Invisible at work, but visible at home: The Indirect Effect of Ostracism on Mental Health and the Buffering-Role of Human-Animal Interactions

Abstract

Aim: Drawing on the integrated model of workplace ostracism and the Conservation of Resources (COR) theory, we developed and tested a multilevel model to explore the mechanisms and boundary conditions through which workplace ostracism affects employee mental health. Methodology: In Study 1, a time-lagged field study involving 498 employees, workplace ostracism was associated with higher levels of negative affect, which in turn predicted lower levels of mental health. Findings: Study 2, a daily diary study with multiple daily measurement points, replicated the indirect effect observed in Study 1 and further demonstrated that interactions with companion animals attenuated the relationship between workplace ostracism and negative affect. Multilevel analyses revealed that end-of-day human-animal interactions moderated the indirect effect of workplace ostracism on mental health via negative affect, such that the indirect effect was weaker on days when employees engaged in more frequent interactions with their companion animals. Originality: Together, these findings underscore the buffering role of human-animal interactions in mitigating the harmful consequences of workplace ostracism on mental health, thereby advancing theory and research on both workplace ostracism and human-animal interaction.

Keywords: workplace ostracism; negative affect; mental health; human-animal interactions.

Introduction

Mental health has emerged as a critical issue for both scholars and practitioners, given its profound implications for employee functioning and organizational effectiveness (Junça-Silva & Silva, 2022; Luong & Green, 2023). The World Health Organization (2018) defines mental health as a state of well-being in which individuals recognize their abilities, cope effectively with everyday stressors, work productively, and contribute to their communities. Despite growing organizational attention to mental health, several workplace factors continue to jeopardize it, with workplace ostracism emerging as a particularly damaging social stressor (Dash et al., 2024).

Workplace ostracism, defined as the experience of being deliberately ignored or excluded in situations where social interaction is expected (Robinson et al., 2013), has been consistently associated with negative psychological outcomes, including burnout (Shafique et al., 2020), anxiety, depression (Ferris et al., 2008; Wu et al., 2012), and overall psychological distress (Spoelma et al., 2021). Such exclusionary experiences threaten fundamental psychological needs, particularly the need to belong (Baumeister & Leary, 1995), elicit emotional pain (Riva et al., 2011), and contribute to increased negative affect (Smart Richman & Leary, 2009)—a key antecedent of declining mental health (Jebb et al., 2020; Zhao & Zhou, 2020). The integrated model of workplace ostracism (Robinson et al., 2013) emphasizes the pragmatic, psychological, and behavioral consequences of exclusion, and a growing body of empirical research affirms the negative effects of ostracism on employee mental health (Ferris et al., 2008; Hitlan et al., 2006; O'Reilly & Robinson, 2009). A recent meta-analysis further reinforces the widespread impact of ostracism on employee' mental health (Bedi, 2021).

Although the link between workplace ostracism, negative affect, and deteriorating mental health is well-established (Reinhard et al., 2020; Yang et al., 2022),

the conditions under which these adverse effects can be mitigated remain insufficiently explored. While some studies have highlighted the buffering effects of interpersonal social support (Bavik et al., 2020; Nielsen et al., 2020), little attention has been paid to alternative sources of emotional support—particularly companion animals.

Increasingly, companion animals are not merely viewed as pets but are regarded as emotional kin (Barcelos et al., 2023; Junça-Silva, 2025c), often treated as integral members of the family (Applebaum et al., 2021). In some cases, individuals even prefer their company over that of other humans (e.g., spouse), as human relationships are frequently perceived as more complex, frustrating, or emotionally taxing, whereas bonds with animals tend to be more stable, fulfilling, and low in conflict (Turcsán et al., 2025). Companion animals thus play a central and growing role in people’s lives, providing a unique form of social and emotional support characterized by consistent companionship (Mueller et al., 2021) high-quality interactions (Lea et al., 2024), and unconditional affection (Junça-Silva, 2024a). An expanding body of research underscores their psychological benefits: companion animals offer emotional comfort (Junça-Silva, 2025a), alleviate loneliness (Junça-Silva, 2025b, c), foster a sense of connectedness (Sudbury-Riley, 2024), and enhance overall well-being (Bowen et al., 2020; Wood et al., 2015). Despite this growing recognition, the potential of human-animal interactions (HAI) as emotional buffers in organizational contexts—particularly in response to social stressors like workplace ostracism—remains significantly underexplored in the literature (Delanoeije & Verbruggen, 2024).

Building on Conservation of Resources (COR) theory (Hobfoll, 1989), we propose that companion animals function as emotional resources that help fulfill the fundamental need for belonging (Baumeister & Leary, 1995) and mitigate the emotional impact of social exclusion. Existing research suggests that companion animals can

provide emotional comfort (Kelemen et al., 2020), reduce feelings of loneliness and exclusion (Guastello et al., 2017; Junça-Silva, 2023a; Sousa et al., 2022), and help restore emotional equilibrium (Junça-Silva, 2024 c, d). Therefore, frequent HAI may buffer the effects of daily workplace ostracism, decrease negative affect, and protect employee mental health.

In this study, we integrate the workplace ostracism model (Robinson et al., 2013) with COR theory to examine how daily experiences of ostracism affect mental health through negative affect, and whether HAI serves as a moderating resource in this process. Specifically, we propose that daily ostracism increases negative affect, which in turn diminishes mental health. However, we hypothesize that daily HAI attenuates this relationship by reducing the emotional toll of exclusion (see Figure 1). To address these aims, we conducted two complementary studies.

Study 1 employed a time-lagged design to test the indirect effect of workplace ostracism on mental health via negative affect, thereby establishing a robust emotional mechanism operating within individuals over time. Study 2 built upon and extended these findings by incorporating a key boundary condition— (HAI)—to examine whether HAI could buffer the negative emotional impact of ostracism on mental health. By doing so, Study 2 enabled the testing of a moderated mediation model, consistent with the COR theory. The rationale for considering HAI in Study 2 lies in its potential role as a dynamic, fluctuating source of emotional support (Delanoeije & Verbruggen, 2024)—one that may inhibit or magnify within-person changes in mental state across days. By treating HAI as a daily variable, we were able to explore how day-to-day HAI help restore emotional equilibrium in response to daily workplace ostracism. This design refinement allowed us to assess not only how such exclusionary events deplete emotional resources on a daily basis but also how HAI may serve as a restorative

counterforce, thereby protecting employees’ mental health. Taken together, the two studies provide a more nuanced and ecologically valid understanding of the affective process linking ostracism to mental health and the moderating role of HAI.

This research offers several theoretical and practical contributions. Theoretically, it advances understanding of the mechanisms through which workplace ostracism undermines mental health, while identifying HAI as a novel boundary condition. While past research has primarily focused on the negative effects of ostracism (Yang et al., 2022), few studies have examined conditions under which these effects are mitigated (Asmita et al., 2025; Bavik et al., 2020). Our findings also contribute to the literature on business ethics by emphasizing the psychological costs of exclusion and proposing concrete strategies for improving employee mental health. By framing HAI as a work-life resource (Junça-Silva, 2025a), our study aligns with enrichment theory and the broader work–nonwork interface literature (Junça-Silva, 2024b). Given that younger generations tend to form strong emotional bonds with their pets (Delanoeije & Verbruggen, 2024), organizations may benefit from implementing pet-friendly policies that support their employees’ mental health and the balance between work and life with companion animals.

Finally, this study responds to growing calls for research at the intersection of companion animals and organizational life (Kelemen et al., 2020). By demonstrating that HAI can buffer the negative impact of workplace ostracism on mental health, we offer a novel perspective on emotional and social support mechanisms within organizations. Our findings also provide actionable insights for managers seeking to foster more inclusive and psychologically supportive work environments through the implementation of pet-friendly policies.

--Figure 1--

Theory and Hypotheses Development

Workplace Ostracism, Negative Affect Mental Health

Recent research has increasingly underscored the importance of mental health in the workplace, given its critical role in employee well-being, organizational functioning, and productivity (Luong & Green, 2023; Wang et al., 2025). Mental health refers to an individual's capacity to cope with daily demands, work efficiently, and contribute to their community (WHO, 2018). It encompasses emotional well-being and optimal psychological functioning (Bassi et al., 2021), whereas its deterioration is associated with increased distress, feelings of alienation, and diminished self-worth (Williams, 2011).

Among the various psychosocial stressors in the workplace, ostracism stands out as a particularly harmful experience (Christensen-Salem et al., 2021), with well-documented adverse effects on mental health (Shafique et al., 2020; Wang et al., 2022). Defined as the deliberate omission of socially appropriate interactions with an individual (Robinson et al., 2013), workplace ostracism can take the form of verbal exclusion, social rejection, or organizational avoidance (Anderson, 2019). Its severity depends on its duration, scope, and the number of individuals involved—chronic, pervasive, and targeted forms tend to produce the most detrimental psychological and behavioral outcomes (Robinson et al., 2013).

The integrated model of workplace ostracism (Robinson et al., 2013) and the workplace ostracism process model (Howard et al., 2019) explain how ostracism contributes to the erosion of mental health through affective and resource-based mechanisms. By threatening fundamental psychological needs—particularly the need for relatedness (Deci & Ryan, 2012)—ostracism elicits distress, anxiety, and depressive

symptoms (O'Reilly et al., 2014). From a conservation of resources (COR) perspective (Hobfoll, 1989), ostracism represents a loss of social and emotional resources, thereby increasing vulnerability to emotional exhaustion and burnout (Dash et al., 2024; Qian et al., 2019). Notably, even sporadic instances of ostracism can significantly undermine well-being (Sharma & Dhar, 2022), provoking negative emotions such as anger, frustration, and sadness (Chow et al., 2008; Diener et al., 2020), while impairing social integration and job satisfaction (Asmita et al., 2025). Over time, these effects may accumulate, leading to chronic stress, depressive symptoms, burnout, and a sense of detachment from work (Anjum et al., 2020; Ferris et al., 2008; Williams, 2011).

Building on this theoretical foundation, we argue that workplace ostracism contributes to long-term declines in mental health by increasing negative affect. Accordingly, we propose the following hypothesis:

Hypothesis 1. Workplace ostracism has a negative indirect effect on employee mental health through negative affect.

The Moderating Role of Human-Animal Interactions

Both theoretical frameworks and empirical findings suggest that the detrimental consequences of workplace ostracism can be attenuated under certain conditions (Sharma & Dhar, 2022). According to the integrated model of workplace ostracism (Robinson et al., 2013), its impact is contingent upon various contextual and individual factors—most notably the availability of social support (Robinson et al., 2013; Sharma & Dhar, 2024). This support may stem from close interpersonal relationships, including family members, friends, and significant others (Asmita et al., 2025). Social support has long been recognized as a critical protective factor (Dash et al., 2024), as individuals embedded in strong social networks are more likely to appraise experiences of exclusion

as less threatening (Robinson et al., 2013), exhibit reduced negative emotional reactions (Bavik et al., 2020), and adopt more adaptive coping strategies (Nielsen et al., 2014), thereby mitigating occupational stress (Selvarajan et al., 2013). Through these mechanisms, diverse sources of support can fulfill threatened psychological needs and help replenish emotional resources depleted by ostracism (Hobfoll et al., 2018).

A substantial body of literature confirms the buffering role of social support in alleviating adverse psychological outcomes (Zhang et al., 2023) and facilitating effective coping in the face of stressors (Reinhard et al., 2020; Nielsen et al., 2014). However, alternative sources of social support—particularly those provided by companion animals—have received limited attention in the context of workplace ostracism (Delanoeije & Verbruggen, 2024). Emerging evidence suggests that HAI may constitute a valuable non-traditional form of emotional support, especially in adverse contexts such as ostracism at work (Junça-Silva, 2023b, 2025a,b; Sudbury-Riley, 2024).

Companion animals are increasingly perceived not merely as “pets,” but as emotional kin and integral members of the family unit (Applebaum et al., 2021; Barcelos et al., 2023). Notably, some individuals report a preference for the company of animals over humans, citing the greater emotional stability, reliability, and lower risk of interpersonal conflict associated with human–animal bonds (Turcsán et al., 2025). These relationships offer continuous companionship, emotional security, and unconditional acceptance (Bowen et al., 2020; Wood et al., 2015), which can be particularly comforting during periods of emotional distress, such as those triggered by workplace ostracism (Behler et al., 2020; Martins et al., 2024; Wang et al., 2025).

Although owning a companion animal may entail certain challenges—such as time demands and financial costs (Barcelos et al., 2023)—the psychological and emotional benefits generally outweigh these constraints (Lea et al., 2024). Indeed, HAI

have been consistently associated with a wide range of positive outcomes, including reduced stress and loneliness, enhanced resilience, and improved overall psychological well-being (Delanoeije, 2020; Junça-Silva, 2024a). As previous studies have shown that support from family members and romantic partners buffers the negative effects of workplace ostracism (Fiset et al., 2017; Feng et al., 2023; Reinhard et al., 2020), and given evidence that individuals may, at times, prefer human–animal over human–human relationships (Turcsán et al., 2025), it is plausible that regular and meaningful interactions with companion animals—particularly during or after the workday—can elicit comparable restorative effects by replenishing depleted emotional resources (Junça-Silva, 2022a, 2022b).

Grounded in COR theory (Hobfoll, 1989), we propose that end-of-day HAI function as an affective recovery mechanism, mitigating the perceived harm and threat associated with ostracism (Robinson et al., 2013). Moreover, such interactions may foster a renewed sense of belonging and self-worth (Junça-Silva & Galrito, 2024), thereby contributing to enhanced mental health. Based on this reasoning, we posit that HAI moderate the emotional consequences of workplace ostracism, buffering its negative impact on affective states and mental health.

Hypothesis 2. End-of-the-day HAI moderate the relationship between workplace ostracism and negative affect, such that the relationship is weaker among employees who report more HAI compared to those who report fewer HAI.

Hypothesis 3. End-of-the-day HAI moderate the indirect effect of workplace ostracism on employee mental health via negative affect, such that the indirect effect is weaker when employees engage in more HAI at the end of the day compared to fewer HAI.

Overview of Studies

The hypotheses were examined across two complementary studies. Study 1 included a sample of 498 working adults and employed a two-wave design to reduce common method bias (Podsakoff et al., 2024). Study 2 adopted a daily diary methodology, involving 85 working adults who provided data twice daily over multiple workdays. This second study served two purposes: to replicate the findings from Study 1 and to test the proposed moderated mediation model using multilevel data, with HAI as a moderator. Furthermore, the diary design enabled the investigation of both within-person fluctuations and between-person differences in the relationships among workplace ostracism, negative affect, HAI, and mental health.

Study 1

Method

Participants and Procedure

The Human Resources Director of a Portuguese insurance company was initially contacted via email, which detailed the study's objectives. A follow-up meeting was arranged to discuss the data collection procedures. Following formal approval, the HR Director disseminated an internal email to all employees, outlining the study, assuring voluntary participation, and emphasizing data confidentiality.

A total of 700 randomly selected employees received invitation letters and surveys in sealed envelopes. The Time 1 survey collected socio-demographic information and assessed workplace ostracism. At this stage, 591 employees responded (response rate = 84.4%). To maintain anonymity while allowing data matching across time points, participants generated a unique identification code using a combination of letters from their parents' names and digits from their phone number.

One week later, at Time 2, the HR Director facilitated the distribution of the second survey to those who had participated in the first. This follow-up survey assessed negative affect and mental health and included a section for participants to re-enter their identification code. A total of 498 employees completed this second survey (response rate = 71.14%). Data was collected in December 2022.

To assess the potential risk of selective attrition, Little's missing completely at random (MCAR) test (Little et al., 2014) was conducted, confirming that data were missing completely at random ($\chi^2 = 2.37$, df = 2, p = 0.306). Additionally, independent samples t-tests were performed to compare participants who discontinued after T1 with those who completed the two-waves. The results revealed no significant differences in the key study variables at T1, including ostracism (t = -0.43, p = 0.33), negative affect (t = 0.86, p = 0.19), and mental health (t = −2.05, p = 0.06). These findings indicate that attrition was not systematically associated with the focal variables.

All completed surveys were returned in sealed envelopes directly to the first author, ensuring that the organization had no access to individual responses and thereby preserving participant confidentiality. Of the final sample, 63.4% were female, with a mean age of 44.11 years (SD = 11.60). Additionally, 13% held mid-level managerial positions, and the average organizational tenure was 15.17 years.

Measures

Workplace ostracism (T1). Participants answered the 10-item Workplace Ostracism Scale developed by Ferris et al. (2008). It measured workplace ostracism experienced in the last week (e.g., "Others ignored you at work"). Participants used a 5-point scale (1: *never; 5: always*) ($\alpha = 0.94$; $\omega = 0.94$).

Negative affect (T2). Negative affect was assessed with eight items from the Multi-Affect Indicator (Warr et al., 2014). It measured negative affective experiences

that occurred in the last week at work. Participants answered the items (e.g., "hopeless") on a 5-point scale (1 – *never*; 5 – *always*). ($\alpha = 0.91$; $\omega = 0.91$).

Mental health (T2). Mental health was measured with five items from the Positive Mental Health Scale (Lukat et al., 2016). A sample item is "Much of what I do brings me joy.". Participants answered the items on a 5-point scale (1 – *not true*; 5 – *true*). ($\alpha = 0.85$; $\omega = 0.85$).

Control variables. Given the predominance of female participants in the sample, gender was included as a control variable. This decision was further supported by Howard et al. (2019), who highlighted the role of gender in shaping the effects of workplace ostracism on various work-related outcomes. Additionally, age was controlled, as the integrated model of workplace ostracism (Robinson et al., 2013) suggests that employees' age may influence their reactions to ostracism. Since age could impact both the mediator (negative affect) and the outcome variable (mental health), controlling for it helped mitigate potential biases in the results.

Data Analysis

A two-step approach was employed: (1) confirmatory factor analysis (CFA) and (2) structural equation modeling (SEM) (Anderson & Gerbing, 1988; Chuang et al., 2018). Model fit was evaluated using four key indices: χ^2 statistics, the comparative fit index (CFI; Bentler, 1990), the Bentler-Bonett normed fit index (NFI; Bentler & Bonett, 1980), the root mean square error of approximation (RMSEA; Brown & Cudeck, 1993), and the standardized root mean square residual (SRMR).

Results

CFA

Before testing Hypothesis 1, four CFAs were conducted in JASP to assess discriminant validity (Jöreskog & Sörbom, 1988). The proposed three-factor model

(workplace ostracism, negative affect, and mental health) showed a good fit: $\chi^2(167) = 523.84$, CFI = 0.99, TLI = 0.99, RMSEA = 0.06, SRMR = 0.05, confirming the distinctiveness of the constructs. Alternative models, including a two-factor model and a one-factor model, demonstrated significantly poorer fit, further supporting the three-factor structure. All CFA item loadings were acceptable (> 0.40), ensuring construct validity.

Discriminant validity was assessed using the average variance extracted (AVE; Fornell & Larcker, 1981). The square roots of the AVEs exceeded inter-construct correlations, confirming discriminant validity. Additionally, all AVEs were above 0.50 (workplace ostracism = 0.57, negative affect = 0.70, mental health = 0.68), demonstrating convergent validity. Thus, the measurement model exhibited acceptable reliability and validity.

To address potential common method bias, Harman's one-factor test (Podsakoff et al., 2024) was performed. The shared variance was 40%, below the 50% threshold (Harman, 1960), and CFA results confirmed the distinctiveness of the constructs, indicating no serious common method bias concerns.

Table 1 presents the descriptive statistics.

--TABLE 1--

Hypothesis testing

To improve result interpretability, the variables were centered before testing the hypothesis (Dalal & Zickar, 2012). Iin line with recommendations by Becker et al. (2016) and Carlson and Wu (2012), we tested our model both with and without control variables to assess their potential influence on the main study relationships. The results were identical across both sets of analyses. Specifically, the inclusion of control

variables did not significantly alter the strength, direction, or significance of the main effects and interactions in our models.

The path coefficient estimates for the hypothesized mediation model (Figure 2) revealed that workplace ostracism was positively and significantly associated with negative affect ($\beta = 0.31$, $p < 0.01$), which in turn had a negative and significant relationship with mental health ($\beta = -0.56$, $p < 0.01$). The model explained 40% of the variance in mental health ($R^2 = 0.40$). Following Edwards and Lambert's (2007) recommendation to examine indirect effects, bootstrapping with 5000 samples showed a significant negative indirect effect of -0.17 ($p < 0.01$, CI 95% [-0.23, -0.11]), supporting Hypothesis 1.

--FIGURE 2--

Study 2

Method

Participants and Procedure

Data were collected in 2023 using a convenience sample. To enhance sample heterogeneity and support the generalizability of the findings, a network sampling technique was employed (Demerouti & Rispens, 2014). A total of 153 employees from the researcher's professional and social networks were invited to participate via an email invitation. This initial email explained the study's objective—to explore workplace experiences and their effects on employees—and emphasized that participation was voluntary, confidential, and could be discontinued at any time. Of those invited, 135 employees provided informed consent to participate.

Participants then received a second email with a link to the baseline survey, which collected demographic data, animal companion ownership information, and neuroticism levels. One week later, data collection for the daily component began and

spanned five consecutive workdays (Monday through Friday) in April 2023. During this period, participants were asked to complete two brief surveys per day (afternoon and evening).

All survey instruments were translated into Portuguese using a standard translation and back-translation procedure to ensure linguistic and conceptual equivalence. Surveys were administered via an online platform, with survey links distributed through email and mobile messages, accompanied by twice-daily reminders. The first daily survey, completed shortly before leaving work, assessed workplace ostracism and negative affect experienced that day. The second survey, completed at the end of the day, measured mental health and HAI.

Prior to the daily survey period, participants selected fixed time slots for their responses to promote consistency. Specifically, they chose one time between 4:00 p.m. and 6:00 p.m. for the afternoon survey and one between 9:00 p.m. and 11:00 p.m. for the evening survey. They were informed that survey links would expire after their chosen time windows, encouraging timely and compliant responses.

In total, 135 participants completed the baseline survey (response rate = 88.2%), 111 completed at least one daily survey (72.5%), and 85 participants completed all five daily surveys (55.5%; total measurement occasions = 425). This final sample size was deemed sufficient for multilevel moderated mediation analyses. As Maas and Hox (2005) recommend, at least 30 participants are necessary to obtain accurate standard error estimates in such models. Thus, the sample of 85 participants provided adequate statistical power and estimation precision.

The final sample was 62.2% female, with a mean age of 32 years (SD = 11.33) and an average organizational tenure of 11.38 years (SD = 11.48). Participants reported working an average of 34.08 hours per week (SD = 14.94) across a variety of sectors.

All participants were pet owners, with an average of 2.36 companion animals per person (SD = 1.80).

Measures

Between-person level measures.

Neuroticism. Neuroticism was measured with four items from the Mini-IPIP Scales (Donnellan et al., 2006). A sample item is "I have frequent mood swings". Participants answered on a 5-point scale (1 = *very inaccurate*; 5 = *very accurate*). (α = 0.71, ω = 0.66).

Within-person level measures.

Workplace ostracism. We used the same measure of Study 1 (Ferris et al. (2008; ω = 0.90).

Negative affect. To measure daily negative affect, we used four items from the Multi-Affect Indicator (Warr et al., 2014; ω = 0.86).

Mental health. To measure daily mental health, we used three items from the Positive Mental Health Scale (Lukat et al., 2016; ω = 0.72).

HAI. HAI were assessed with the 3-item HAI Scale (Junça-Silva, 2024e). We reworded the items to fit with the current study and with the time of measurement (end of the day). A sample item is "Today, at night, I interacted with my pet". Participants answered on a 5-point scale (1 = *never*, 5 = *four or more times*) (ω = 0.97).

Control variables. In this study, we controlled for age and gender (as in Study 1), as well as neuroticism, a stable personality trait characterized by heightened sensitivity to negative emotional experiences. Neuroticism has been consistently associated with stronger affective reactivity and more intense negative responses to social stressors such as ostracism, which can amplify perceived exclusion and its impact on mental health (Nezlek et al., 2012). Given its potential to influence baseline levels of

negative affect and shape how individuals respond emotionally across days, neuroticism could confound within-person associations between ostracism, affect, and mental health. Controlling for neuroticism therefore allowed us to isolate the unique effects of daily workplace ostracism and HAI on fluctuations in emotional and mental states. We also controlled for the day of the week (Monday to Friday), as temporal factors can influence both affective experiences and well-being indicators (Junça-Silva & Silva, 2022).

Data analysis

This study employed a daily diary design in which repeated daily observations (Level 1) were nested within individuals (Level 2). Given this hierarchical data structure, the assumptions of traditional regression models—particularly the independence of error terms—would be violated, as responses from the same individual across days are likely to be correlated. For instance, an individual’s affective state or mental health on one day may be systematically related to their state on other days due to stable personal characteristics or shared situational contexts. To account for this non-independence and accurately model within-person processes, we used multilevel modeling (MLM), which appropriately partitions variance across levels and provides unbiased estimates of standard errors.

Multilevel analyses were conducted using the SPSS macro MLmed (Rockwood, 2020). Daily-level predictors (e.g., workplace ostracism and HAI) were person-mean-centered, following Enders and Tofighi (2007), to isolate pure within-person fluctuations by removing between-person variance. A fixed-slope model was employed, as the primary interest was in estimating average within-person effects rather than examining individual differences in slopes. This approach aligns with the theoretical

goal of identifying day-level processes that fluctuate within individuals rather than stable interindividual traits.

Indirect and conditional indirect effects were tested using Monte Carlo simulation (20,000 replications) to generate bias-corrected confidence intervals (CI). An indirect effect was considered statistically significant if the CI did not include zero. This analytic strategy ensured a robust test of the proposed mediation and moderated mediation pathways at the within-person level.

Results

Confirmatory Factor Analyses

A multilevel confirmatory factor analysis (CFA) was conducted to assess the distinctiveness of the study constructs, which included workplace ostracism, negative affect, mental health, and HAI. The four-factor model demonstrated a good fit to the data ($\chi^2 = 207.61$, df = 71, CFI = 0.95, TLI = 0.93, $SRMR_{within} = 0.06$, $SRMR_{between} = 0.05$, RMSEA = 0.08). Two alternative models were tested for comparison. First, a unifactorial model, combining all variables into a single latent construct, was assessed but showed a poor fit ($\chi^2 = 1{,}519.23$, df = 77, CFI = 0.40, TLI = 0.30, $SRMR_{within} = 0.21$, $SRMR_{between} = 0.18$, RMSEA = 0.29). The four-factor model provided a significantly better fit than the unifactorial model (ΔSatorra-Bentler Scaled $\chi^2(6) = 1{,}311.61$, $p < 0.001$).

The second alternative tested a three-factor model, merging workplace ostracism and negative affect, but this also exhibited a poor fit ($\chi^2 = 499.49$, df = 53, CFI = 0.80, TLI = 0.75, SRMRwithin = 0.14, SRMRbetween = 0.13, RMSEA = 0.20). The four-factor model again demonstrated a superior fit compared to this three-factor solution (ΔSatorra-Bentler Scaled $\chi^2(18) = 291.88$, $p < 0.001$). These findings confirm the distinctiveness of the study constructs.

The variance inflation factors (VIFs) for all variables were below the threshold of 5.0 (Sheather, 2009), ranging from 1.06 to 3.35, indicating that common method variance was not a concern. To assess discriminant validity, the average variance extracted (AVE) was calculated using Fornell and Larcker's (1981) criterion. The AVEs for the four constructs were 0.71 (workplace ostracism), 0.71 (negative affect), 0.54 (mental health), and 0.50 (HAI), demonstrating acceptable convergent validity.

Descriptive statistics, correlations, and intra-class correlations (ICCs) are presented in Table 2. The ICC for workplace ostracism was 0.48, indicating that 52% of the variance was attributable to within-person variation. The ICCs for negative affect (0.57), mental health (0.54), and HAI (0.45) also suggest significant within-person variability. Given that all ICCs exceeded 0.05, multilevel modeling was employed (Raykov et al., 2024) to account for the nested structure of the data (days nested within individuals).

--TABLE 2--

Hypotheses testing

As suggested by Griep et al. (2022), the model that best fits the data was tested. The Bayesian Information Criterion (BIC) and the BIC values adjusted to the sample size were compared between the multilevel mediation model and the moderated mediation model. Results showed that the multilevel moderated mediation model had the lowest BIC value (BIC=865.952; $BIC_{\text{adjusted to sample size}}$=869.925) when compared to the mediation model (BIC=997.722; $BIC_{\text{adjusted to sample size}}$=1001.722). Hence, the multilevel moderated mediation model demonstrated the best fit to the data.

Moreover, we tested the model both with and without the inclusion of control variables, and their effects were not statistically significant. The results of the main

analyses remained consistent, indicating that the control variables did not meaningfully influence the relationships among the key constructs.

The first hypothesis predicted that workplace ostracism would predict employees' mental health through negative affect. As shown in Table 3, daily workplace ostracism was positively related to negative affect, which was related negatively to employees' mental health. Using 20,000 Monte Carlo replications, a 95% CI for the indirect effect was calculated (Preacher & Selig, 2012). The within-person indirect effect was negative and significant (Estimate = -0.33, 95% CI [-0.46, -0.20]). Thus, Hypothesis 1 received support.

The second hypothesis expected that HAI would moderate the relationship between workplace ostracism and negative affect, in a way that the effect would be stronger for those who had fewer HAI (versus many HAI). The results showed that there was a significant interaction between workplace ostracism and HAI in predicting negative affect (γ = -0.50, $p < 0.05$, CI 95% [-0.96, -0.03]). Figure 3 presents the simple slopes. Thus, Hypothesis 2 was supported.

--FIGURE 3--

Finally, Hypothesis 3 predicted that HAI would moderate the indirect effect of daily workplace ostracism on mental health through negative affect such that the indirect effect would be stronger when employees had fewer HAI (vs. many). Results of the within-person moderated mediation analyses gave full support for this hypothesis (moderated mediation index = 0.27, 95% CI [0.02, 0.55]). Specifically, the conditional indirect effect was stronger [estimate = -0.77, $p < 0.01$, CI 95% [-1.08, -0.42]) when employees had fewer interactions with their pets (i.e., -1 SD below the mean) than when they engaged in many interactions with their pets (i.e., +1 SD above the mean) (estimate = -0.45, $p > 0.05$, CI 95% [-0.72, -0.14]). The statistical analysis revealed a

significant difference between the two indirect effects (difference = 0.77, $p < 0.01$). So, Hypothesis 3 was also supported by the data (see Table 4 for a summary of the findings).

--Table 4--

Discussion

This research comprises two studies that investigate the detrimental effects of workplace ostracism on employees' mental health, utilizing the integrated model of workplace ostracism and the COR theory as the theoretical frameworks. The studies identify negative affect as a key mechanism through which ostracism influences mental health, shedding light on the emotional pathways that link social exclusion to psychological distress. In addition, the research explores the role of HAI as a potential buffer, offering new insights into how non-human companions may serve as a source of emotional support in the workplace context.

The findings highlight that workplace ostracism negatively impacts employees' mental health by evoking negative affect, such as anxiety, sadness, and frustration, which in turn contribute to mental health deterioration. However, the studies also reveal that HAI can significantly mitigate the harmful effects of ostracism. Specifically, the research shows that employees who engage more frequently with their companion animals experience less psychological distress, as their companion animals help reduce the intensity of negative emotions generated by ostracism. This suggests that companion animals, as a form of informal social support (Barcelos et al., 2023), can serve as a critical resource for emotional recovery (Junça-Silva, 2024a), buffering the adverse effects of ostracism on employees' mental health.

Theoretical Implications

This research offers two key theoretical implications, both grounded in robust empirical evidence. First, it advances the literature on workplace ostracism by demonstrating its damaging effects on employees' mental health. Across both studies, we show that workplace ostracism evokes a range of negative affective responses, which in turn contribute to poorer mental health outcomes. Specifically, the more frequently employees reported experiencing ostracism, the greater their levels of negative affect (Yang et al., 2022), leading to decreased mental health (Asmita et al., 2025). These findings support the integrated model of workplace ostracism (Robinson et al., 2013) and reinforce the tenets of COR theory (Hobfoll et al., 2018), which posits that resource loss—such as social exclusion—elicits emotional strain and undermines well-being. Our results are consistent with prior research linking ostracism to anxiety, depression, emotional exhaustion (Anjum et al., 2020), and burnout (Qian et al., 2019), emphasizing the pressing need to identify protective factors in workplace settings (Dash et al., 2024).

Second, this research makes a novel theoretical contribution by positioning HAI as a valuable yet underexplored resource in work life (Delanoeije & Verbruggen, 2024). Specifically, the results of Study 2 indicate that HAI moderate the negative effects of workplace ostracism on mental health through the reduction of negative affect. On days when employees experienced more ostracism, those who engaged more frequently in HAI reported better mental health than those with limited or no HAI. These findings suggest that companion animals can act as a form of informal, nonjudgmental social support (Lea et al., 2024), fulfilling basic psychological needs for connection and belonging (Turcsán et al., 2025), which are typically compromised during ostracism (Reinhard et al., 2020). Companion animals may also help replenish emotional resources (Barcelos et al., 2023) and promote self-regulation (Junça-Silva, 2022a,b),

consistent with COR theory and recovery research. Importantly, this expands the current understanding of support systems by highlighting the unique role of animals—complementing and, in some cases, substituting traditional human support sources such as family, colleagues, or spouses (Junça-Silva, 2024b; Feng et al., 2024; Xia et al., 2019).

Beyond their role in buffering the negative effect of ostracism on mental health, companion animals may increasingly shape work-related routines (Delanoeije, 2020), particularly in flexible or remote work contexts (Delanoeije & Verbruggen, 2024). As prior studies suggest (e.g., Junça-Silva, 2022, 2023), daily HAI during telework can enhance emotional regulation, work engagement, and productivity, serving as a recovery mechanism throughout the workday. Thus, the presence of companion animals in the daily lives of employees may contribute not only to personal well-being (Mueller et al., 2021) but also to organizational outcomes by preserving workers' mental health Junça-Silva, 2025b) and emotional balance in the face of social adversity (Applebaum et al., 2021).

Practical Implications

The findings of this study offer several actionable insights for organizations aiming to mitigate the harmful effects of workplace ostracism on employees’ mental health. First and foremost, it is essential for organizations to actively identify and monitor the occurrence of ostracism. If such exclusionary behaviors are found to be frequent or recurrent, targeted interventions should be implemented. Awareness-raising workshops can play a key role in this process—both to clarify what constitutes ostracism (including unintentional forms) and to communicate its adverse consequences

on mental health. Training programs should also include components that foster coping resources and affective regulation strategies.

Importantly, our findings highlight the potential of HAI as an effective recovery mechanism that buffers the psychological strain associated with ostracism. This suggests new, evidence-based directions for organizational policies. For instance, employers might consider introducing pet-friendly practices, such as allowing employees to bring their pets to the workplace on designated days or providing access to therapy animals. Yet, organizations can establish pet-free zones to ensure employees who may have allergies or other health concerns related to pets are not inadvertently excluded. This balance can promote inclusivity and ensure that pet-related practices do not inadvertently create new sources of discrimination or discomfort. Such initiatives may foster a more supportive climate and offer immediate emotional comfort for individuals facing ostracism.

Additionally, the results support the value of flexible work arrangements, including the option to work from home—particularly for employees experiencing ostracism. Given that HAI were most beneficial during end-of-day interactions, remote or hybrid work formats may allow employees to more frequently engage with companion animals in ways that replenish emotional resources and enhance positive affective experiences (see Junça-Silva, 2024a). Thus, offering remote work options is not only a matter of flexibility (Delanoeije, 2020) but may also serve as a preventive measure against the deteriorating mental health consequences of workplace ostracism.

For employees who do not own pets, organizations could introduce programs like pet therapy sessions or partnerships with local animal shelters to provide temporary HAI. Such initiatives could serve to provide the emotional and psychological benefits associated with companion animals, even for non-pet owners. In sum, organizations

should consider integrating pet-friendly and flexible work policies into broader mental health initiatives. These approaches, grounded in our findings, reflect a novel and humane avenue for supporting employees affected by ostracism.

Limitations and Future Research Directions

Despite its contributions, this research has several limitations that warrant acknowledgment. First, the reliance on self-reported measures may raise concerns about common method variance (Podsakoff et al., 2024). However, as argued by Miliauskas and colleagues (2022), self-reports remain the most appropriate means to assess individuals’ subjective experiences, such as affective states and perceptions of workplace ostracism. To minimize potential biases, we applied person-mean centering to all relevant variables, following Gabriel et al.'s (2019) recommendations, and we employed both statistical (e.g., multilevel CFA and VIFs) and methodological strategies to mitigate common method bias.

Second, although our findings highlight the buffering role of HAI, the study did not directly compare HAI to other sources of social support (e.g., family, colleagues, supervisors). Future research could investigate whether HAI provide unique or complementary forms of support, particularly in situations where human social support is limited or absent. Explicit comparisons may reveal distinct emotional or physiological mechanisms through which HAI operate, thereby enhancing our understanding of their unique contribution.

Moreover, the study assumes that HAI are uniformly beneficial. However, pet ownership can also present stressors, such as financial burdens, caregiving responsibilities, or time constraints. These potential downsides were not assessed in the present study and represent an important direction for future work. For instance, future

studies might examine whether the strength of the pet-owner bond or the level of caregiving strain moderates the buffering effect of HAI. Exploring such boundary conditions would allow a more balanced understanding of when and for whom HAI are effective.

Sample diversity also poses a limitation. Study 1 relied on employees from a single insurance company in Portugal, while Study 2 was based on a convenience sample drawn from the researchers' networks. Although this dual-study design strengthens internal validity, it may limit the generalizability of our findings across cultures, sectors, or occupational roles. Future studies should examine whether cultural attitudes toward pets, sectoral norms, or hierarchical structures influence how ostracism is experienced and how HAI are perceived as supportive. We encourage research across diverse populations to test the replicability and boundary conditions of our findings. Furthermore, cross-cultural studies could examine whether societal attitudes toward companion animals shape their perceived legitimacy and effectiveness as sources of emotional support. Such research would deepen our understanding of how cultural norms and values influence the role of HAI in workplace well-being.

Another important limitation concerns the unidirectional treatment of workplace ostracism as a predictor of mental health. While our two-wave design in Study 1 allows for a temporal examination of ostracism’s effects on employee well-being, it does not fully account for the possibility that pre-existing mental health issues might increase an individual's susceptibility to being ostracized or perceiving social exclusion. This points to a potentially bidirectional or reciprocal relationship between these constructs. Individuals experiencing anxiety, depression, or other psychological vulnerabilities may be more likely to interpret ambiguous social cues as ostracizing or may be inadvertently excluded due to reduced workplace engagement. Future research should therefore

employ longitudinal or cross-lagged panel designs to explore these reciprocal dynamics and clarify the directionality of effects between workplace ostracism and mental health.

Additionally, future studies could explore whether organizational-level pet-friendly policies (e.g., allowing animal companions at work or offering pet-related benefits) amplify the buffering effects of HAI. Lastly, the implications of HAI for the work-life interface warrant further exploration, particularly among younger generations for whom pets often play central roles (Rueff-Lopes et al., 2025). Comparing employees with and without animal companions, or those who engage in alternative restorative activities (e.g., social hobbies, mindfulness, exercise), could clarify the relative and contextual effectiveness of different coping strategies.

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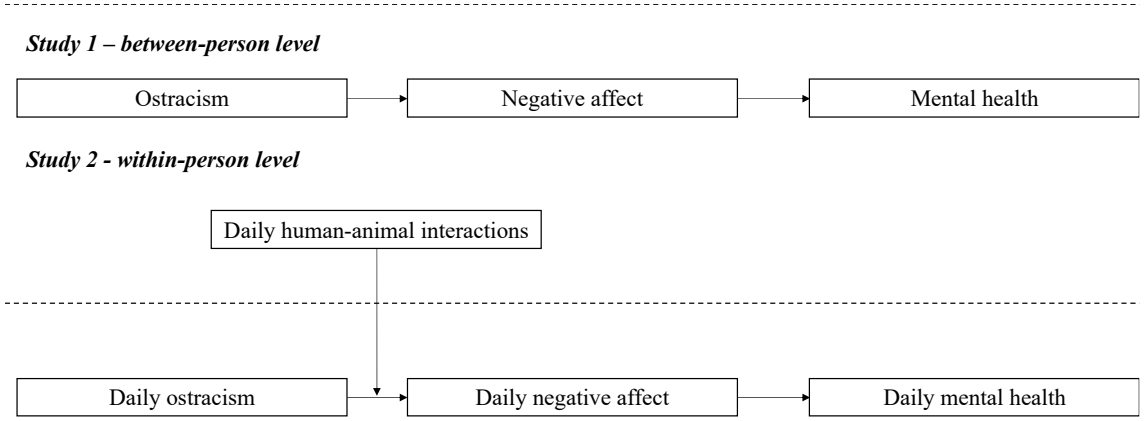
Figures

Figure 1.

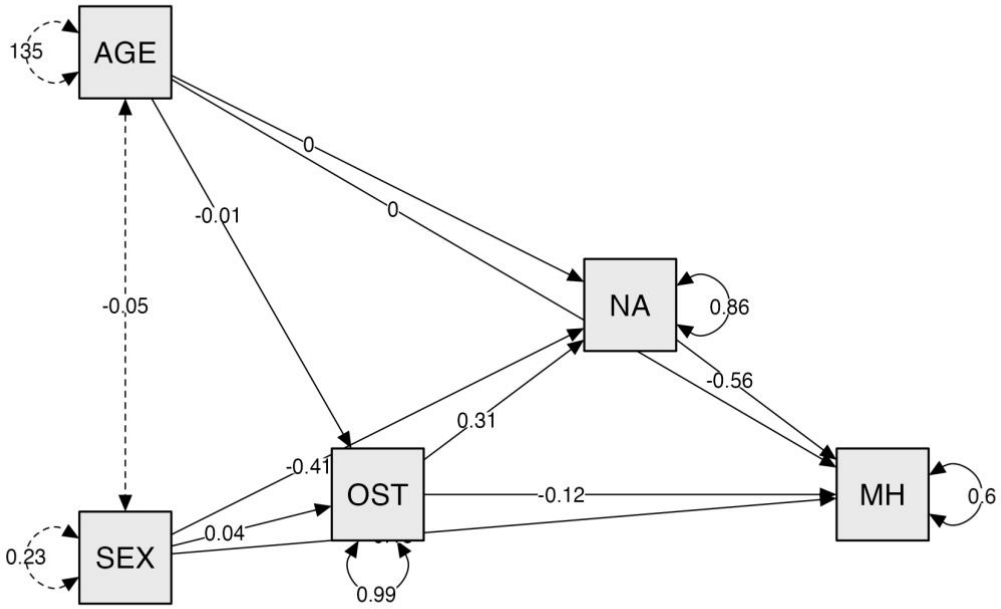
The proposed conceptual multilevel moderated mediation model.



Source: Authors' own work.

Figure 2.

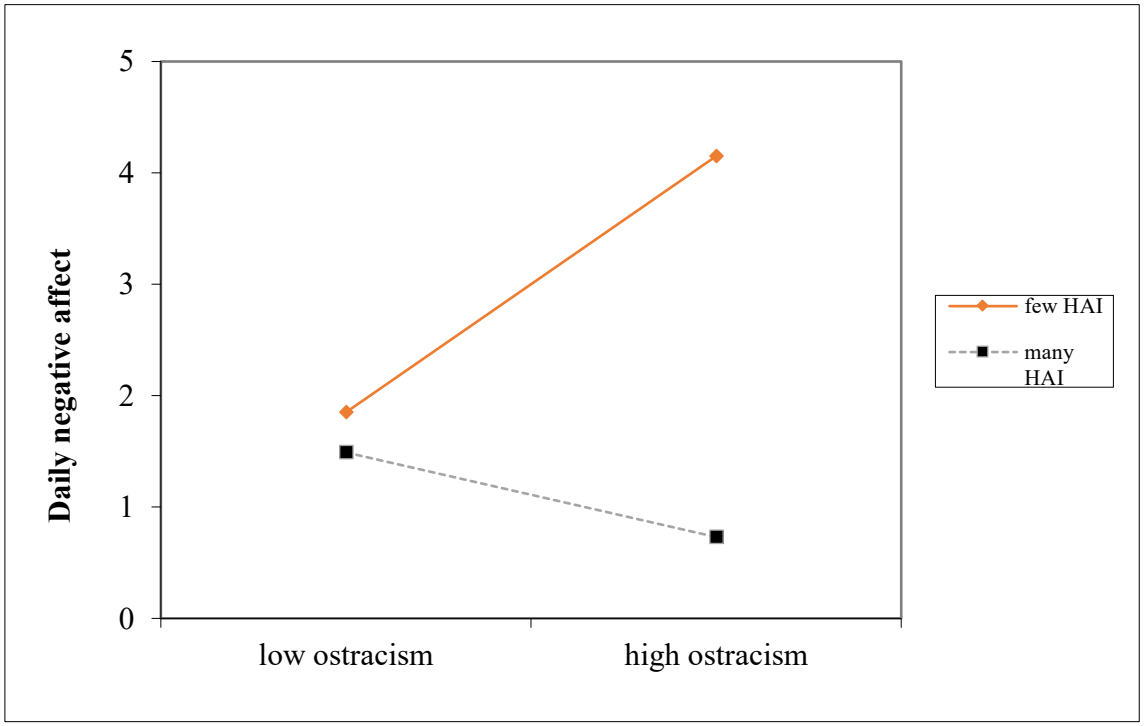
Coefficient paths of the mediated model (Study 1).



Note. Dashed lines indicate non-significant associations.
OST = Workplace ostracism; NA = Negative affect; MH = Mental health.
Source: Authors' own work.

Figure 3.

Interaction between daily ostracism and daily HAI in predicting daily negative affect (Study 2).



Source: Authors' own work.

Tables

Table 1.

Descriptive statistics, correlations and reliabilities (Study 1).

Variable	*M*	*SD*	AVE	1	2	3	4	5
1. Ostracism (T1)	1.41	0.57	0.57	(0.94)				
2. Negative affect (T2)	2.46	0.83	0.70	0.30***	(0.91)			
3. Mental health (T2)	3.53	0.88	0.68	-0.30***	-0.41***	(0.85)		
4. Age (T1)	44.11	11.61	-	-0.09*	-0.08	0.10*	-	
5. Sex (T1)	-	-	-	0.02	-0.19***	0.19***	-0.01	-

Note. $N = 498$. Reliabilities are shown in parentheses on the diagonal. Sex: 1 = female; 2 = male.
SD = Standard deviation; T1 = Time 1, T2 = Time 2 (one week after Time 1).
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Source: Authors' own work.

Table 2.

Descriptive statistics, correlations and reliabilities (Study 2).

Variables	*M*	*SD*	*AVE*	*ICC*	1	2	3	4	5	6	7	8
1. Ostracism	1.13	0.44	0.71	0.48	(0.90)	0.41***	-0.05	-0.10*	-0.14*	-	-	-
2. NA	1.92	0.83	0.71	0.57	0.29**	(0.86)	-0.48***	-0.27***	0.00	-	-	-
3. MH	3.57	0.82	0.53	0.54	-0.38**	-0.45**	(0.72)	0.11*	-0.05	-	-	-
4. HAI	1.81	1.24	0.93	0.50	-0.30**	-0.32**	0.29**	(0.97)	0.02	-	-	-
5. Time	-	-	-	-	-0.06	0.01	-0.02	-0.07	-	-	-	-
6. Age	31.97	11.33	-	-	-0.04	0.06	0.03	0.04	0.01	-	-	-
7. Sex	-	-	-	-	0.01	-0.03	0.02	0.13	0.00	-0.17**	-	-
8. Neuroticism	3.16	0.91	0.54	-	-0.15*	0.04	-0.20**	0.02	0.01	-0.48***	0.12	(0.71)

Note. $N = 85$ (425 measurement occasions). Reliabilities are shown in parentheses on the diagonal. Sex: 1 = male; 2 = female. Correlations above the diagonal are within-person level; correlations below the diagonal are between-person level.
SD = Standard deviation; ICC = Intra-class correlation; AVE = Amount of variance extracted; NA = Negative affect; MH = Mental health; HAI = Human-animal interactions.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Source: Authors' own work.

Table 3. Coefficients of the multilevel moderated mediation model.

Variables	*Coefficient*	*95% CI*
DV: Negative affect		
Ostracism	0.60**	0.40, 0.80

Negative affect	-	-
HAI	-0.63**	-1.10, -0.16
Ostracism *HAI	-0.50**	-0.96, -0.03
Time	0.01	-0.04, 0.05
Sex	-0.09	-0.47, 0.32
Age	-0.01	-0.02, 0.01
Neuroticism	0.06	-0.17, 0.28
R^2	0.23	
DV: Mental health		
Ostracism	0.27**	0.06, 0.47
Negative affect	-0.54**	-0.67, -0.41
Time	-0.01	-0.04, 0.03
Sex	0.02	-0.29, 0.32
Age	-0.01	-0.02, 0.01
Neuroticism	-0.18	-0.35, 0.01
R^2	0.40	

Note. N = 85 (425 measurement occasions). Sex: 1 = male; 2 = female.
NA = Negative affect; MH = Mental health; HAI = Human-animal interactions.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.
Source: Authors' own work.

Table 4.

Summary of the results of both studies.

Hypotheses	Study 1 (N = 498)	Study 2 ($N_{participants}$ = 85, N_{days} = 425)	Summary of Findings
H1	Supported: Indirect effect = -0.17, 95%	Supported: Indirect effect = -0.33, 95% CI [-0.46, -0.20], p < .001	Negative affect mediates the detrimental impact of

Hypotheses	Study 1 (N = 498)	Study 2 ($N_{participants}$ = 85, N_{days} = 425)	Summary of Findings
	CI [-0.23, -0.11], p < .001		ostracism on mental health in both studies.
H2	Not tested	Supported: Interaction effect = -0.50, CI 95% [-0.96, -0.03]	HAI buffers the link between ostracism and negative affect, reducing its emotional impact.
H3	Not tested	Supported: Moderated mediation index = 0.27, 95% CI [0.02, 0.55]	HAI mitigates the overall indirect negative effect of ostracism on mental health.

Note.
H1: Workplace ostracism has a negative indirect effect on employee mental health through negative affect.
H2: End-of-the-day HAI moderate the relationship between workplace ostracism and negative affect, such that the relationship is weaker among employees who report more HAI.
H3: End-of-the-day HAI moderate the indirect effect of workplace ostracism on employee mental health via negative affect, such that the indirect effect is weaker with higher HAI.
Source: Authors' own work.