

COGNITIVE SCIENCES AND HUMAN DEVELOPMENT

Impact of loneliness in the workplace on employees' job performance: Mediating role of affective commitment

Nor Julzafirah binti Julkipli¹, Ki Yen Ping*² & Heng Kiat Sing³ Faculty of Business, Design and Arts, Swinburne University of Technology, Jalan Simpang Tiga, 93350, Kuching, Sarawak, Malaysia.

ABSTRACT

This study investigates the impact of workplace loneliness on job performance among Generation Z employees in Malaysia, with affective commitment as a mediating factor. Grounded in the Affective Theory of Social Exchange (ATSE), it explores how emotional disconnection at work influences employee commitment and performance, particularly within collectivist cultural contexts. A quantitative methodology was employed using survey data from 271 Gen Z employees across Malaysia. Data were analysed via PLS-SEM to test four hypothesised relationships between workplace loneliness, affective commitment, and job performance. Findings indicate a significant negative relationship between workplace loneliness and both affective commitment and job performance. Conversely, affective commitment has a positive influence on job performance and mediates the relationship between workplace loneliness and performance outcomes. These results underscore the importance of fostering emotional attachment in digitally native yet socially vulnerable Gen Z employees. The cross-sectional design and cultural specificity limit the study, affecting generalisability. Nonetheless, it contributes to the underexplored discourse on workplace loneliness in non-Western settings and extends the application of ATSE. Its value lies in offering practical insights for organisations aiming to enhance Gen Z's workplace experiences through supportive, socially connected environments.

Keywords: workplace loneliness, Generation Z, affective commitment, job performance

ARTICLE INFO

Email address: yki@swinburne.edu.my (Ki Yen Ping)
*Corresponding author

https://doi.org/10.33736/jcshd.9491.2025

e-ISSN: 2550-1623

Manuscript received: 13 April 2025; Accepted: 30 August 2025; Date of publication: 30 September 2025

Copyright: This is an open-access article distributed under the terms of the CC-BY-NC-SA (Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International License), which permits unrestricted use, distribution, and reproduction in any medium, for non-commercial purposes, provided the original work of the author(s) is properly cited.

1 INTRODUCTION

Over the past decade, globalisation has strengthened economic and technological ties across nations. However, despite this interconnectedness, emotional and social distances between individuals have widened, leading to a growing prevalence of loneliness. Xia and Li (2018) describe loneliness as a "behavioural epidemic," which, though not a new phenomenon, has become more pronounced in contemporary work environments. Firoz et al. (2021) found that nearly three-quarters of Americans experience loneliness annually, with one-third feeling lonely at least once a week. Harvard Business Review has classified loneliness as a public health crisis with significant implications for workplace dynamics and employee well-being.

The COVID-19 pandemic further exacerbated workplace loneliness due to prolonged lockdowns, social isolation measures, and the widespread shift to remote work. Hwang et al. (2020) emphasised that loneliness and social isolation often co-occur, representing a subjective emotional experience and social isolation characterised by the frequency and depth of social interactions. The transition to virtual communication limited in-person engagement, reducing opportunities for spontaneous interactions and informal social bonding, which is essential for workplace cohesion (Wax et al., 2022). Consequently, workplace loneliness has emerged as a significant challenge, affecting employees' psychological well-being, job satisfaction, and overall performance.

Bernhold and Giles (2020) define workplace loneliness as a lack of meaningful connections and support, leading to negative emotional and behavioural outcomes. Persistent loneliness has been linked to stress, anxiety, and depression (Basit & Nauman, 2023), reducing motivation, engagement, and productivity (Zhou, 2018). Even before the pandemic, studies showed its harmful effects on job satisfaction and performance. Remote work and social distancing have intensified these problems, weakening professional ties. For example, research on factory workers reported a drop in efficiency after lockdown, with high-performing staff falling from 99% to 91.8% (Kotagi et al., 2023).

The long-term consequences of workplace loneliness extend beyond productivity losses. Zeng et al. (2023) reported that even after recovering from COVID-19, many individuals continue to experience physical and mental health challenges that hinder their ability to concentrate and perform effectively. Psychological factors such as fear and anxiety about workplace changes exacerbate struggles in adapting to new work routines. Walz et al. (2024) highlighted that work-related stress and conflicts between professional and personal responsibilities contribute to increased feelings of isolation and workplace loneliness. These concerns underscore the need to understand better workplace loneliness's implications on employee well-being and performance, particularly as organisations adopt remote and hybrid work models.

In Malaysia, workplace loneliness has mirrored global trends, particularly during the pandemic when employees faced increased workload pressures, reduced social interactions, and blurred work-life boundaries. Lee et al. (2023) reported that Malaysian employees experienced heightened stress and burnout due to disruptions in their daily work routines. The Department of Statistics Malaysia (DOSM) recorded a 16% decline in labour productivity in the construction industry

during the second quarter of 2020, illustrating the negative impact of workplace loneliness on employee performance (Tan & Abdul-Samad, 2023).

Generation Z employees, as digital natives, present a unique case in discussions of workplace loneliness. Beam and Kim (2020) noted that Gen Z employees, relatively new to the workforce, have been particularly vulnerable to workplace loneliness due to their reliance on digital communication and limited face-to-face interaction skills. Harari et al. (2023) emphasised that Gen Z values meaningful and engaging work experiences. Nevertheless, their preference for digital interactions over traditional workplace communication may hinder the development of essential interpersonal skills. Mahapatra et al. (2022) suggested that reliance on digital communication reduces conversational abilities such as active listening, relationship-building, and real-time problem-solving, further exacerbating workplace loneliness and impacting performance.

Park et al. (2022) described affective commitment as an employee's emotional bond and identification with the organisation, closely tied to workplace loneliness. Ayazlar and Güzel (2014) found that loneliness directly reduces affective commitment, which then affects job performance (Schoemmel & Jonsson, 2014). Disconnection from colleagues weakens commitment, leading to lower engagement and poorer performance (Basit & Nauman, 2023). Amarat et al. (2018) also noted that loneliness can foster work alienation, reducing effectiveness and satisfaction. In Malaysia, Hanafiah et al. (2024) emphasised that strong social connections help protect psychological well-being, highlighting the value of meaningful workplace relationships.

Despite the growing recognition of workplace loneliness as a pressing issue, there remains a critical gap in understanding its long-term implications and strategies to mitigate its impact. Organisations must acknowledge the role of workplace loneliness in shaping employee well-being, engagement, and performance, particularly in the post-pandemic work environment. This study aims to contribute to the literature by examining the relationship between workplace loneliness, affective commitment, and job performance, with a specific focus on Generation Z employees in Malaysia. By exploring these dynamics, the study provides insights into how organisations can foster a more supportive and connected work environment to enhance employee well-being and productivity.

1.1 The Impact of Loneliness in the Workplace

Loneliness, a universal yet complex emotional state, arises from the gap between desired and actual social connections (Perlman, 1988). Traditional typologies distinguish between emotional loneliness, characterised by the absence of intimate bonds, and social loneliness, which stems from a lack of community belonging. However, recent scholarship critiques this binary distinction. Mansfield et al. (2021) introduce the concept of existential loneliness, which is rooted in psychological rejection or awareness of mortality. While this expansion broadens the understanding of loneliness, it also risks overcomplicating the construct without sufficient empirical validation.

Additionally, Holt-Lunstad and Steptoe (2022) emphasise the role of structural factors, such as physical proximity, in shaping loneliness. Their work challenges the dominant focus on subjective perceptions, highlighting a critical oversight that loneliness interventions often prioritise individual coping strategies while neglecting systemic solutions, such as workspace design. The COVID-19 pandemic exacerbated loneliness worldwide (Gruber et al., 2021), yet post-pandemic studies overlook its broader implications. For instance, Xu et al. (2024) link loneliness to bedtime procrastination in students, missing its relevance in workplace settings. Similarly, Özdemir and Çelen's (2024) study on Turkish older adults, while valuable, reinforces an age-centric bias that marginalises younger cohorts, such as Gen Z, whose digital-native experiences require distinct analytical frameworks.

1.2 Job Performance in the Workplace

Job performance, which encompasses task execution and contextual behaviours such as organisational citizenship (Dåderman et al., 2020), is increasingly influenced by psychosocial factors. The decline in productivity following the pandemic underscores the link between workplace loneliness and performance. However, many studies homogenise generational experiences, failing to account for Gen Z's unique workplace challenges. For instance, López-Cabarcos et al. (2022) attribute job performance to leadership styles. Cucina et al. (2018) reduce generational differences to simplistic comparisons, such as Gen Z's conscientiousness versus that of older cohorts. Such generalisations ignore Gen Z's distinct stressors, including digital overload, pandemic-induced anxiety (Harari et al., 2023), and a preference for "work smarter" cultures (Dreyer & Stojanová, 2023). Additionally, performance metrics prioritise quantitative outputs, sidelining qualitative factors such as psychological safety (Obrenovic et al., 2020), which is a critical oversight given that Gen Z places significant value on mental health and well-being (Beam & Kim, 2020).

1.3 Generation Z Employees' Affective Commitment

Affective commitment, an employee's emotional attachment to an organisation, plays a crucial role in workplace dynamics. However, its application to Gen Z remains problematic. While research links commitment to job performance (Sungu et al., 2019), most studies focus on older cohorts (Singh & Gupta, 2015), failing to capture Gen Z's transactional approach to workplace loyalty (Sidorcuka & Chesnovicka, 2017). Anh Do et al. (2023) suggest that job insecurity may drive commitment, yet they overlook loneliness as a critical factor. Given Gen Z's high isolation levels, loneliness may weaken the conventional link between commitment and performance. Additionally, affective commitment frameworks assume stable work environments, which may be ill-suited to the post-pandemic era characterised by hybrid models and gig-economy engagements.

1.4 Problem Statement

Workplace loneliness remains under-theorised despite significant economic and psychological consequences (Dhir et al., 2023). Defined as psychological distress resulting from unmet relational needs at work (Wright & Silard, 2021), it is associated with reduced creativity (Peng et al., 2017),

increased turnover intention (Chen et al., 2021), and higher emotional exhaustion (Anand & Mishra, 2019). Existing research predominantly focuses on Western contexts (Ozcelik & Barsade, 2018), often overlooking cultural nuances. In collectivist societies like Malaysia, familial ties and communal values may buffer or exacerbate workplace loneliness (Sumari et al., 2020). Post-pandemic studies highlight environmental factors, such as remote work (Chmiel, 2024); however, the role of meaningful social connections as moderators remains unclear. This study seeks to address this gap.

Generation Z (born 1995–2012), the first fully digital-native generation, is entering the workforce amid significant societal and economic changes. Although digitally fluent (Abutalip et al., 2023), their reliance on virtual communication can limit face-to-face skills (Mahapatra et al., 2022), potentially increasing workplace loneliness. Their need for authenticity (Sakdiyakorn et al., 2021) often conflicts with traditional hierarchies, leading to disengagement, a problem worsened by pandemic-related mental health challenges (Governale et al., 2024). Current research often overlooks Gen Z's internal diversity and focuses more on intergenerational friction (Atay, 2024). Furthermore, their "purpose-driven" outlook (Dreyer & Stojanová, 2023) is often mistaken for idealism, overlooking the economic pressures that influence their career decisions.

The Affective Theory of Social Exchange (ATSE) conceptualises workplace interactions as emotionally charged exchanges (Lawler, 2001), providing a useful framework for understanding how loneliness erodes commitment. Employees deprived of meaningful connections often disengage, reducing organisational effort (Cropanzano & Mitchell, 2005). However, ATSE's Western-centric assumptions limit its application in collectivist cultures such as Malaysia, where communal values may shape workplace dynamics differently. For example, while interactional justice has been identified as a mediator in the U.S. context (Cenkci & Bircan, 2024), cultural factors like mutual aid may buffer workplace loneliness in Malaysia.

Workplace loneliness negatively impacts employee engagement, motivation, and job performance (Wright et al., 2006). However, its specific effects on Generation Z employees remain insufficiently explored. This study aims to fill this gap by examining how workplace loneliness influences job performance and affective commitment among Gen Z employees. Loneliness also weakens emotional attachment to organisations, reducing alignment with values and goals (Wax et al., 2022). The COVID-19 pandemic exacerbated loneliness, contributing to lower affective commitment, but research remains scarce on these dynamics within Gen Z populations (Bartholomeusz et al., 2021).

Job performance, defined as effective role fulfilment (Pourteimour et al., 2021), tends to improve with stronger affective commitment (Hadi & Tentama, 2020). Given Gen Z's emphasis on workplace experience, pragmatism, and practicality (Aggarwal et al., 2022), it is important to investigate how affective commitment influences their job performance. Mediation occurs when an independent variable affects a dependent variable through an intermediary (Tofighi, 2023). Workplace loneliness is associated with reduced affective commitment, which in turn affects job performance (Basit & Nauman, 2023). However, the mediating role of affective commitment in this relationship among Gen Z employees requires empirical validation.

1.5 Research Aim and Hypotheses

This study aims to explore the direct and indirect relationships between workplace loneliness, employees' job performance, and affective commitment among Gen Z employees. The research framework of this study is presented in Figure 1 below. Additionally, based on the literature and problem outlined above, this study proposes the following hypotheses:

H1: There is a negative relationship between workplace loneliness and job performance among Gen Z employees.

H2: There is a significant negative relationship between workplace loneliness and affective commitment among Gen Z employees.

H3: A positive relationship exists between affective commitment and job performance among Gen Z employees.

H4: Affective commitment mediates the relationship between workplace loneliness and job performance among Gen Z employees.

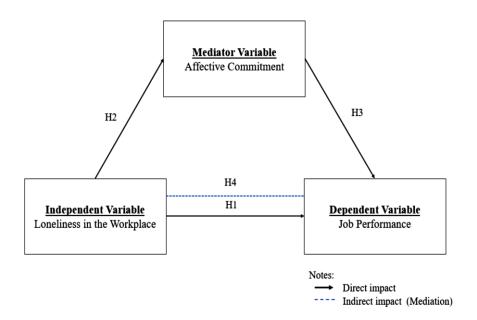


Figure 1. The framework of the study.

2 METHODS

2.1 Design

This study employed a quantitative research approach using an online survey via Microsoft Forms to examine the relationship between workplace loneliness, job performance, and affective commitment. Quantitative methods were chosen for their structured approach, enabling statistical analysis of reliable and valid numerical data to identify patterns, relationships, and causality

(Sürücü & Maslakci, 2020). The questionnaire was disseminated through various social media platforms to engage Malaysian Gen Z employees (ages 18–29) with work experience. A Consent Information Statement ensured participant anonymity and privacy.

2.2 Participants

This study targeted the working Generation Z population in Malaysia. A non-probability purposive sampling method was employed to select participants who fit the demographic profile. Additionally, snowball sampling was employed to reach a broader and more diverse group, particularly to engage individuals who might be hesitant to discuss sensitive issues, such as loneliness. Snowball sampling allowed researchers to leverage personal networks to overcome the stigma surrounding loneliness (Dusek et al., 2015). A total of 288 participants initially participated in the study. After data cleaning, the final sample size consisted of 271 participants, determined using an online Raosoft calculator with a 90% confidence level. This sample size ensured the findings were both reliable and generalisable to the Gen Z workforce in Malaysia.

2.3 Instruments

This study utilised a five-point Likert scale across all sections, including participant demographics, the Loneliness at Work Scale (Wright et al., 2006), the Individual Work Performance Questionnaire (IWPQ) (Koopmans et al., 2014), and the Employee Affective Commitment Scale (Allen & Meyer, 1990). Workplace loneliness was measured using the 16-item Loneliness at Work Scale, divided into emotional deprivation (9 items) and social companionship (7 items). Job performance was assessed using the 13-item IWPQ, which covers task performance (5 items) and contextual performance (8 items). The researchers evaluated affective commitment using the 6-item Employee Affective Commitment Scale, which assesses employees' emotional attachment and identification with their organisation.

2.4 Data Screening

Before analysis, data screening was performed to ensure accuracy and reliability, enhancing consistency and predictive precision (Badara & Saidin, 2014). SPSS was used to verify data, with items numerically coded. A two-step outlier detection process was applied. First, a Univariate Outliers Test using z-scores identified 14 cases exceeding the ±3.29 threshold, reducing the sample from 302 to 288 participants (Satari & Khalif, 2020). Next, the Mahalanobis Distance detected no multivariate outliers, as all values remained within the acceptable range (Dashdondov & Kim, 2023).

2.5 Reliability of the Items

Cronbach's alpha was analysed to assess internal consistency, yielding satisfactory reliability with values ranging from 0.882 to 0.952. Composite reliability and outer loadings further validated the measurement model. Items with outer loadings below 0.5 were removed to enhance composite reliability and average variance extracted (AVE) (Sarstedt et al., 2021). Composite reliability

ranged from 0.909 to 0.953, exceeding the 0.7 threshold (Gefen et al., 2000), while AVE values between 0.599 and 0.627 confirmed construct validity by surpassing the 0.5 threshold (Henseler et al., 2015) (see Table 1).

Table 1. Reliability analysis results.

Variable	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)	
Workplace Loneliness	0.952	0.953	0.621	
Job Performance	0.922	0.936	0.599	
Affective Commitment	0.882	0.909	0.627	

2.6 Validity of the Items

The researchers conducted a pre-test with 52 participants before distributing the survey, following Touloumi et al. (2019), who suggested that 20–50 cases are sufficient to detect significant flaws in the questionnaire. Participants provided feedback on question clarity, relevance, and comprehension, helping to identify ambiguities and improve the questionnaire before full implementation. The researchers assessed discriminant validity using the Heterotrait-Monotrait (HTMT) Ratio and found that all values were below the recommended threshold of 1.0 (HTMT < 1) (Hair et al., 2011), confirming the satisfactory discriminant validity of the constructs (see Table 2).

Table 2. Heterotrait-Monotrait (HTMT) ratio.

Construct	Affective Commitment	Job Performance	Workplace Loneliness
Affective Commitment			
Job Performance	0.834		
Workplace Loneliness	0.990	0.800	

2.7 Procedure

Prior to the full-scale distribution of the questionnaire, a pre-test was conducted to refine the survey instrument. This step helped to improve the validity and reliability of the data collection tool. Based on the pre-test results, necessary adjustments were made to ensure the clarity, relevance, and appropriateness of the items. Following this, the finalised questionnaire was distributed online to the selected participants. The data collection process aimed to gather insights into workplace loneliness, its impact on job performance, and the mediating role of affective commitment.

2.8 Data Analysis

The data was analysed using SPSS (version 26) and PLS-SEM via SmartPLS (version 4.0). The analysis began with reliability and validity assessments. Descriptive statistics, including participant demographics and levels of workplace loneliness, job performance, and affective commitment, were generated in SPSS, with means and standard deviations computed. PLS-SEM was used to evaluate the Coefficient of Determination (R²) and predictive Relevance (Q²) and test all four hypotheses, including the mediating effect of affective commitment.

3 RESULTS

3.1 Characteristics of the Participants

This study surveyed 288 Malaysian Gen Z employees using an online questionnaire with demographic questions at the beginning. The survey gathered data on gender, age, education, location, employment status, industry, job role, work experience, and work setting. The sample comprised 50.3% female and 49.7% male participants. Most participants (72.6%) were aged 18–25. Educational qualifications included bachelor's (82.1%), diplomas (8.9%), and master's degrees (8.0%). The highest representation was from Selangor (37.2%). Regarding employment, 45.6% held mid-level roles, 15.9% were executives, and 13.2% held entry-level positions. The distribution of employment was as follows: 65.3% in full-time jobs, 19.5% in internships, 9.9% self-employed, and 8.1% in part-time roles. Most participants (58.7%) had 1–3 years of work experience, and most worked remotely.

3.2 Levels of Workplace Loneliness, Job Performance, and Affective Commitment

Table 3 summarises the mean and standard deviation of key variables. On a five-point Likert scale, workplace loneliness averaged 3.36 (SD = 0.48), indicating moderate loneliness among Malaysian Gen Z employees. Job performance had a mean of 3.60 (SD = 0.26), reflecting moderate performance, while affective commitment averaged 2.98 (SD = 0.44), suggesting a moderate emotional attachment to the organisation. These results indicate that all three factors exist at moderate levels.

Table 3. Mean and standard deviations of the variables.

Variables	Overall Mean	Overall Standard Deviation
Workplace Loneliness	3.36	0.48
Job Performance	3.60	0.26
Affective Commitment	2.98	0.44

3.3 Evaluation of Structural Model

The researchers evaluated the structural model using the coefficient of determination (R²), where values above 0.10 indicate relationships between constructs (Sarstedt et al., 2021). Workplace loneliness significantly influenced affective commitment, explaining 81.6% of its variance, and job performance, accounting for 63.8%. Predictive relevance (Q²) was also assessed, with all values exceeding 0, confirming meaningful relationships among the study's constructs (Hair et al., 2011) (see Table 4). The structural model of this study is presented in Figure 2.

Table 4. Coefficients of deterr	mination $(R2)$ and predicti	ve relevance (Q2).
Targeted Construct	D 2	Ω^2

Targeted Construct	R ²	Q ²	
Affective Commitment	0.816	0.812	
Job Performance	0.638	0.590	

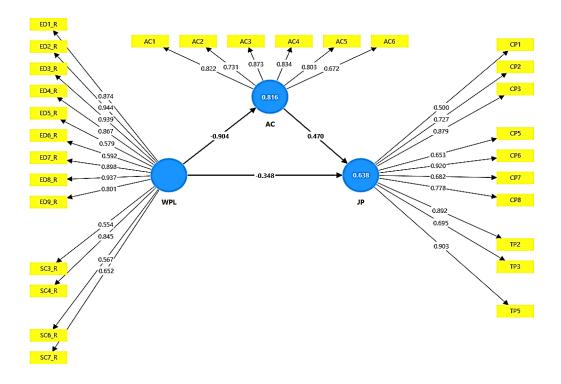


Figure 2. Structural model.

3.4 Hypotheses Testing

The study examined four hypotheses on the relationships between workplace loneliness, affective commitment, and job performance among Gen Z employees (see Table 5). Findings revealed a significant negative impact of workplace loneliness on job performance (H1: β = -0.348, p = 0.005) and affective commitment (H2: β = -0.904, p = 0.000). Affective commitment positively

influenced job performance (H3: β = 0.470, p = 0.000) and mediated the link between workplace loneliness and job performance, showing a negative mediation effect (H4: β = -0.425, p = 0.000). These results underscore the critical role of workplace loneliness and affective commitment in shaping Gen Z employees' job performance.

Table 5. Analysis of direct relationships and the mediator effect.

Hypothesis	Path relationship	Path Coefficient β	Std Error	t-Values	P- values	Results
H1	WPL -> JP	-0.348	0.123	2.827	0.005	Supported
H2	WPL -> AC	-0.904	0.017	54.565	0.000	Supported
Н3	AC -> JP	0.470	0.122	3.850	0.000	Supported
H4	WPL -> AC -> JP	-0.425	0.110	3.860	0.000	Supported

4 DISCUSSION

This study found that Generation Z employees experience workplace loneliness at moderate to high levels. This finding aligns with prior research suggesting that, as digital natives, Gen Z encounters difficulties in fostering meaningful workplace connections, particularly in hybrid and remote work settings (Barhate & Dirani, 2022). Additionally, the findings reinforce Bu et al.'s (2020) argument that the pandemic intensified feelings of loneliness within this generation due to restricted social interactions and isolation effects that continue to linger in the post-pandemic era.

The findings indicate moderate job performance levels, with notable differences across industries and work environments. These findings align with the work of Koopmans et al. (2014), which highlights that job performance is shaped by various individual, social, and organisational factors, including workplace conditions (Saidi et al., 2019), motivation (Wuryani et al., 2021), and emotional well-being (Obrenovic et al., 2020). The moderate job performance observed among Gen Z employees may stem from difficulties adapting to conventional workplace structures and inadequate support systems after the pandemic. This outcome is consistent with Celestin (2020), who found that Gen Z performs optimally in environments that reflect their core values, such as teamwork, inclusive decision-making, and diversity.

The analysis showed that affective commitment among Gen Z employees was generally moderate, reflecting a lower emotional attachment to their organisations. This is significant, as affective commitment is crucial for building loyalty and reducing turnover intentions (Anh Do et al., 2023). Such moderate levels may stem from Gen Z's entrepreneurial mindset, openness to nontraditional career paths, and ability to adapt and shift between opportunities (Dreyer & Stojanová, 2023). This also supports Sidorcuka and Chesnovicka (2017), who found that although Gen Z values meaningful social ties, their workplace commitment has declined after the pandemic, as lifelong employment is not their main goal.

The analysis identified a significant negative correlation between workplace loneliness and job performance, indicating that higher levels of loneliness among Gen Z employees are associated with poorer job performance. This finding aligns with Wright and Silard (2021), who highlighted the detrimental impact of workplace social isolation on employee morale and productivity. This result also conforms to the ATSE proposition that emotional disconnection disrupts the reciprocity norm essential for sustained engagement and productivity. In the Malaysian context, these results are consistent with Samion and Rahman (2021), who found that workplace loneliness negatively influenced job performance among academics aged 27 to 71. Although prior research has emphasised generational differences in workplace behaviour (Mahmoud et al., 2021), this relationship persists across generations in Malaysia. Consequently, H1 is supported, confirming that workplace loneliness has a detrimental effect on job performance.

The analysis further validated the hypothesis that workplace loneliness has a negative impact on affective commitment. The findings align with previous research, demonstrating that employees who experience heightened feelings of loneliness tend to exhibit weaker emotional attachment to their organisations. Ayazlar and Güzel (2014) emphasised that workplace loneliness erodes employees' emotional connections, ultimately reducing their affective commitment. These results highlight the necessity of cultivating a supportive work environment where employees feel valued and connected, which can help counteract the adverse effects of loneliness on commitment. ATSE also supports the erosive effect of loneliness on affective commitment. Thus, H2 is supported, confirming that workplace loneliness negatively influences affective commitment.

The study also confirmed a positive relationship between affective commitment and job performance, aligning with ATSE and the findings of Sungu et al. (2019). Employees with more substantial affective commitment demonstrated higher job performance, consistent with Schoemmel and Jonsson's (2014) results. Prior research suggests that emotionally invested employees are more likely to support organisational change and actively contribute to its success. This study indicates that a strong emotional connection to the workplace enhances motivation, effort, and efficiency, particularly for Gen Z employees, who highly value their workplace experience (Agegnehu et al., 2022). Therefore, H3 is supported, confirming a positive association between affective commitment and job performance among Gen Z employees.

The findings confirmed that affective commitment mediates the relationship between workplace loneliness and job performance. This result aligns with Kundi et al. (2020), who identified affective commitment as a significant mediator between psychological well-being and job performance. This study fills an existing research gap by addressing the negative psychological impact of loneliness. The results suggest that workplace loneliness diminishes employees' emotional attachment to their organisation, hindering job performance. These findings support the Affective Events Theory (AET), which emphasises the role of emotional connections in strengthening employee commitment. For instance, when employees feel supported and engage in meaningful internal communication, such as workplace friendships. It enhances their psychological well-being, ultimately leading to improved job performance (Qin & Men, 2023). In contrast, a lack of support, social isolation, and ineffective communication can adversely affect performance (Bieńkowska et al., 2022; Khalid et al., 2012). Therefore, H4 is supported, aligning with Basit and

Nauman (2023), who also found that affective commitment is a protective factor against the detrimental effects of workplace loneliness.

This study highlights that workplace loneliness negatively affects employees' emotions, sense of belonging, performance, and commitment, and it extends the relevance of the ATSE framework to Generation Z employees, whose heavy reliance on digital communication often weakens emotional bonds in traditional work settings. In Malaysia's collectivist culture, where emotional ties are deeply valued, workplace loneliness significantly impacts affective commitment and job performance, underscoring the need to integrate cultural dimensions into organisational strategies. Practically, organisations can mitigate isolation by providing job autonomy, fostering trust, encouraging collaboration, and creating opportunities for informal interaction through initiatives like peer mentorship and virtual social gatherings. In the post-pandemic era of hybrid work, adopting innovative office layouts and tailored support programs is crucial to sustaining performance and nurturing social connections, offering insights for Generation Z and preparing for future generations' needs.

However, this study's cross-sectional design and focus on Malaysian Gen Z limit generalisability, while the framework overlooks cultural norms, hierarchy, and power dynamics. It examines only affective commitment, excluding factors like gender or age. Future research should apply broader theories, explore generational and gender differences, and use longitudinal approaches to reveal how workplace loneliness evolves and shapes team dynamics and culture, enabling more targeted organisational interventions.

In conclusion, this research interprets the findings through the ATSE, which asserts that employees' emotional and social experiences in the workplace actively shape their attitudes, behaviours, and performance through reciprocal exchange processes. Results indicate that workplace loneliness negatively affects job performance, while affective commitment mitigates this effect. Addressing loneliness and fostering emotional connections can improve job performance and create a supportive work environment.

ACKNOWLEDGEMENTS

The authors gratefully acknowledge all participants for their valuable support and contributions to this study and the thoughtful feedback offered by the reviewers and journal editors.

AUTHOR CONTRIBUTIONS

The first author was responsible for designing the study, collecting data, and conducting the analysis. The second author supervised the project's overall progress, assisted in developing the questionnaire, contributed to drafting the manuscript based on this research, and managed general administrative tasks. The third author aided in interpreting the findings, contributed to writing the manuscript, and approved the final version for submission.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to this study.

DATA AVAILABILITY STATEMENT

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

FUNDING

This study was conducted without financial support from funding agencies, commercial entities, or other external sources.

REFERENCES

Abutalip, D., Yesbossyn, M., Pertiwi, F., Suleimen, S., & Kassymova, G. (2023). Career guidance for Generation Z: Modern methods of professional orientation in a stressful period. *Challenges of Science*, 6, 15–21. https://doi.org/10.31643/2023.02

Agegnehu, W., Abdissa, D., & Alemayehu, D. (2022). Confirmatory and exploratory factor analysis for validating Allen and Meyer organisational commitment questionnaire for health professionals in Ethiopia—Amharic language. *Journal of Healthcare Leadership*, *14*, 99–111. https://doi.org/10.2147/JHL.S364973

Aggarwal, A., Sadhna, P., Gupta, S., Mittal, A., & Rastogi, S. (2022). Gen Z entering the workforce: Restructuring HR policies and practices to foster task performance and organisational commitment. *Journal of Public Affairs*, 22(3), e2535. https://doi.org/10.1002/pa.2535

Allen, N. J., & Meyer, J. P. (1990). The measurement and antecedents of affective, continuance and normative commitment to the organisation. *Journal of Occupational Psychology*, 63(1), 1–18. https://doi.org/10.1111/j.2044-8325.1990.tb00506.x

Amarat, M., Akbolat, M., Ünal, Ö., & Güneş Karakaya, B. (2018). The mediating role of work alienation in the effect of workplace loneliness on nurses' performance. *Journal of Nursing Management*, 27(3), 553–559. https://doi.org/10.1111/jonm.12710

Anand, P., & Mishra, S. K. (2019). Linking core self-evaluation and emotional exhaustion with workplace loneliness: Does high LMX make the consequence worse? *The International Journal of Human Resource Management, 32*(10), 2124–2149. https://doi.org/10.1080/09585192.2019.1570308

Anh Do, D., Diem Doan, Q., Khanh Vu, L., Thi Le, T., Minh Tran, N., & Linh Nguyen, G. (2023). Antecedents of turnover intention among Gen Z in Vietnam: The mediating role of affective commitment. *Cogent Business & Management*, 10(3), 2267811. https://doi.org/10.1080/23311975.2023.2267811

Atay, A. (2024). Gen Z, explained: The art of living in a digital age. *Contemporary Sociology*, 53(3), 257–259. https://doi.org/10.1177/00943061241240882v

Ayazlar, G., & Güzel, B. (2014). The effect of loneliness in the workplace on organizational commitment. *Procedia-Social and Behavioural Sciences*, 131, 319–325. https://doi.org/10.1016/j.sbspro.2014.04.124

Badara, M. A. S., & Saidin, S. Z. (2014). Internal audit effectiveness: Data screening and preliminary analysis. *Asian Social Science*, 10(10), 76–85. https://doi.org/10.5539/ass.v10n10p76

Barhate, B., & Dirani, K. M. (2022). Career aspirations of generation Z: A systematic literature review. *European Journal of Training and Development*, 46(1-2), 139–157. https://doi.org/10.1108/EJTD-07-2020-0124

Bartholomeusz, R. A., Perera, D. R., & Masinghe, Y. P. (2021). The effects of workplace loneliness on employee commitment during the Covid-19 outbreak. *International Journal of Business and Management Invention*, 10(4), 19–27. https://doi.org/10.35629/8028

Basit, A. A., & Nauman, S. (2023). How workplace loneliness harms employee well-being: A moderated mediational model. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.1086346

Beam, C. R., & Kim, A. J. (2020). Psychological sequelae of social isolation and loneliness might be a larger problem in young adults than older adults. *Psychological Trauma: Theory, Research, Practice, and Policy, 12*(S1), S58–S60. https://doi.org/10.1037/tra0000774

Bernhold, Q. S., & Giles, H. (2020). Group-based identity accommodation in older adults' romantic relationships. *Communication Quarterly*, 68(4), 417–437. https://doi.org/10.1080/01463373.2020.1804960

Bieńkowska, A., Koszela, A., Sałamacha, A., & Tworek, K. (2022). COVID-19 oriented HRM strategies influence on job and organizational performance through job-related attitudes. *PLOS One*, *17*(4), e0266364. https://doi.org/10.1371/journal.pone.0266364

Bu, F., Steptoe, A., & Fancourt, D. (2020). Who is lonely in lockdown? Cross-cohort analyses of predictors of loneliness before and during the COVID-19 pandemic. *Public Health*, *186*, 31–34. https://doi.org/10.1016/j.puhe.2020.06.036

Celestin, M. (2020). Gen Z in the workforce: Strategies for leading the next generation. 5th International Conference on Recent Trends in Arts, Science, Engineering & Technology (ICRTASET-2020), India, 127–134. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5020351

Cenkci, A. T., & Bircan, T. (2024). The relationship between authentic leadership and workplace loneliness during the COVID-19 pandemic: The mediating role of interactional justice. *Management Research Review*, 47(2), 281–297. https://doi.org/10.1108/MRR-10-2022-0722

Chen, X., Peng, J., Lei, X., & Zou, Y. (2021). Leave or stay with a lonely leader? An investigation into whether, why, and when leader workplace loneliness increases team turnover intentions. *Asian Business & Management*, 20, 280–303. https://doi.org/10.1057/s41291-019-00082-2

Chmiel, M. (2024). Loneliness, office space arrangement and mental well-being of Gen Z PR professionals. Falling into the trap of an agile office? *Journal of Communication Management*, 29(3), 379–400. https://doi.org/10.1108/JCOM-03-2024-0046

Cropanzano, R., & Mitchell, M. S. (2005). Social exchange theory: An interdisciplinary review. *Journal of Management*, 31(6), 874–900. https://doi.org/10.1177/0149206305279602

Cucina, J. M., Byle, K. A., Martin, N. R., Peyton, S. T., & Gast, I. F. (2018). Generational differences in workplace attitudes and job satisfaction: Lack of sizable differences across cohorts. *Journal of Managerial Psychology*, 33(3), 246–264. https://doi.org/10.1108/JMP-03-2017-0115

Dåderman, A. M., Ingelgård, A., & Koopmans, L. (2020). Cross-cultural adaptation, from Dutch to Swedish language, of the Individual Work Performance Questionnaire. *Work*, 65(1), 97–109. https://doi.org/10.3233/WOR-193062

Dashdondov, K., & Kim, M.-H. (2023). Mahalanobis distance based multivariate outlier detection to improve performance of hypertension prediction. *Neural Processing Letters*, *55*, 265–277. https://doi.org/10.1007/s11063-021-10663-y

Dhir, S., Mohapatra, M., & Srivastava, S. (2023). The effect of workplace loneliness on employee wellbeing: Role of organizational support and resilience. *Global Business Review*. https://doi.org/10.1177/09721509231174738

Dreyer, C., & Stojanová, H. (2023). How entrepreneurial is German generation Z vs. generation Y? A literature review. *Procedia Computer Science*, 217, 155–164. https://doi.org/10.1016/j.procs.2022.12.211

Dusek, G., Yurova, Y., & Ruppel, C. P. (2015). Using social media and targeted snowball sampling to survey a hard-to-reach population: A case study. *International Journal of Doctoral Studies*, 10, 279–299. https://doi.org/10.28945/2296

- Firoz, M., Chaudhary, R., & Khan, A. (2021). Desolated milieu: Exploring the trajectory of workplace loneliness (2006-2019). *Management Research Review*, 44(5), 757–780. https://doi.org/10.1108/MRR-01-2020-0051
- Gefen, D., Straub, D. W., & Boudreau, M. -C. (2000). Structural Equation Modeling and Regression: Guidelines for research practice. *Communications of the Association for Information Systems*, 4(7), 1–78. https://doi.org/10.17705/1CAIS.00407
- Governale, A., McTighe, K., & Cechova, V. (2024). Psychological reactions to COVID-19: Ambiguous loss, posttraumatic growth, and coronavirus impact among college students. *Psychological Trauma: Theory, Research, Practice, and Policy, 16*(2), 201–207. https://doi.org/10.1037/tra0001508
- Gruber, J., Prinstein, M. J., Clark, L. A., Rottenberg, J., Abramowitz, J. S., Albano, A. M., Aldao, A., Borelli, J. L., Chung, T., & Davila, J. (2021). Mental health and clinical psychological science in the time of COVID-19: Challenges, opportunities, and a call to action. *American Psychologist*, 76(3), 409–426. https://doi.org/10.1037/amp0000707
- Hadi, N., & Tentama, F. (2020). Affective commitment, continuance commitment and normative commitment in reflecting organizational commitment. *American International Journal of Business Management*, 3(8), 148–156.
- Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. *Journal of Marketing Theory and Practice*, 19(2), 139–152. https://doi.org/10.2753/MTP1069-6679190202
- Hanafiah, J. M., Rasdi, R. M., & Musa, S. N. S. (2024). A conceptual framework in determining psychological well-being among school middle leaders. In Y. G. Ng, D. D. Daruis, & N. W. Abdul Wahat, (Eds.), *Human factors and ergonomics toward an inclusive and sustainable future: HFEM 2023* (Springer series in design and innovation, Vol. 46, pp. 129–140). Springer. https://doi.org/10.1007/978-3-031-60863-6 12
- Harari, T. T., Sela, Y., & Bareket-Bojmel, L. (2023). Gen Z during the COVID-19 crisis: A comparative analysis of the differences between Gen Z and Gen X in resilience, values and attitudes. *Current Psychology*, 42, 24223–24232. https://doi.org/10.1007/s12144-022-03501-4
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115–135. https://doi.org/10.1007/s11747-014-0403-8
- Holt-Lunstad, J., & Steptoe, A. (2022). Social isolation: An underappreciated determinant of physical health. *Current Opinion in Psychology*, 43, 232–237. https://doi.org/10.1016/j.copsyc.2021.07.012

Hwang, T.-J., Rabheru, K., Peisah, C., Reichman, W., & Ikeda, M. (2020). Loneliness and social isolation during the COVID-19 pandemic. *International Psychogeriatrics*, 32(10), 1217–1220. https://doi.org/10.1017/S1041610220000988

Khalid, A., Zafar, A., Zafar, M. A., Saqib, L., & Mushtaq, R. (2012). Role of supportive leadership as a moderator between job stress and job performance. *Information Management and Business Review*, 4(9), 487–495. https://doi.org/10.22610/imbr.v4i9.1004

Koopmans, L., Bernaards, C. M., Hildebrandt, V. H., de Vet, H. C., & van der Beek, A. J. (2014). Measuring individual work performance: Identifying and selecting indicators. *Work*, 48(2), 229–238. https://doi.org/10.3233/WOR-131659

Kotagi, P., Angolkar, M., & Koppad, R. (2023). Comparison of work efficiency in factory workers: Pre & post COVID lockdown – A cross-sectional study. *BMC Public Health*, 23, 939. https://doi.org/10.1186/s12889-023-15886-3

Kundi, Y. M., Aboramadan, M., Elhamalawi, E. M., & Shahid, S. (2020). Employee psychological well-being and job performance: Exploring mediating and moderating mechanisms. *International Journal of Organizational Analysis*, 29(3), 736–754. https://doi.org/10.1108/IJOA-05-2020-2204

Lawler, E. J. (2001). An affect theory of social exchange. *American Journal of Sociology*, 107(2), 321–352. https://doi.org/10.1086/324071

Lee, Y. N., Haw, Y. N., Ho, H. R., & Mohd Johan, M. R. (2023). Improving employee performance on work efficiency: A survey in employee productivity in Malaysia during COVID-19 pandemic age. *Jurnal Intelek*, 18(2), 179–194. http://10.24191/ji.v18i2.22274

López-Cabarcos, M. Á., Vázquez-Rodríguez, P., & Quiñoá-Piñeiro, L. M. (2022). An approach to employees' job performance through work environmental variables and leadership behaviours. *Journal of Business Research*, 140, 361–369. https://doi.org/10.1016/j.jbusres.2021.11.006

Mahapatra, G. P., Bhullar, N., & Gupta, P. (2022). Gen Z: An emerging phenomenon. *NHRD Network Journal*, 15(2), 246–256. https://doi.org/10.1177/26314541221077137

Mahmoud, A. B., Fuxman, L., Mohr, I., Reisel, W. D., & Grigoriou, N. (2021). "We aren't your reincarnation!" Workplace motivation across X, Y and Z generations. *International Journal of Manpower*, 42(1), 193–209. https://doi.org/10.1108/IJM-09-2019-0448

Mansfield, L., Victor, C., Meads, C., Daykin, N., Tomlinson, A., Lane, J., Gray, K., & Golding, A. (2021). A conceptual review of loneliness in adults: Qualitative evidence synthesis. *International Journal of Environmental Research and Public Health*, 18(21), 11522. https://doi.org/10.3390/ijerph182111522

Obrenovic, B., Jianguo, D., Khudaykulov, A., & Khan, M. A. S. (2020). Work-family conflict impact on psychological safety and psychological well-being: A job performance model. *Frontiers in Psychology*, 11, 475. https://doi.org/10.3389/fpsyg.2020.00475

Ozcelik, H., & Barsade, S. G. (2018). No employee an island: Workplace loneliness and job performance. *Academy of Management Journal*, 61(6), 2343–2366. https://doi.org/10.5465/amj.2015.1066

Özdemir, P. A., & Çelen, H. N. (2024). Social loneliness and perceived stress among middle-aged and older adults during the COVID-19 pandemic. *Current Psychology*, 43, 12198–12207. https://doi.org/10.1007/s12144-023-04301-0

Park, J., Han, S. J., Kim, J., & Kim, W. (2022). Structural relationships among transformational leadership, affective organizational commitment, and job performance: The mediating role of employee engagement. *European Journal of Training and Development*, 46(9), 920–936. https://doi.org/10.1108/EJTD-10-2020-0149

Peng, J., Chen, Y., Xia, Y., & Ran, Y. (2017). Workplace loneliness, leader-member exchange and creativity: The cross-level moderating role of leader compassion. *Personality and Individual Differences*, 104, 510–515. https://doi.org/10.1016/j.paid.2016.09.020

Perlman, D. (1988). Loneliness: A life-span, family perspective. In R. M. Milardo (Eds.), *Families and social networks* (pp. 190–220). Sage Publications, Inc.

Pourteimour, S., Yaghmaei, S., & Babamohamadi, H. (2021). The relationship between mental workload and job performance among Iranian nurses providing care to COVID-19 patients: A cross-sectional study. *Journal of Nursing Management*. https://doi.org/10.1111/jonm.13305

Qin, Y. S., & Men, L. R. (2023). Exploring the impact of internal communication on employee psychological well-being during the COVID-19 pandemic: The mediating role of employee organizational trust. *International Journal of Business Communication*, 60(4), 1197–1219. https://doi.org/10.1177/23294884221081838

Saidi, N. S. A., Michael, F. L., Sumilan, H., Lim, S. L. O., Jonathan, V., Hamidi, H., & Ahmad, A. I. A. (2019). The relationship between working environment and employee performance. *Journal of Cognitive Sciences and Human Development*, 5(2), 14–22. https://doi.org/10.33736/jcshd.1916.2019

Sakdiyakorn, M., Golubovskaya, M., & Solnet, D. (2021). Understanding Generation Z through collective consciousness: Impacts for hospitality work and employment. *International Journal of Hospitality Management*, 94, 102822. https://doi.org/10.1016/j.ijhm.2020.102822

- Samion, A. J., & Rahman, S. A. (2021). The effect of distress from COVID-19 and workplace loneliness on job performance among academics in Malaysian public universities. *International Journal of Social Policy and Society, 18*(S1), 120–140. https://ijsps.ism.gov.my/index.php/IJSPS/article/download/208/178
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2021). Partial least squares structural equation modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of market research* (pp. 587–632). Springer. https://doi.org/10.1007/978-3-319-05542-8 15-2
- Satari, S. Z., & Khalif, K. M. N. K. (2020). Review on outliers identification methods for univariate circular biological data. *Advances in Science, Technology and Engineering Systems*, *5*(2), 95–103. https://dx.doi.org/10.25046/aj050212
- Schoemmel, K., & Jonsson, T. S. (2014). Multiple affective commitments: Quitting intentions and job performance. *Employee Relations*, 36(5), 516–534. https://doi.org/10.1108/ER-08-2013-0116
- Sidorcuka, I., & Chesnovicka, A. (2017). Methods of attraction and retention of generation Z staff. *CBU International Conference Proceedings*, 5, 807–814. https://doi.org/10.12955/cbup.v5.1030
- Singh, A., & Gupta, B. (2015). Job involvement, organizational commitment, professional commitment, and team commitment: A study of generational diversity. *Benchmarking: An International Journal*, 22(6), 1192–1211. https://doi.org/10.1108/BIJ-01-2014-0007
- Sumari, M., Baharudin, D. F., Khalid, N. M., Ibrahim, N. H., & Ahmed Tharbe, I. H. (2020). Family functioning in a collectivist culture of Malaysia: A qualitative study. *The Family Journal*, 28(4), 396–402. https://doi.org/10.1177/1066480719844334
- Sungu, L. J., Weng, Q., & Xu, X. (2019). Organizational commitment and job performance: Examining the moderating roles of occupational commitment and transformational leadership. *International Journal of Selection and Assessment*, 27(3), 280–290. https://doi.org/10.1111/ijsa.12256
- Sürücü, L., & Maslakci, A. (2020). Validity and reliability in quantitative research. *Business & Management Studies: An International Journal*, 8(3), 2694–2726. https://doi.org/10.15295/bmij.v8i3.1540
- Tan, C. K. L., & Abdul-Samad, Z. (2023). A study of the impact of COVID-19 on construction workforce productivity in Malaysia. *International Journal of Productivity and Performance Management*, 72(8), 2376–2396. https://doi.org/10.1108/IJPPM-07-2021-0421
- Tofighi, D. (2023). Mediation analysis. In F. Maggino (Eds.), *Encyclopedia of quality of life and well-being research* (pp. 4276–4279). Springer. https://doi.org/10.1007/978-3-031-17299-1 1771

- Touloumi, G., Karakatsani, A., Karakosta, A., Sofianopoulou, E., Koustenis, P., Gavana, M., Alamanos, Y., Kantzanou, M., Konstantakopoulos, G., Chryssochoou, X., Benos, A., Vantarakis, A., Hadjichristodoulou, C., Chlouverakis, G., Trypsianis, G., Voulgari, P. V., Makrilakis, K., Liatis, S., & Stergiou, G. (2019). National survey of morbidity and risk factors (EMENO): Protocol for a health examination survey representative of the adult Greek population. *JMIR Research Protocols*, 8(2), e10997. https://doi.org/10.2196/10997
- Walz, T., Kensbock, J. M., de Jong, S. B., & Kunze, F. (2024). Lonely@Work@Home? The impact of work/home demands and support on workplace loneliness during remote work. *European Management Journal*, 42(5), 767–778. https://doi.org/10.1016/j.emj.2023.05.001
- Wax, A., Deutsch, C., Lindner, C., Lindner, S. J., & Hopmeyer, A. (2022). Workplace loneliness: The benefits and detriments of working from home. *Frontiers in Public Health*, 10, 903975. https://doi.org/10.3389/fpubh.2022.903975
- Wright, S. L., Burt, C. D. B., & Strongman, K. T. (2006). Loneliness in the workplace: Construct definition and scale development. *New Zealand Journal of Psychology*, *35*(2), 59–68.
- Wright, S., & Silard, A. (2021). Unravelling the antecedents of loneliness in the workplace. *Human Relations*, 74(7), 1060–1081. https://psycnet.apa.org/doi/10.1177/0018726720906013
- Wuryani, E., Rodli, A. F., Sutarsi, S., Dewi, N. N., & Arif, D. (2021). Analysis of decision support system on situational leadership styles on work motivation and employee performance. *Management Science Letters*, 11, 365–372. http://dx.doi.org/10.5267/j.msl.2020.9.033
- Xia, N., & Li, H. (2018). Loneliness, social isolation, and cardiovascular health. *Antioxidants & Redox Signaling*, 28(9), 837–851. https://doi.org/10.1089/ars.2017.7312
- Xu, C., Lin, N., Shen, Z., Xie, Z., Xu, D., Fu, J., & Yan, W. (2024). Bedtime procrastination related to loneliness among Chinese university students during post-pandemic period: A moderated chain mediation model. *BMC Public Health*, 24, 491. https://doi.org/10.1186/s12889-024-18019-6
- Zeng, N., Zhao, Y.-M., Yan, W., Li, C., Lu, Q.-D., Liu, L., Ni, S.-Y., Mei, H., Yuan, K., & Shi, L. (2023). A systematic review and meta-analysis of long term physical and mental sequelae of COVID-19 pandemic: Call for research priority and action. *Molecular Psychiatry*, 28, 423–433. https://doi.org/10.1038/s41380-022-01614-7
- Zhou, X. (2018). A review of researches workplace loneliness. *Psychology*, *9*(5), 1005–1022. https://doi.org/10.4236/psych.2018.95064