizational and individual goals.

Limitations and Future Directions

Despite the positive features of this study, such as being a five-day diary study with more than 2,000 observations, and with a working sample, it has some limitations. Firstly, we have used self-reported measures, which might result in common method variance (Podsakoff, 2017; Podsakoff, et al., 2012). However, we followed some procedures to minimize this, such as the confirmatory factor analysis. Secondly, we only used a sample of teleworkers who worked in a hybrid format, hence future research would rely also on full-time teleworkers and test whether the finding effects are maintained.

These results open the way for future studies. First, future studies should test the model, with other moderators (e.g., psychological capital) and criterion variables (e.g., quality of life, well-being, performance; Kelemen et al., 2020). Second, it would be interesting to test the model with other individual characteristic moderators, for instance, considering the Big5. Third, other studies could explore to what extent work engagement is related to the individual's work-family and work-nonwork balance. At last, other studies should compare the levels of work engagement and positive affect for those who own pets and for those who do not. For instance, it should be relevant to conduct an experimental study in which the experimental condition would be the pet interaction (and a control condition without pet interaction) and thus compare the levels of, for instance, affect and engagement, between the conditions.

Conclusions

In sum, interacting with pets during telework may be viewed as an affective event that positively influences affective reactions, and as a consequence, improves work engagement. Moreover, mindfulness is a condition that amplifies these effects, in particular for those less mindful which means that the human-animal bond may be stronger than the innovation process inherent to the concept of socio-cognitive mindfulness, making individuals more connected to the HAI per se, rather than the context itself.

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