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When Gig Work Gets Ruff: The Affective Benefits of Daily Human – Animal Interactions for Mental Health

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ABSTRACT

Gig work has emerged as one of the fastest-growing employment trends, with its expansion accelerating during the COVID-19 pandemic. As this form of work continues to evolve, it has brought to light several characteristics—such as instability, isolation and lack of social support—that may adversely affect workers’ mental health. Accordingly, it is essential to identify mechanisms and conditions that can protect gig workers from psychological deterioration. Grounded in Affective Events Theory, this study investigated (1) the mediating role of daily affect ratio in the relationship between daily human-animal interactions (HAI) and mental health, and (2) the moderating role of neuroticism in this indirect relationship. Using a daily diary design involving 205 freelance journalists (5 daily observations per participant, totalling 1025 observations), multilevel analyses yielded three key findings. First, daily HAI was positively associated with mental health through its enhancement of the daily affect ratio. Second, the positive effect of daily HAI on affect ratio was stronger among individuals with higher levels of neuroticism. Third, neuroticism amplified the indirect effect of daily HAI on mental health via affect ratio. Theoretical and practical implications for supporting gig workers’ mental health are discussed.

1 | Introduction

The relationship between man and dog is a therapy without words.

(Boris Levinson)

In recent years, the gig economy has expanded rapidly, fundamentally reshaping traditional employment structures and work arrangements (Kuhn and Galloway 2019). Characterized by task-based compensation, short-term contracts and a high degree of autonomy and flexibility in terms of when, where, and how work is performed, gig work encompasses a broad range of occupations, including freelancers, independent contractors and platform-based workers (Watson et al. 2021). These workers, often classified as self-employed, typically operate outside the

framework of standard employment relationships and increasingly engage in technology-mediated, remote or app-based roles (Bernhardt et al. 2023; Spreitzer et al. 2017).

Despite offering flexibility and independence, gig work is frequently associated with significant psychological challenges, including income insecurity, social isolation and the lack of organizational support systems commonly found in traditional employment contexts (Klein et al. 2024; Spreitzer et al. 2017). The absence of coworker interaction, fluctuating income and the continuous demands of self-management contribute to heightened levels of stress, emotional exhaustion and loneliness (Cropanzano et al. 2023; Ray et al. 2024). These conditions place gig workers at increased risk of compromised mental health and reduced overall well-being (Bernhardt et al. 2023; Saksida et al. 2024).

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Within this context, human-animal interactions (HAI)—such as daily contact with a companion animal—may function as a valuable yet underexplored affective resource for supporting gig workers' psychological well-being (Junça-Silva 2025). HAI have the potential to regulate emotions, provide companionship, mitigate feelings of loneliness and isolation, restore motivation and fulfil unmet socio-emotional needs (Charles and Wolkowitz 2024; Delanoëje and Verbruggen 2024). According to the World Health Organization (2007), mental health is a state of well-being shaped by everyday experiences, including interactions with companion animals, which frequently elicit positive emotional responses (Delanoëje 2020; Herzog 2011). As such, HAI may foster emotional balance and enhance psychological functioning (Delanoëje and Verbruggen 2024; Gardner 2024).

For gig workers—particularly those working remotely—work and nonwork boundaries are often blurred, and companion animals are frequently present during working hours. Consequently, HAI may occur within the workday (e.g., between tasks, during brief breaks, or while performing work activities), rather than being confined to nonwork contexts. Drawing upon Affective Events Theory (AET; Weiss and Cropanzano 1996), we conceptualize HAI as positive work micro-events, that is, short, proximal and emotionally meaningful encounters embedded in the workday that shape daily affective states and, in turn, influence well-being (Wagner and Pina e Cunha 2021). This framing distinguishes HAI from general daily micro-events that merely co-occur with work by emphasizing their function as contextually situated affective triggers that can support emotion regulation and psychological functioning as gig workers navigate autonomous and often isolated work. Although prior research has demonstrated that HAI can benefit mental health (Martins et al. 2023), their role in occupational settings—particularly within the gig economy—remains insufficiently explored (Junça-Silva 2023; Cunha et al. 2019).

AET also emphasizes the importance of individual differences in shaping affective responses. In this regard, personality traits such as neuroticism may serve as important moderators. Neuroticism is associated with heightened emotional reactivity, increased negative affectivity and a tendency to perceive events more negatively (Lahey 2009; Lazarus 1999; Moors et al. 2013). Thus, individuals high in neuroticism may experience amplified emotional benefits from HAI, due to stronger affective contrasts between daily stressors and emotionally rewarding interactions (Junça-Silva and Silva 2022; Marciano et al. 2022).

Although interest in HAI in work contexts is growing (Sousa et al. 2022), further research is needed to examine its mechanisms and boundary conditions, especially in gig work environments where social isolation is prevalent, self-management is imperative and mental health resources are scarce. These environments are marked by inherent uncertainties—including unclear boundaries and irregular compensation—derived from project-based, task-oriented and short-term contractual arrangements (Watson et al. 2021; Spreitzer et al. 2017).

The present study employed a daily diary design, which is particularly well-suited for examining HAI and their affective consequences. This approach allows for the capture of within-person fluctuations in emotional experiences, providing insight into how

HAI influence momentary affective states rather than relying on retrospective summaries, which can introduce recall bias (Ohly et al. 2010). Daily diary methods also help disentangle day-level processes from stable individual differences, enabling the investigation of dynamic interactions between daily events and trait-level moderators such as neuroticism. While prior research has examined the effects of HAI on well-being (e.g., Goh et al. 2023), the current study extends this work by focusing on gig workers, a population characterized by precarious, isolated and highly variable work environments.

In addition, we investigated the daily affect ratio—the balance of positive to negative affect—as a mediator and examined neuroticism as a moderator, integrating trait and state processes. This design allows for a more nuanced understanding of the affective mechanisms through which daily HAI may support mental health in occupational contexts, highlighting both the temporal dynamics of daily experiences and the individual differences that shape their impact. By addressing two key gaps in the literature, the study provides insight into how HAI help gig workers manage emotional demands and preserve psychological well-being in the absence of conventional organizational structures. Furthermore, the findings have practical implications for platform-based organizations, public policy and occupational health, informing the development of inclusive, pet-friendly initiatives that promote mental health among freelance and independent workers (Kelemen et al. 2020).

2 | Theoretical Framework

2.1 | Gig Work

In recent years, gig workers have emerged as a vital and expanding segment of the global workforce, a trend that accelerated significantly during the COVID-19 pandemic (Kuhn and Galloway 2019), which drove widespread adoption of flexible, task-based employment models (Klein et al. 2024). Gig work is commonly characterized by three core features (Watson et al. 2021). First, unlike salaried employees, gig workers—typically classified as self-employed (Bernhardt et al. 2023)—are compensated per task or service delivered rather than receiving a fixed monthly income (e.g., a journalist hired for a single media assignment) (Goods et al. 2019). Second, gig work is temporary and project-based, usually structured through short-term contracts (Spreitzer et al. 2017). Third, it affords varying degrees of autonomy and flexibility, allowing workers to determine when, where, and how they complete their tasks, as well as whether to accept or decline specific assignments (Henderson et al. 2020). Accordingly, gig work is defined by autonomy, short-term engagement and often technology-mediated platforms, offering individuals flexible and decentralized working arrangements.

In addition to these core features, gig work may involve remote labour, digital platforms and crowd- or agency-based assignments (Watson et al. 2021). However, this flexibility is frequently accompanied by a lack of job security, income predictability and access to traditional organizational resources such as social support, structured routines or mental health services (Goods et al. 2019; Klein et al. 2024). Because gig workers operate outside conventional employment structures, they are typically excluded from

standard employment benefits such as pensions, health insurance and paid leave (Caza et al. 2022). These benefits are critical to individual well-being, as they help buffer against risk and life uncertainties. The limited legal and organizational accountability toward gig workers contributes to a precarious employment context, increasing their exposure to financial instability and adverse psychological outcomes (Campbell and Price 2016). The combination of unstable income, social isolation and lack of institutional support places gig workers at heightened risk for stress, emotional exhaustion and poor mental health (Myhill et al. 2023). Therefore, as the prevalence of freelancers, independent contractors and platform-based workers continues to grow (Kuhn and Galloway 2019), developing effective strategies to protect and promote their mental health has become an urgent priority.

2.2 | Human-Animal Interactions

The growing recognition of the importance of companion animals has catalysed interdisciplinary research, underscoring their physical, emotional and psychological benefits (Lee et al. 2022; Brkljačić et al. 2020; Jones et al. 2019). HAI, encompassing visual, physical, or proximity-based exchanges between individuals and their companion animals, have been shown to positively influence well-being and health (Griffin et al. 2012; Junça-Silva 2022). Empirical evidence suggests that HAI are associated with the elicitation of positive emotional states, such as joy and contentment (Junça-Silva and Moço 2025), lending support to the pet-effect hypothesis. This framework posits that companion animals contribute not only to the attenuation of negative affect but also to the enhancement of mental health via the promotion of positive emotional experiences (Herzog 2007, 2011; Phillipou et al. 2021; Westgarth et al. 2021). In line with this perspective, the World Health Organization (2007) conceptualized mental health as a state of well-being, which may be fostered through frequent and meaningful interactions with companion animals.

Companion animals are increasingly recognized as valuable sources of support, contributing to both emotional and physical well-being by mitigating symptoms of loneliness, stress and anxiety (Charles and Wolkowitz 2024). These benefits are particularly salient for individuals with limited social interactions (de Araújo et al. 2022; Bussolari et al. 2021; Lee et al. 2022; Martins et al. 2023), such as remote and gig workers, who often operate in isolation and may experience heightened levels of loneliness throughout the workday. Within the workplace context, HAI have been associated with reductions in stress and improvements in well-being, especially among individuals with introverted dispositions (Delanoëje and Verbruggen 2024; Warrilow 2024). More broadly, the presence of companion animals has been shown to support cognitive functioning, physical health and emotional stability, underscoring their relevance not only in personal life but also in professional environments (Gardner 2024; Junça-Silva 2023).

2.3 | The Mediating Role of Daily Affect Ratio

A growing body of research highlights the beneficial impact of HAI on mental health, particularly in terms of stress reduction

and overall well-being (Wagner and Pina e Cunha 2021). Central to mental health is affect—defined as the experience of positive and negative emotions, which arises in response to daily events and contextual demands (Fredrickson 2003). AET (Weiss and Cropanzano 1996) posits that individuals' emotional reactions to specific events at work—referred to as affective micro-events—play a critical role in shaping their overall affective experiences, attitudes and behaviours. These micro-events can accumulate to influence longer-term psychological outcomes, like mental health (Junça-Silva et al. 2021). Within this framework, AET offers a valuable lens through which to understand how specific workplace events, such as HAI, function as affective micro-events capable of eliciting emotional responses that influence individuals' mental states, attitudes and behaviours (Delanoëje 2020; Martins et al. 2023; Junça-Silva 2022).

Moreover, although AET is focused on how micro-events create affective responses that influence other reactions, integrating evidence from neuroscience adds explanatory depth. For example, HAI has been shown to activate neurochemical responses such as oxytocin release, which facilitates bonding and emotional regulation (Beetz et al. 2012). These neurochemical effects may partly explain the salience of HAI as emotionally meaningful micro-events, reinforcing the affective reactions they elicit and amplifying their cumulative effect on mental health over time. Thus, repeated exposure to emotionally meaningful events—such as HAI—can shape mental health over time via both cognitive-emotional mechanisms and neurochemical reinforcement.

This perspective is particularly relevant in the context of gig work, where workers often perform tasks in decentralized environments, typically outside formal organizational settings (Kuhn and Galloway 2019). Many gig workers—such as freelance journalists, designers, or translators—conduct part or all of their work from home, frequently in solitary conditions (Watson et al. 2021). In such settings, interactions with companion animals can become an integral part of daily routines, offering spontaneous affective micro-events that enhance emotional well-being (Delanoëje and Verbruggen 2024; Weber and Stewart 2020; Yu et al. 2025). For instance, pausing to stroke a companion animal can induce feelings of relaxation and satisfaction, which may positively influence the trajectory of emotional experiences throughout the day (Warrilow et al. 2024). Thus, HAI may serve as informal, restorative moments that shape the affective landscape of gig workers' daily lives.

To quantify these emotional shifts, the present study adopted the affect ratio—the balance between positive and negative affect—as a key indicator of emotional well-being (Larsen 2009). This ratio has been identified as a more accurate predictor of emotional well-being than the isolated assessment of affective states (Diener et al. 2011; Junça-Silva et al. 2021). Building on this, Junça-Silva (2022a, 2022b) introduced the 'furr-recovery method', conceptualizing HAI as affective micro-breaks that replenish self-regulatory resources and mitigate stress (Bennett et al. 2020). These brief interactions foster positive affective states, reinforcing emotional well-being and contributing to improved mental health outcomes (Albulescu et al. 2022; Sousa et al. 2022). Promoting HAI within remote or home-based gig work routines

may therefore facilitate more balanced emotional experiences, wherein positive affect outweighs negative affect—ultimately enhancing mental health (Gardner 2024).

Grounded in AET and the *furr-recovery method*, the following hypothesis was formulated:

H1. *Daily HAI will positively influence daily mental health through daily affect ratio.*

2.4 | The Moderating Role of Neuroticism

AET (Weiss and Cropanzano 1996) suggests that individuals' emotional reactions to daily micro-events are shaped by stable personality traits, like the Big Five (neuroticism, openness, extraversion, agreeableness and conscientiousness). Among these, neuroticism is a critical determinant of emotional vulnerability and psychological functioning (Widiger and Oltmanns 2017). This trait is particularly salient in the context of gig work, where individuals often face precarious employment conditions, including social isolation, income instability and limited job security (Cropanzano et al. 2023)—factors known to exacerbate affective reactivity (Xanthopoulou et al. 2023). Accordingly, this study investigates neuroticism as a moderator in the relationship between daily HAI and mental health among gig workers (Junça-Silva and Silva 2022).

Neuroticism is conceptualized as a stable dispositional trait within the Big Five personality framework, reflecting a heightened tendency to experience negative emotional states such as anxiety, sadness and irritability (McCrae and Costa 1999). It is typically associated with a pervasive negative worldview, reduced perceived control over life circumstances and elevated emotional reactivity, often manifesting in increased vulnerability to stress, frustration and affective instability (Barlow et al. 2014; Widiger and Oltmanns 2017). Individuals high in neuroticism also exhibit distinct behavioural and interpersonal patterns, which may shape how they interpret and respond to everyday micro-events (Junça-Silva and Silva 2022).

These characteristics together influence not only emotional reactivity but also the cognitive appraisals through which individuals derive meaning from daily experiences, including emotionally salient interactions such as HAI. Drawing from cognitive appraisal theory (Lazarus 1999), individuals high in neuroticism are more likely to evaluate HAI as emotionally protective and soothing, due to their heightened sensitivity to sources of social and emotional reassurance (Baines and Oliva 2024). In this context, the non-evaluative, supportive presence of companion animals may function as a valuable emotional resource, particularly within the emotionally demanding and unpredictable nature of gig work (Reevy and Delgado 2020).

Neurotic individuals also exhibit greater sensitivity to emotional stimuli and are more motivated to seek positive experiences to counterbalance their baseline distress (Kalokerinos et al. 2020). Consequently, they may experience stronger affective responses to HAI, both cognitively and neurobiologically. Research indicates that HAI trigger oxytocin and dopamine release—neurochemical processes associated with reward and

stress regulation, which may be amplified among those with higher neuroticism (Wells and Treacy 2024). Additionally, the multisensory nature of HAI (e.g., tactile stimulation, eye contact and behavioural mimicry) functions as an automatic affective regulator, reducing rumination and cognitive overload (Gobbo and Zupan 2020). Repeated interactions may lead to implicit emotional conditioning, reinforcing the positive association between HAI and mental health over time (Schulze et al. 2024). Thus, oxytocin serves as a biological correlate of the positive emotions elicited by such interactions—reinforcing the emotional salience of the event and potentially enhancing its cognitive appraisal as rewarding or supportive.

Moreover, because HAI are inherently rewarding, emotionally salient and readily accessible during the workday, they may serve as potent micro-breaks that elicit positive affect and temporarily counterbalance negative emotional states. In other words, the heightened sensitivity of neurotic individuals may make them particularly responsive to the emotional uplift provided by HAI. Therefore, individuals high in neuroticism may derive disproportionate psychological benefits from daily HAI, particularly within the emotionally volatile context of gig work (Jabagi et al. 2019; Ray et al. 2024). These interactions may help offset their negative emotional baseline, fostering a more favourable affective ratio and promoting mental health (Fredrickson 2001; Phillipou et al. 2021). Based on this rationale, we propose the following hypotheses:

H2. *Neuroticism will moderate the relationship between daily HAI and daily affect ratio, in such a way that the relationship will be stronger when individuals have higher levels of neuroticism (versus lower levels of neuroticism).*

H3. *Neuroticism will moderate the indirect relationship between daily HAI and mental health through daily affect ratio, such that the relationship will be stronger when individuals have higher levels of neuroticism (versus lower levels of neuroticism).*

3 | Method

3.1 | Procedure and Participants

This study employed a general survey alongside a daily diary design conducted over five consecutive working days (Monday to Friday). Both surveys were administered online via Qualtrics, with date and time stamps automatically recorded to ensure accurate temporal data. Data collection occurred between February and April 2025.

The sample was intentionally limited to freelance journalists to maintain homogeneity in work type within the gig economy and to focus on a segment characterized by frequent remote work and potential daily companion animal interactions. Eligibility criteria included: (1) ownership of at least one companion animal living within the participant's household, and (2) active engagement in gig work as an independent contractor, specifically as a freelance journalist. These criteria ensured that participants had regular opportunities for HAI and were representative of gig workers with relevant work characteristics.

Participants were recruited through LinkedIn. Freelance journalists were initially identified via professional networks and journalism groups on LinkedIn and invited to participate in a study investigating the potential effects of HAI on daily work life. Those who expressed interest provided their phone numbers or email addresses, enabling the research team to distribute detailed study instructions and daily survey links via private WhatsApp messages.

To maximize compliance and engagement, daily survey reminders were sent through WhatsApp at 7:00 PM, with participants requested to complete the survey by 11:00 PM on the same day. Before participation, participants were assured of confidentiality and anonymity, and informed consent was obtained. Participants did not receive monetary compensation; however, as an incentive, they were offered personalized feedback reports summarizing their affective patterns and work well-being at the end of the study.

A total of 367 freelance journalists who owned at least one companion animal were invited to participate in the study. Of these, 324 completed the general survey (response rate: 88.28%), 296 completed at least one daily survey (response rate: 80.65%), and 205 participants completed all five daily surveys (response rate: 55.85%), resulting in a total of 1025 measurement occasions. Participants who did not meet the eligibility criteria—namely, having at least one companion animal and working as a gig worker under an independent contract—were excluded from the study, including those with traditional employment contracts. Although multilevel models can accommodate unbalanced diary data, we focused on participants who completed all five daily surveys to ensure a comparable observation window across individuals and sufficient within-person information for reliable estimation of day-level effects.

The sample comprised exclusively gig workers, specifically freelance journalists. In terms of demographics, 49% of participants identified as female, with a mean age of 32.71 years ($SD = 12.33$) and an average of 12.00 years ($SD = 11.92$) of professional experience. Participants reported working an average of 36.16 h per week ($SD = 9.24$), and 15% indicated holding editorial responsibilities within their freelance roles. Regarding pet ownership, participants reported an average of 1.53 companion animals ($SD = 0.49$), with a mean ownership duration of 10.82 years ($SD = 8.89$). Dogs were the most frequently reported companion animals (70.14%), followed by cats (54.60%). All companion animals resided within the participants' households.

3.2 | Measures

General survey. A general survey was administered to collect sociodemographic data and the inter-individual variable neuroticism. This survey was completed once, 1 week prior to the daily surveys. Neuroticism was measured using two items from the Big Five Inventory-10 (BFI-10; Rammstedt and John 2007), such as 'I get nervous easily'. And 'I am relaxed, handle stress well'. Participants rated their agreement on a five-point Likert scale, ranging from 1 (*totally disagree*) to 5 (*totally agree*) ($\alpha = 0.75$).

Daily survey. The daily surveys adhered to established best practices for daily diary research, with all items rephrased in the past tense and prefaced by 'Today ...' to capture participants' experiences within the specific day (Ohly et al. 2010).

HAI. Three items were used to measure daily HAI during the workday (Junça-Silva 2024; 'Today, I took breaks during work to interact with my companion animal.'; 'Today, during work, my companion animal was close to me.' and 'Today, during work, I pet my furry friend.'). Participants responded using a five-point Likert scale (1—*never*; 2—*once*; 3—*two/three times per day*; 4—*four/five times per day*; 5—*more than six times per day*; $\alpha = 0.95$).

Affect. We employed 16 items from the Multi-Affect Indicator (Warr et al. 2014) to assess affective states, capturing both positive (e.g., 'enthusiasm') and negative (e.g., 'sadness') emotions. Participants rated each item on a five-point Likert scale ranging from 1 (never/almost never) to 5 (always/almost always), with the scale demonstrating high internal consistency ($\alpha = 0.89$). Following established procedures (Larsen 2009), the daily affect ratio was computed by dividing the aggregated positive affect score by the aggregated negative affect score, thereby providing a robust indicator of affective balance (Diehl et al. 2011; Junça-Silva et al. 2021).

Mental health. Three items from the Health Survey SF-36v2 (Ware et al. 2007) were used. An example item was: 'Today, how long did you feel calm and peaceful?' Items were answered on a five-point Likert scale (1—*none of the time*; 5—*almost all the time*) ($\alpha = 0.73$).

Control variables. The day of data collection (from Monday to Friday) was used because due to the daily nature of the data, it could influence the criterion variable (e.g., Hox and Boeije 2005).

3.3 | Data Analysis

Confirmatory factor analyses (CFA) were conducted using JASP software to validate the measurement models. The multilevel moderated mediation model was tested in SPSS using the MLMed macro (Rockwood 2020), which is specifically designed to handle complex mediation and moderation analyses in nested data structures. Given the hierarchical nature of the data—with daily observations (Level 1) nested within individuals (Level 2)—we computed the intraclass correlation coefficients (ICCs) for the key variables: daily HAI, affect ratio and mental health (Hox 2010). The ICC values were 0.46, 0.53 and 0.31, respectively, indicating that 46%, 53% and 31% of the variance in these variables was attributable to between-individual differences, with the remaining variance reflecting within-individual variability across days. Since all ICCs exceeded the commonly referenced threshold of 0.05 (Marcoulides and Schumacker 2013), this indicated meaningful clustering in the data and supported the use of multilevel modelling to appropriately account for the nested structure (days nested within individuals) and to estimate both within-person and between-person effects.

All indirect effects are estimated using multilevel analysis, which separates within-person (day-level) and between-person

(trait-level) variance. The reported coefficients for the mediation paths reflect the within-person associations between daily HAI, the daily affect ratio and mental health. Conditional indirect effects were calculated using Monte Carlo simulations with 20,000 replications to obtain 95% confidence intervals for the indirect effect at different levels of neuroticism, consistent with established multilevel mediation procedures (Preacher and Selig 2012).

4 | Results

4.1 | Descriptive Statistics

Table 1 presents the descriptive statistics.

4.2 | Confirmatory Factor Analyses

The proposed model demonstrated an adequate fit to the data (see Table 2).

4.3 | Hypotheses Testing

Figure 1 presents the model coefficients. The findings indicated that daily HAI were positively associated with daily affect ratio ($\gamma = 0.32, p < 0.01$), suggesting that on days when individuals interacted more with their companion animals, they tended to experience a more favourable balance of positive over negative

emotions. In turn, a higher affect ratio was significantly related to better mental health ($\gamma = 0.09, p < 0.05$), implying that feeling more positive than negative emotions during the day contributed to improved mental health.

The results showed a statistically significant within-person indirect effect of daily HAI on daily mental health through affect ratio ($\gamma = 0.10, p < 0.01, 95\% \text{ CI } [0.02, 0.20]$). Thus, H1 received support.

Results also provided support for H2. They showed a significant interaction effect between daily HAI and neuroticism ($\gamma = 0.31, p < 0.01, 95\% \text{ CI } [0.12, 0.48]$) (Table 3). As shown in Figure 2, the relationship between daily HAI and daily affect ratio became stronger for individuals with higher levels of neuroticism (versus lower levels). In other words, affect ratio depended more on daily HAI when individuals had higher levels of neuroticism.

The results also revealed a significant moderated mediation effect ($\gamma = 0.03, 95\% \text{ CI } [0.01, 0.05]$), providing empirical support for H3. To further interpret this effect, we examined the conditional indirect effects at different levels of neuroticism ($\pm 1 \text{ SD}$). The indirect effect of daily HAI on mental health via affect ratio was stronger at higher levels of neuroticism ($\gamma = 0.057, p < 0.01$) and substantially weaker at lower levels of neuroticism ($\gamma = 0.001, p < 0.05$). These findings indicated that neuroticism strengthened the indirect relationship between daily HAI and mental health through affect ratio, such that the beneficial emotional mechanism was more pronounced among individuals higher in neuroticism.

TABLE 1 | Descriptive statistics.

Variables	M	SD	CR	AVE	MSV	1	2	3	4	5
1. HAI	2.54	0.93	0.95	0.85	0.14	(0.92)	0.37**	0.22**	—	0.01
2. Affect ratio	1.91	1.22	0.89	0.51	0.20	0.44**	(0.71)	0.45**	—	-0.03
3. Mental health	3.51	0.80	0.80	0.57	0.20	0.25**	0.51**	(0.75)	—	-0.02
4. Neuroticism	3.09	1.05	0.83	0.63	0.04	-0.14*	-0.21**	-0.20**	(0.79)	—
5. Day	—	—	—	—	—	0.01	0.02	-0.02	0.01	—

Note: Zero-order correlations are presented below the diagonal ($N = 205$). Person-centered correlations are presented above the diagonal ($N = 1025$). The correlation between neuroticism and intra-individual level variables was not calculated because only cross-sectional data was collected for neuroticism. The square roots of the Average Variance Extracted (AVE) are within the range ().

Abbreviations: AVE = average variance extracted; CR = composite reliability; HAI = human-animal interactions; M = mean; MSV = maximum shared variance; SD = standard deviation.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

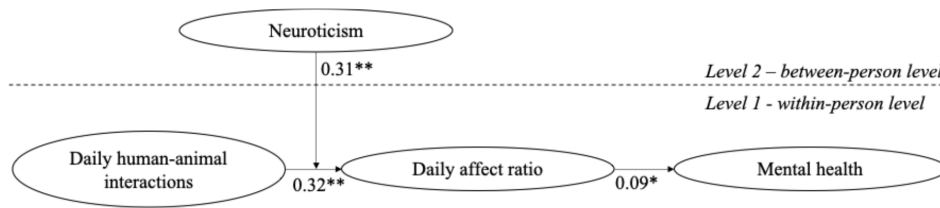
TABLE 2 | Fit statistics for models based on confirmatory factor analyses.

Modelo	$\chi^2/(df)$	RMSEA	CFI	TLI	SRMR	Comparison	$\Delta\chi^2$	Δdf	p	
M1	<i>4 latent factors</i>	3.76	0.10	0.95	0.93	0.07	—	—	—	
M2	3 latent factors	5.85	0.15	0.91	0.87	0.09	M2-M1	61.614	2	< 0.001
M3	2 latent factors	12.42	0.22	0.76	0.69	0.14	M3-M1	331.781	10	< 0.001
M4	1 latent factors	34.38	0.39	0.29	0.08	0.22	M4-M1	1113.042	11	< 0.001

Note: Model with the best fit in italics. M1: Daily HAI, affect ratio, mental health and neuroticism were placed into four latent factors. M2: Affect ratio and mental health were placed into a single factor plus daily HAI, and neuroticism into two separate latent factors. M3: Affect ratio, mental health and daily HAI were placed into a single factor plus neuroticism in another latent factor. M4: All variables (daily HAI, affect ratio, mental health and neuroticism) were placed into a single latent factor.

Abbreviations: CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual; TLI = Tucker-Lewis's index.

Source: authors' own work.



Moderated mediated index: $\gamma = 0.03$, IC 95% = [0.01, 0.05]

FIGURE 1 | Multilevel moderated model results. *Source:* authors' own work.

TABLE 3 | Multilevel results.

	Affect ratio	Mental health
HAI	0.32**	0.13**
Affect ratio		0.09**
Neuroticism	0.94**	—
HAI*neuroticism	0.31**	—
Within-person direct effect	0.13** 95% CI [0.03, 0.22]	
Within-person indirect effect	0.10** 95% CI [0.02, 0.20]	
Within-person moderated mediation index	0.03** 95% CI [0.01, 0.05]	

Source: authors' own work.

* $p < 0.05$.

** $p < 0.01$.

5 | Discussion

Grounded in AET (Weiss and Cropanzano 1996), this study examines how daily HAI affect the daily affect ratio and mental health among gig workers—a workforce characterized by job insecurity, social isolation and flexible work arrangements (Kuhn and Galloway 2019; Klein et al. 2024). Findings indicate that daily HAI improve mental health by enhancing the balance of positive to negative affect (Fredrickson 2001). Neuroticism moderates this indirect effect, with individuals higher in neuroticism experiencing greater emotional benefits from HAI (Widiger and Oltmanns 2017; Junça-Silva and Silva 2022). These results highlight the importance of considering personality differences when evaluating HAI's role as an affective resource, particularly in gig work contexts where mental health risks are elevated (Saksida et al. 2024). Understanding these dynamics is crucial for designing effective interventions to support gig workers' mental health.

5.1 | Theoretical Implications

This study makes two key theoretical contributions. First, it advances AET by conceptualizing daily HAI as micro-affective events that shape employees' emotional states and mental health. Findings reveal that daily HAI enhance mental health by promoting a higher affect ratio, fostering improved mood and psychological well-being (Fredrickson 2003). Consistent with AET, these micro-events elicit emotional responses that influence cognition

and behaviour (Weiss and Cropanzano 1996), underscoring the role of daily HAI in workplace affective experiences.

These findings also align with prior research on HAI's psychological benefits, including stress reduction and increased well-being (Junça-Silva 2022; Delanoije and Verbruggen 2024). Even brief interactions with companion animals provide emotional respite from work demands, improve emotional balance and enhance job satisfaction (Sousa et al. 2022; Grajfoner et al. 2021). Together, these results highlight the broader organizational and individual benefits of integrating HAI into work practices, particularly for remote and gig workers.

Second, this study demonstrates how neuroticism moderates the HAI–mental health relationship. Individuals high in neuroticism experience more pronounced boosts in positive affect from HAI, likely due to heightened sensitivity to emotional stimuli and a greater need for affective regulation (Barlow et al. 2014). Companion animals provide non-judgmental companionship and emotional safety (Martins et al. 2023), which neurotic individuals unconsciously perceive as restorative. These interactions reinforce positive emotional responses through cognitive appraisal processes (Lazarus 1999) and neurochemical mechanisms, such as oxytocin release (Friedmann et al. 2023; Beetz et al. 2012). Over time, repeated HAI may function as conditioned cues of comfort and stability, illustrating how personality traits shape the affective benefits derived from micro-events.

In sum, the study demonstrates that daily HAI enhance emotional well-being among gig workers, with neurotic individuals benefiting most. These findings advance AET by illustrating how contextually embedded micro-affective events interact with stable personality traits to influence mental health, offering both theoretical and practical insights for supporting well-being in flexible, isolated, or pet-friendly work environments.

5.2 | Limitations and Future Research

A key limitation of this study concerns the relatively short data-collection window, which spanned only five consecutive days. Although daily diary designs offer valuable insights into within-person processes, this limited time frame may restrict the temporal robustness and generalizability of the findings. Future research would benefit from longer sampling periods to better capture the dynamics and stability of human–animal interactions (HAI) and their implications for mental health, as well as to detect potential fluctuations and longer-term patterns that may strengthen external validity.

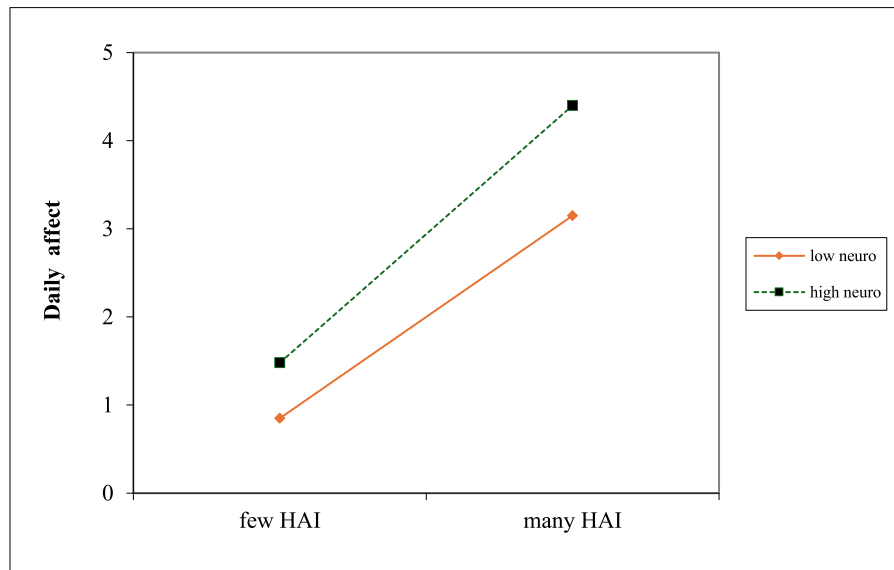


FIGURE 2 | Interaction between daily HAI and neuroticism. Daily affect = daily affect ratio. *Source:* Authors' own work.

A second limitation is that our sample included only participants who had exposure to animals; therefore, we were unable to compare outcomes with individuals without such exposure. Accordingly, future studies should recruit participants both with and without animal exposure to enable direct comparisons and enhance the generalizability of the conclusions.

In addition, all variables were assessed using a single daily measurement point, which precluded temporal separation between predictors, mediators and outcomes within the same day. This design limits the strength of causal inferences regarding the directionality of effects, as it does not capture potential time-lagged associations or the unfolding of processes across the day. Future research using multiple assessments per day would allow for a more fine-grained examination of temporal ordering among HAI, affective responses and mental health outcomes, thereby providing stronger evidence regarding the mechanisms underlying these relationships.

Another limitation is the reliance on self-report measures, which may increase the risk of common method bias (Podsakoff et al. 2024). Although self-reporting is a practical and widely used approach for assessing affective experiences (Fernández del Río et al. 2019), and our measures demonstrated good reliability—with CFA results suggesting that common method variance was not a major concern—this possibility cannot be fully ruled out. Future studies could address this issue more robustly by adopting time-lagged designs and/or incorporating multi-source or objective indicators to reduce shared method variance and strengthen causal interpretations.

Moreover, neuroticism was assessed using only two items, which may limit construct validity and reduce the depth with which this complex trait is captured. Future research should consider more comprehensive measures to improve precision and reliability.

Finally, it is possible that the association between HAI and improved affective experiences was influenced by unmeasured third variables, such as daily workload, perceived busyness or

time availability. For example, on less demanding days, participants may have had more opportunities to interact with their companion animals, which could independently contribute to more positive affect. Although the within-person design accounts for stable individual differences, it does not fully control for daily contextual fluctuations. Future research should incorporate measures of daily demands and situational constraints to test whether the effects of HAI persist when accounting for these potential confounds.

The present findings also open several avenues for future research. While we focused on neuroticism, other personality traits (e.g., extraversion, openness, agreeableness, conscientiousness) and state-like daily traits (e.g., daily neuroticism) may also shape the strength and direction of the HAI–mental health relationship. For instance, extraversion may amplify the benefits of HAI due to stronger social orientation, whereas openness may influence how individuals cognitively appraise and derive meaning from these interactions. Adopting broader personality frameworks and person-centered approaches (e.g., profiles) may therefore provide deeper insight into for whom and under what conditions HAI is most beneficial.

Future studies could also integrate objective health indicators to complement self-reported outcomes and provide a more comprehensive understanding of HAI's benefits. Additionally, examining whether effects differ across companion animal species could further refine the scope of these conclusions, as pets beyond dogs may also contribute to well-being (Junça-Silva 2023). Finally, incorporating more nuanced assessments of interaction quality—alongside animal type and specific behaviours—would allow for a more detailed understanding of how different forms of HAI relate to mental health outcomes.

5.3 | Practical Implications

The results underscore the significant role of HAI in enhancing affective well-being and mental health, particularly among

gig workers. As independent contractors often face greater job insecurity, isolation and limited access to organizational support structures (van der Zwan et al. 2020), daily interactions with companion animals may serve as a vital source of emotional regulation and mental health. These findings align with the growing societal and organizational recognition of the value of companion animals (Junça-Silva et al. 2022) in promoting well-being (Delanoije and Verbruggen 2024).

For organizations engaging freelance or gig-based talent, implementing pet-friendly practices—such as virtual pet check-ins, flexible schedules for pet care, or even co-working spaces that accommodate companion animals—could contribute to improved mental health, greater work-life harmony and enhanced engagement. These practices also offer broader organizational benefits, including improved employer branding, talent attraction and retention and the cultivation of a more inclusive and human-centered work environment (Junça-Silva 2023).

Nevertheless, it is crucial to consider the diverse needs of the workforce. Not all individuals may feel comfortable around animals due to allergies, phobias or religious considerations. To ensure inclusivity, organizations should conduct diagnostic assessments to evaluate workers' openness to pet-friendly practices and to identify potential concerns. This allows for the development of tailored strategies that support well-being without causing discomfort or distraction.

6 | Conclusion

This study highlights the positive relationship between daily HAI and mental health, showing that fewer daily HAI are associated with a lower affect ratio. Neuroticism moderates the indirect relationship between HAI and mental health through affect, with individuals higher in neuroticism benefiting more from HAI. These individuals require more frequent HAI to experience an increase in positive emotions and improve their mental health.

Author Contributions

Ana Junça-Silva: methodology, conceptualization, writing – review and editing, project administration, software, formal analysis, data curation, supervision, resources, writing – original draft, investigation, funding acquisition.

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Ethics 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.

Consent

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

Conflicts of Interest

The author declares no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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