



# A meta-analysis of knowledge hiding behavior in organizations: Antecedents, consequences, and boundary conditions

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## ABSTRACT

In this meta-analysis study, we propose a comprehensive framework for investigating the factors related to knowledge-hiding (KH) behavior, and the boundary conditions in those different relationships. These factors include human resource (HR) practices, leadership, and personality traits that lead to KH behavior, as well as two types of consequences: psychological and behavioral outcomes, and performance-related outcomes. With 267 independent samples from 248 primary studies, we conducted meta-analytic correlations, relative weight analysis, meta-regression analyses, and meta-subgroup analyses. Results indicate significant relationships between HR practices, leadership styles, personality traits and KH. KH was found to significantly impact psychological and behavioral outcomes, as well as performance-related outcomes. We further examined the moderating roles of demographic and contextual factors on KH and its antecedents, as well as methodological factors on the relationship between KH and its consequences. We discussed the implications and future directions.

## 1. Introduction

Knowledge hiding (KH), a behavior at work that impacts both organizations and individuals, has recently attracted growing attention; since the mid-2020 s, some 400 research studies expressly address the idea. According to Connelly et al. (2012), KH refers to employees' deliberate concealment and/or withholding of information that other people require or expect to know. The ubiquity of KH behavior in the workplace may be a major factor in the rising number of academic studies on this behavior.

Although not always harmful, the negative impact of KH behaviors on employees and the workplace should not be underestimated. Examples include increased negative emotional states (Rezwan & Takahashi, 2021), decreased trust (Erkutlu & Chafra, 2021), and unproductive performance (Guo et al., 2022). A significant body of literature on KH also suggests that employees who engage in this behavior experience a range of unfavorable emotional, attitudinal, and behavioral outcomes. The ability of organizations to compete and grow financially may be impacted as a result (Cerne et al., 2014). Given its potential impact on both financial and non-financial performance, it is not surprising that KH in knowledge management and organizational behavior has become

a hot topic for research.

Although the literature on KH is expanding, findings remain non-conclusive. For instance, Nguyen et al. (2022) found that KH has a detrimental impact on people's work performance, but Wang et al. (2018) found that perceived KH has a good impact on knowledge seekers' individual sales performance. Several qualitative and bibliometric review studies evaluate the rapidly growing field of KH (e.g., Anand et al., 2022; Siachou et al., 2021; Xiao & Cooke, 2019). They have paid substantial attention to the key influences on KH, such as ethical leadership, abusive supervision, trust, emotion, organizational identification, psychological identification, and so forth. Some typical consequences of KH, including extra-role performance, task performance, innovation, distrust, and creativity have also been reviewed. A few review papers have discussed the role of mediators and moderators (e.g., Anand et al., 2022; Xiao & Cooke, 2019). While these studies provide valuable overviews of the field, they focus on descriptive or surface-level relationships between variables and fall short of delving deep into the intricate relationships between variables and exploring the broader theoretical implications.

Meta-analyses provide a robust and quantitatively rigorous method for synthesizing and understanding data from multiple individual

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studies, allowing us to discern patterns, inconsistencies, and gaps in the existing research effectively (Borenstein et al., 2021). Recent meta-analytical works by Arain et al. (2024), Škerlavaj et al. (2023) and Xiao (2024), for example, have provided cumulative effect sizes on several antecedents and consequences of KH behaviors (see Table 1). Recognizing their contributions, our study posits a need for a more granular exploration, specifically targeting critical aspects of KH's antecedents and consequences that have not been sufficiently addressed in previous studies. In our meta-analysis, we study how KH behavior relates to psychological, behavioral and performance outcomes in various organizational contexts: among individual employees, within team interactions, and across the broader organizational environment. We do this by concentrating on three different antecedent categories: human resource (HR) practices, leadership, and personality factors.

Furthermore, we look into how the links between KH and its antecedents and outcomes are impacted by the moderating effects of demographic, contextual, and methodological factors. The rationale for selecting these moderators is multifaceted. Demographic factors such as age, education, and tenure, are known to influence employees' perceptions and behaviors within organizational settings (Hoffman et al., 2007). Additionally, cultural differences, particularly power distance, significantly impact employees' perceptions and responses to similar situations (Hofstede, 1984). Moreover, since recent articles advocate using multiple data collection waves and diverse sources (e.g., An, 2022; Becker, 2022), methodological approaches are included as moderators to better understand the temporal effects and self-report bias.

The study addresses the following five crucial research questions: What particular HR practices are connected to KH? How do various leadership styles affect KH behavior? Which personality characteristics are associated with KH? What impact does KH have on psychological, behavioral and performance outcomes? How do demographic, contextual, and methodological factors moderate the different relationships? By addressing these questions, this meta-analysis provides an in-depth and nuanced understanding of what factors contribute to KH and how the concept influences outcomes.

This study makes several contributions. In response to calls in the current literature (Connelly & Zweig, 2015), it develops a comprehensive and integrative theoretical framework that incorporates a wide variety of antecedents and effects of KH, including HR practices, leadership, and personality traits, and defines the border conditions that affect the linkages. In light of recent meta-analyses (Arain et al., 2024; Škerlavaj et al., 2023; Xiao, 2024), our study uses a structured framework in KH to delve into the role of HR practices, offering a novel perspective that distinguishes our work from existing literature. As the first meta-analysis to incorporate HR practices as antecedents of KH, this study promotes a reassessment of current models that have overlooked the potential influence of HR on KH behaviors within organizations.

Our meta-analysis also distinguishes itself through its comprehensive categorization of leadership. For example, Arain et al. (2024) only considered three leadership styles: ethical, empowering, and abusive leadership, and put them under the category of "contextual" with other non-leadership variables. We present a more exhaustive classification of leadership styles, which encompasses change-oriented, relational-oriented, task-oriented, and destructive leadership (Supplementary C presents the detailed categories of each variable). This categorization is more extensive than previous studies, capturing the nuances of leadership behaviors and their potential influence on KH.

With regard to the consequences of KH, the meta-analysis on the KH-outcome relationship across different aspects—psychological, behavioral, and performance-related variables—is a ground-breaking addition to academic research and real-world applications. This meta-analysis will help resolve any discrepancies or conflicting findings in the literature and clarify the nature and strength of the relationship between KH and different types of consequences by combining the results from several studies.

A further contribution is that this meta-analytic work incorporates

boundary conditions, shedding light on the conditions under which KH is most likely to increase or decrease. We also answer Hunter and Schmidt's (2004) call to look into moderators that have not been examined in individual research. This distinguishes meta-analysis from individual primary studies, as meta-analysis can run comprehensive analyses that primary studies cannot perform (e.g., examining the role of measurement considerations). This study, therefore, offers novel insights that can be used to create tailored treatments aimed at preventing or reducing the occurrence of KH in the workplace by investigating the influence of demographic, contextual, and methodological aspects as modifiers (see Table 1 for important intellectual and practical gaps in existing KH review studies).

## 2. Conceptual framework

Our study is underpinned by the following conceptual framework (see Fig. 1), in which we outline HR practices, leadership, and personal traits as antecedents and psychological, behavioral and performance-related outcomes as outcomes of KH. We also examine demographic, contextual, and methodological factors as boundary conditions of KH. We elaborate on this conceptual framework below.

### 2.1. Antecedents of KH

#### 2.1.1. HR practices

The focus of human resource management (HRM) is to optimize every employee's contribution to a company's performance (Schuler et al., 2002). This idea encompasses a range of tasks, duties, and procedures intended to attract, develop, and retain (or let go of) a company's people resources (Armstrong & Taylor, 2020). Drawing on Subramony's (2009) classification method for HR practices, we conceptualize the practices into three main categories: skill-enhancing, motivation-enhancing, and empowerment-enhancing. This classification is supported by the ability-motivation-opportunity (AMO) model (Appelbaum et al., 2000), which posits that effective HR practices must address employee ability, motivation, and opportunities to participate. Furthermore, we employ the self-determination theory (SDT) to explain the relationship between HR practices and KH. According to SDT, humans need autonomy, competence, and relatedness on a basic psychological level (Ryan & Deci, 2000). Fulfilling these needs fosters enhanced employee motivation and drives more effective behavioral outcomes (Gagné & Deci, 2005).

**Skill-enhancing HR practices** refer to staffing and skill training initiatives aimed at improving the overall knowledge, abilities, and skill levels of the workforce (Ostroff & Bowen, 2000). These practices foster a sense of competence among employees, fulfilling their intrinsic need for enhancing abilities that will enable them to be more competent in the organization (Van den Broeck et al., 2016). Empirical evidence supports the notion that when employees perceive their abilities are enhanced and recognized, they are less inclined to engage in KH and more likely to participate in team collaborative efforts (El-Kassar et al., 2022).

**Motivation-enhancing HR practices** focus on individual and group performance evaluations, which are closely linked to incentive-based compensation systems and performance-oriented promotion mechanisms (Huselid, 1995). Such recognition and promotion mechanisms not only make employees feel that their work is valued, but also enhance their sense of competence (Gagné & Deci, 2005). By providing rewards and fair recognition, these practices fulfill employees' needs for a sense of value (Alnaimi & Rjoub, 2021). Collectively, these factors enhance employees' intrinsic motivation, thereby reducing the occurrence of KH behaviors (Deci et al., 2017; Gagné et al., 2019).

**Empowerment-enhancing HR practices** refer to strategies aimed at improving individual employees' self-efficacy (Conger & Kanungo, 1988). These HR practices grant employees greater autonomy and participatory rights, enabling them to be involved in decision-making processes and benefit from information sharing (Mathieu et al., 2006).

**Table 1**  
Important intellectual and practical gaps in existing KH review papers.

Authors	Method and procedure	Time period covered	Focus of the review	Unique differences between our study and other reviews
Anand, Centobelli & Cerchione (2020)	Review	2005–2019	Focuses on drivers of KH: situation, psychological ownership, hostility and abuse, identity, and norms.	<ul style="list-style-type: none"> <li>• Includes a more comprehensive framework (antecedents, consequences, and boundary conditions)</li> <li>• Focuses on different antecedents with unique categories (HR practices, leadership, and personality traits)</li> <li>• Includes more levels of antecedents</li> <li>• Explores relationships quantitatively</li> </ul>
Anand, Offergelt & Anand (2022)	Systematic review	2012–2020	Focuses on the geographic representation of KH research, methodological approaches, and theories adopted to investigate KH.	<ul style="list-style-type: none"> <li>• Includes a more comprehensive framework (antecedents, consequences, and boundary conditions)</li> <li>• Focuses on different antecedents with unique categories (HR practices and personality traits)</li> <li>• Uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Includes different boundary conditions (demographic, contextual and methodological factors)</li> <li>• Explores relationships quantitatively</li> </ul>
Arain et al. (2024)	Meta-analysis	2012–2022	Focuses on antecedents of KH from aspects of individual, interpersonal, contextual and knowledge characteristics, consequences of KH from aspects of performance, and attitudinal and interpersonal outcomes.	<ul style="list-style-type: none"> <li>• Focuses on different antecedents with unique categories (HR practices and personality traits)</li> <li>• Uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Uniquely introduces boundary conditions (demographic, contextual and methodological factors)</li> </ul>
Bernatović, Slavec & Černe (2022)	Bibliometric analysis	1985–2021	Focuses on KH co-citation network and identifies the most influential topics.	<ul style="list-style-type: none"> <li>• Focuses on antecedents with unique categories (HR practices, leadership and personality traits)</li> <li>• Examines different kinds of consequences (psychological, behavior and performance-related)</li> <li>• Provides more precise estimates of the effects of current empirical articles to derive conclusions</li> </ul>
Di Vaio et al. (2021)	Systematic review	1988–2020	Focuses on publication activities, prominent themes, citation trends, and collaborations amongst contributors in the KH field.	<ul style="list-style-type: none"> <li>• A completely different focus of KH (antecedents, consequences, and boundary conditions)</li> </ul>
Fauzi (2022)	Systematic review	2010–2021 (February)	Focuses on the role of leadership, team creativity and innovation on KH in a team context.	<ul style="list-style-type: none"> <li>• Focuses on different antecedents with unique categories (HR practices and personality traits)</li> <li>• Includes more kinds of leadership styles</li> <li>• Includes different boundary conditions (demographic, contextual, and methodological factors)</li> <li>• Explores relationships quantitatively</li> </ul>
Garg, Kumar & Ganguly (2022)	Systematic review	2012–2021 (June)	Focuses on several themes of KH; divides them into psychological and behavioral, organizational factors, nature of knowledge, etc.	<ul style="list-style-type: none"> <li>• Focuses on different antecedents with unique categories (HR practices, leadership, and personality traits)</li> <li>• Focuses on different consequences of KH</li> <li>• Includes different boundary conditions (contextual and methodological)</li> <li>• Explores relationships quantitatively</li> </ul>
He et al. (2021)	Review	2012–2020	Focuses on KH’s dimensions, antecedents, consequences, theories, and influence mechanisms.	<ul style="list-style-type: none"> <li>• Focuses on different antecedents (HR practices)</li> <li>• Includes a more comprehensive examination of leadership: uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Includes different boundary conditions (demographic, contextual, and methodological)</li> <li>• Explores relationships quantitatively</li> </ul>
Irum, Ghosh & Pandey (2020)	Review	2001–2019	Focuses on the impacts of workplace incivility on KH.	<ul style="list-style-type: none"> <li>• Includes a more comprehensive framework (antecedents, consequences, and boundary conditions)</li> <li>• Focuses on different antecedents with unique categories (HR practices, leadership, and personality traits)</li> <li>• Explores relationships quantitatively</li> </ul>
Issac et al. (2021)	Review	1981–2019	Focuses on internal, external and integrated factors that trigger KH.	<ul style="list-style-type: none"> <li>• Includes a unique and comprehensive framework (antecedents, consequences, and boundary conditions)</li> <li>• Focuses on different antecedents with unique categories (HR practices, leadership, and personality traits)</li> <li>• Explores relationships quantitatively</li> </ul>
Issac, Baral & Bednall (2021)	Review	2001–2019	Focuses on antecedents of KH (such as complexity, distrust, knowledge-sharing climate, etc).	<ul style="list-style-type: none"> <li>• Includes a unique and comprehensive framework (antecedents, consequences, and boundary conditions)</li> <li>• Focuses on different antecedents with unique categories (HR practices, leadership, and personality traits)</li> <li>• Includes different boundary conditions (contextual and methodological)</li> <li>• Explores relationships quantitatively</li> </ul>
Khan et al. (2022)	Bibliographic analysis	2013–2022 (April)	Focuses on the role of psychological ownership in KH.	<ul style="list-style-type: none"> <li>• Includes a more comprehensive framework (antecedents, consequences, and boundary conditions)</li> </ul>

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Table 1 (continued)

Authors	Method and procedure	Time period covered	Focus of the review	Unique differences between our study and other reviews
Oliveira, Curado & de Garcia (2021)	Systematic review	2011–2017	Focuses on KH, knowledge hoarding, and knowledge sharing, as well as their antecedents (e.g., work incivility, distrust), consequences (e.g., team creativity, innovation) and boundary conditions (e.g., decision autonomy, team stability).	<ul style="list-style-type: none"> <li>• Focuses on different antecedents with unique categories (HR practices, leadership, and personality traits)</li> <li>• Provides more precise estimates of the effects of current empirical articles to derive conclusions</li> <li>• Focuses on different antecedents with unique categories (HR practices)</li> <li>• Includes a more comprehensive examination of leadership: uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Examines different kinds of consequences (psychological, behavior and performance-related)</li> <li>• Focuses on different boundary conditions (demographic, contextual, and methodological moderators)</li> <li>• Explores relationships quantitatively</li> <li>• Includes a more comprehensive framework (antecedents, consequences, and moderators)</li> <li>• Focuses on different antecedents with unique categories (HR practices)</li> <li>• Includes a more comprehensive examination of leadership: uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Examines different kinds of consequences (psychological, behavior and performance-related)</li> <li>• Focuses on different boundary conditions (demographic, contextual, and methodological moderators)</li> </ul>
Rezwan & Takahashi (2021)	Systematic review	2010–2021	Focuses on the psychological process behind KH.	<ul style="list-style-type: none"> <li>• Explores relationships quantitatively</li> <li>• Includes a more comprehensive framework (antecedents, consequences, and moderators)</li> <li>• Focuses on different antecedents with unique categories (HR practices)</li> <li>• Includes a more comprehensive examination of leadership: uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Examines different kinds of consequences (psychological, behavior and performance-related)</li> <li>• Focuses on different boundary conditions (demographic, contextual, and methodological moderators)</li> </ul>
Ruparel & Choubisa (2020)	Systematic review	2008–2018	Focuses on KH's specific antecedents (e.g., workplace incivility, distrust), consequences (e.g., team creativity, promotion turnover), and boundary conditions (e.g., autonomy, cultural intelligence).	<ul style="list-style-type: none"> <li>• Explores relationships quantitatively</li> <li>• Focuses on different antecedents with unique categories (HR practices)</li> <li>• Examines different kinds of consequences (psychological, behavior and performance-related)</li> <li>• Introduces different boundary conditions (demographic, contextual and methodological moderators)</li> <li>• Explores relationships quantitatively</li> <li>• Focuses on different antecedents with unique categories (HR practices and personality traits)</li> <li>• Uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Examines different kinds of consequences (psychological, behavior and performance-related)</li> <li>• Uniquely introduces boundary conditions (demographic, contextual and methodological factors)</li> </ul>
Skerlavaj, Černe & Batistić (2023)	Meta-analysis	2012–2022 (March)	Focuses on antecedents and consequences of KH.	<ul style="list-style-type: none"> <li>• Focuses on different antecedents with unique categories (HR practices and personality traits)</li> <li>• Uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Examines different kinds of consequences (psychological, behavior and performance-related)</li> <li>• Uniquely introduces boundary conditions (demographic, contextual and methodological factors)</li> </ul>
Siachou et al. (2021)	Systematic review	1998–2020	Focuses on personal antecedents (e.g., work skills, interpersonal injustice), organizational antecedents (e.g., work design, relational climate), consequences (e.g., turnover, creativity) and boundary conditions (e.g., cultural intelligence, social value orientation).	<ul style="list-style-type: none"> <li>• Focuses on different antecedents with unique categories (HR practices and personality traits)</li> <li>• Includes a more comprehensive examination of leadership: uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Examines different kinds of consequences (psychological, behavior and performance-related)</li> <li>• Includes different boundary conditions (demographic, contextual and methodological moderators)</li> <li>• Explores relationships quantitatively</li> </ul>
Xia et al. (2022)	Bibliometric analysis	2002–2020	<ul style="list-style-type: none"> <li>• Focuses on publication performance, thematic evolution, and most influential topics of the KH field.</li> </ul>	<ul style="list-style-type: none"> <li>• Focuses on different antecedents with unique categories (HR practices)</li> <li>• Examines different kinds of consequences (psychological, behavior and performance-related)</li> <li>• Includes different boundary conditions (demographic and methodological moderators)</li> <li>• Provides more precise estimates of the effects of current empirical articles to derive conclusions</li> </ul>
Xia (2024)	Meta-analysis	2010–2022	Focus on personal and contextual antecedents, employee outcomes and cross-cultural moderator.	<ul style="list-style-type: none"> <li>• Focuses on different antecedents with unique categories (HR practices, leadership, and personality traits)</li> <li>• Includes a more comprehensive examination of leadership: uniquely includes all kinds of leadership and uses a highly acknowledged classification (relational-, change-, task-oriented) in addition to destructive leadership</li> <li>• Examines different kinds of consequences with unique categories (psychological, behavior and performance-related)</li> <li>• Includes different boundary conditions (demographic, contextual and methodological moderators)</li> </ul>

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Table 1 (continued)

Authors	Method and procedure	Time period covered	Focus of the review	Unique differences between our study and other reviews
Xiao & Cooke (2019)	Systematic review	1997–2017	Focuses on KH in the Chinese context, including different levels of antecedents and consequences, as well as moderators.	<ul style="list-style-type: none"> <li>• Focuses on different antecedents with unique categories (leadership and personality traits)</li> <li>• Includes different boundary conditions (demographic and methodological moderators)</li> <li>• Explores relationships quantitatively</li> </ul>

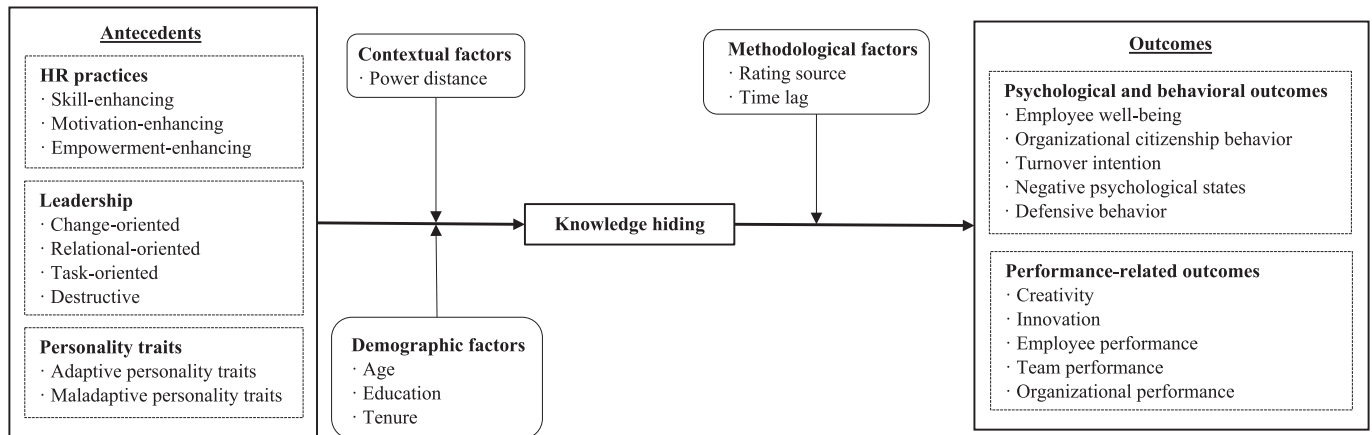


Fig. 1. Conceptual model.

When employees effectively participate in decision-making, they feel more connected to the organization, and therefore are more likely to prioritize organizational interests over self-interest (Saks, 2022). When autonomy and relatedness needs are fulfilled, employees are encouraged to act in ways that support the organization in achieving its goals (Gagné et al., 2019), thereby reducing the likelihood they will engage in KH. Taken together, we hypothesize:

**Hypothesis 1:** Empowerment-enhancing (H1a), motivation-enhancing (H1b), and skill-enhancing (H1c) HR practices will be negatively related to KH.

Given that KH behavior is largely influenced by employees' perceptions of their workplace, motivation- and empowerment-enhancing HR practices may more significantly curtail KH behavior than the practices that merely enhance skills, as they address the root causes of KH, such as a lack of trust and poor communication (Kumar & Varkkey, 2018). Furthermore, motivation-enhancing HR practices, which foster a supportive workplace climate, are expected to more significantly reduce KH than empowerment-enhancing practices. The latter, while boosting employees' control, may not directly cultivate the emotional environment needed to minimize KH (Gabriel et al., 2016). We therefore hypothesize:

**Hypothesis 2:** The relative contribution of motivation-enhancing HR practices to KH behavior will be the strongest, followed by empowerment-enhancing and skill-enhancing HR practices.

### 2.1.2. Leadership

Change-oriented, relationship-oriented, and task-oriented are three meta-categories that can be used to classify leadership behavior (Yukl et al., 2002). These categories are unique from one another philosophically and practically (Derue et al., 2011). Numerous studies have examined the connections between different leadership styles and employee behavior (e.g., Nawaz et al., 2024; Shamim et al., 2019). Path-goal theory is a popular explanation of these connections. According to this theory, one of the primary roles of leaders is to facilitate subordinates' goal achievement by providing structure, support, or rewards

(House, 1971).

**Change-oriented leadership** aims to create an environment that encourages innovation and transformation (Yukl et al., 2019). This type of leadership stimulates employee innovation and enthusiasm by setting challenging goals and providing essential resources and opportunities (Azeem et al., 2023). The establishment of clear transformative paths and the provision of necessary support help employees perceive that their efforts are valuable and recognized (Eisenberger et al., 1990). Empirical research further indicates that employees under such conditions are less likely to engage in KH behaviors (Pereira & Mohiya, 2021).

**Relationship-oriented leadership** emphasizes supporting others, caring for subordinates' welfare, and fostering a healthy work environment (Gerpott et al., 2019). Such leaders provide emotional support and build trust, helping employees overcome emotional barriers in the workplace and enhancing their sense of belonging and loyalty toward organizations (Wang & Noe, 2010). When employees feel valued and cared for in the process of achieving their goals, they are less likely to engage in negative behaviors towards the team and organization, such as KH (Nerstad et al., 2018).

**Task-oriented leadership** focuses on guiding the team to achieve predetermined goals and closely monitoring the achievement of these goals (Breevaart & de Vries, 2021). Consistent with House's (1971) path-goal theory, leaders with a task-oriented approach set clear goals and paths, provide structured guidance, and assist employees in overcoming specific task-related obstacles. Clear task assignments help employees understand their responsibilities and expectations, reducing uncertainty and thus decreasing the likelihood of KH (Donate et al., 2022). Taken together, we hypothesize:

**Hypothesis 3:** Change-oriented (H3a), relationship-oriented (H3b), and task-oriented (H3c) leadership behaviors will be negatively related to KH.

The three categories listed above are examples of effective leadership styles, and they are consistent with how leadership behavior has traditionally been seen. However, new data suggests that leaders may act in ways that intentionally or accidentally hurt followers, teams, and organizations (Decoster et al., 2021). Destructive leadership includes

rudeness, disrespect, reprimands, and even misbehavior (Schyns & Schilling, 2013); these negative aspects of leadership behavior are lacking from Yukl et al.'s (2002) paradigm and are grouped here as a meta-category in leadership behavior.

**Destructive leaders** frequently prioritize their own objectives and interests, which can lead to a toxic work atmosphere that demotivates employees (Tepper & Henle, 2011). According to Mitchell and Ambrose (2007), some leaders even engage in abusive or bullying behaviors that make their followers feel threatened or in danger. They would be more likely to keep their knowledge to themselves if they believe that their leaders may victimize or treat them unfairly (Guo et al., 2021). Therefore, we propose the following hypothesis:

**Hypothesis 4:** Destructive leadership will be positively related to KH.

Destructive leadership, characterized by negative behaviors such as bullying and harassment, has lasting negative psychological effects that strongly encourage KH employees to retain information in self-defense (Tepper & Henle, 2011). The destructive leadership's influence on KH may be evident in a persistent culture of KH even after the departure of a harmful leader (Pradhan et al., 2020), coupled with a "negativity bias" that accentuates adverse experiences (Baumeister et al., 2001).

Of the three classic positive leadership styles, relationship-oriented leadership fosters trust and communication, thereby creating a productive work environment (Kostova & Roth, 2003). Since these mechanisms have a direct influence on employees' psychological states and behavioral choices (Nerstad et al., 2018), we consider that relationship-oriented leadership is highly effective in reducing KH. Although change-oriented leadership emphasizes organizational innovation, it can simultaneously introduce uncertainty and stress (Buttigieg et al., 2023). Such uncertainties may cause employees to feel anxious and insecure, thereby weakening its intended effect on reducing KH (Baer & Frese, 2003). Task-oriented leadership, with its strong focus on task goals and work performance, may neglect fluctuations in key factors such as employee psychology and cognition (Menguc & Auh, 2006). Consequently, this leadership style is likely the least effective in mitigating KH, as it fails to address the underlying emotional and cognitive needs of employees (Piccolo et al., 2010). As such, we propose the following:

**Hypothesis 5:** The relative contribution of destructive leadership to KH behavior will be the strongest, followed by relational-oriented, then change-oriented, and lastly, task-related leadership.

### 2.1.3. Personality traits

Personality traits are individual variations in character models of thought, feeling, and behavior that seem to be stable over time and in many contexts (Ozer & Benet-Martinez, 2006). This provides a valuable framework for examining the nuanced relation of personality traits to work-related outcomes; the use of adaptive and maladaptive dimensions to categorize personality traits has grown more widespread (Judge et al., 2006).

**Adaptive personality traits** refer to those characteristics that help individuals adjust to and cope with the workplace environment effectively, enhance their ability to handle stress, build positive relationships with others, and achieve personal goals. Conscientiousness, emotional stability, and agreeableness are a few examples of adaptive personality traits that have been connected to successful work-related outcomes (Barrick & Mount, 1991). Conversely, **maladaptive personality traits** are those that interfere with an individual's ability to adapt to the workplace environment, manage stress, and establish healthy interpersonal relationships. Traits such as neuroticism, narcissism, and Machiavellianism fall into this category and are associated with undesirable work-related outcomes (Jonason & Webster, 2010).

Self-monitoring theory is frequently used to explain the connections between personality traits and employee behavior (Kudret et al., 2019; Snyder, 1987). KH behaviors might vary according to an individual's

capacity to observe and modify behavior to conform to situational demands and societal expectations. According to Oh et al. (2014), people with high self-monitoring capacities may be better able to adjust their behaviors to different social and situational contexts than people with poor self-monitoring capacities. Highly adaptable employees are adept at tailoring their acts to fit the situation and conform to social norms (Kudret et al., 2019). They are more predisposed to share their expertise with teammates, fostering collaboration and contributing to the attainment of organizational goals. By contrast, people who exhibit a high level of maladaptive personality traits are less adaptable and may be consistently self-serving to keep power and control over their knowledge (Cohen, 2016). Thus, we propose:

**Hypothesis 6:** Adaptive personality traits will be negatively related to KH.

**Hypothesis 7:** Maladaptive personality traits will be positively related to KH.

To examine the relative importance of adaptive and maladaptive personality traits and KH, we refer to the trait activation theory (Tett & Burnett, 2003), which suggests that traits are more likely to affect behavior when the situational cues are relevant to the trait. This theory implies that the relative significance of adaptive and maladaptive personality traits may vary depending on the particular setting and desired outcome. For instance, maladaptive personality traits like narcissism and Machiavellianism may be more significant in predicting individual behavior and outcomes in a highly competitive workplace (Wu & Lebreton, 2011). In contrast, adaptive personality qualities, such as agreeableness and emotional stability, will be more relevant in predicting corresponding behavior in a highly collaborative work setting (Wang et al., 2014). While the effects of adaptive and maladaptive personality traits on a person's behavior and attitudes vary, their relative importance can be similar across different situations. Thus, we propose that:

**Hypothesis 8:** Adaptive and maladaptive personality traits are equally important in influencing KH.

## 2.2. Consequences of KH

### 2.2.1. Psychological and behavioral outcomes

When individuals encounter specific stimuli or experiences in the workplace, they exhibit a range of responses and changes in their psychological states and actions (Ashkanasy & Dorris, 2017). Changes in employees' cognition and psychological states depend on their perceptions of the availability of workplace resources (Hobfoll, 1989). The conservation of resources (COR) theory provides robust theoretical support for examining the consequences of KH, as it posits that the availability of personal resources influences the intensity of individuals' responses (Hobfoll, 1989).

**Employee well-being** refers to the overall quality of an employee's experience and functioning at work (Warr, 1987). Commonly used indicators include job satisfaction, positive emotions, work engagement, and thriving (Chhabra & Pandey, 2023; Jiang et al., 2019; Offergelt et al., 2019). According to COR theory, the depletion of employees' psychological and emotional resources leads to decreased job satisfaction and work engagement (Hobfoll, 1989). Extant literature corroborates that KH increases psychological stress and emotional exhaustion, behaviors that consume resources, thereby diminishing overall employee well-being (Khoreva & Wechtler, 2020; Maslach & Leiter, 2016).

**Negative psychological status** refers to a range of adverse emotional and psychological conditions, such as emotional exhaustion, negative emotions, and psychological distress (Venz & Nesher, 2022). When an individual's resources are threatened or depleted, negative emotions and psychological stress are triggered (Hobfoll, 2001). Empirical studies support that KH itself is often triggered by resource shortages, and engaging in KH behaviors can further induce feelings of

guilt and anxiety among employees (Burmeister et al., 2019; Khan et al., 2023). Therefore, this exacerbates their negative psychological status.

**Organizational citizenship behavior (OCB)** refers to employees' voluntary work-related behaviors that go beyond their formal job requirements and benefit the organization (Bateman & Organ, 1983). OCB relies heavily on the foundation of trust and collaboration among employees (Podsakoff et al., 2000). KH, however, disrupts these relationships, thereby reducing social capital within the organization (Nahapiet & Ghoshal, 1998). A reduction in social capital means fewer opportunities for individuals to receive support and assistance at work. Consequently, when employees feel that their contributions are neither recognized nor rewarded, their willingness to engage in OCB diminishes (Bolino et al., 2013).

**Employee turnover intention** refers to an employee's intention to leave the organization after a certain period (Mobley et al., 1978). KH behavior consumes significant psychological resources, leading to increased stress, emotional exhaustion, and a sense of alienation among employees (Connelly et al., 2012; Hobfoll, 1989). As a result, employees who experience such resource depletion are more likely to withdraw physically, mentally, and emotionally from the organization in search of a more supportive and resource-abundant environment.

**Defensive behavior** refers to actions undertaken by employees to protect themselves from criticism or negative evaluations when they perceive threats (Ashforth & Lee, 1990). When employees detect the presence of KH, they tend to choose defensive silence to avoid potential conflicts and adverse consequences (Arain et al., 2021). Furthermore, the act of KH by colleagues poses a threat to their career development and social capital (Anand et al., 2020). In response, employees may engage in similar concealment behaviors, withholding their own knowledge and information to safeguard their professional resources (Connelly et al., 2012).

**Hypothesis 9:** KH will be negatively related to employee well-being (H9a) and organizational citizenship behavior (H9b).

**Hypothesis 10:** KH will be positively related to employee turnover intention (H10a), negative psychological states (H10b), and defensive behavior (H10c).

### 2.2.2. Performance-related outcomes

In this field, the research trend toward conceptualizing performance in different aspects has been gradual. The initial emphasis was on employee performance (Campbell, 1990), but as research on teams and organizations grew (Colquitt et al., 2014), the conceptualization of performance was expanded to encompass team and organizational performance. Currently, creativity and innovation performance have garnered significant attention (Lee et al., 2020), and thus, we include them in performance-related outcomes as well.

The relationship between KH and performance-related outcomes can be explained through social exchange theory (SET). SET, proposed by Blau (2017), posits that interpersonal relationships and behaviors are governed by principles of reciprocity and fairness. According to SET, individuals maintain and strengthen social relationships in the work environment by exchanging resources such as knowledge, support, and trust. Research by Jahanzeb et al. (2021) also indicates that when this exchange is disrupted or perceived as inequitable, negative outcomes are likely to occur.

**Creativity** refers to employees' ability and performance to generate novel and useful ideas and solutions in their work (Amabile, 1988). Research indicates that creative performance depends highly on the flow of information and the exchange of resources (Glaser et al., 2015). KH disrupts trust and cooperation among colleagues, impeding fair resource exchange. When employees fail to access the necessary information, their creativity is significantly inhibited (Chua, 2018).

**Innovation** refers to the capacity of employees or teams to develop new products, services, processes, or strategies (Shin et al., 2022). As Duan et al. (2022) stated, KH reduces the efficiency of knowledge

transfer and sharing systems, undermining trust and reciprocity among employees. Consequently, such disruption prevents teams from fully leveraging collective wisdom and experience, thereby impairing their innovative capabilities (Donate et al., 2022).

**Employee performance** refers to the behavioral outcomes exhibited by individuals in their job roles (Sonnetag & Frese, 2002). Serenko and Bontis (2016) noted that KH behavior significantly reduces employees' work efficiency and quality by concealing the information and resources necessary for task completion, thereby disrupting fair exchange relationships. This lack of access to essential knowledge and tools increases the difficulty of completing tasks, adversely affecting employees' overall performance (López-Cabarcos et al., 2022).

**Team performance** refers to the overall performance of a team in achieving common goals, including efficiency and quality (Salas et al., 2008). In the context of team dynamics, when individuals of a team suppress information, it can foster a climate of distrust and make it harder for the team to work together efficiently (Tjosvold, 2008). As a form of information suppression, KH undermines reciprocal relationships within the team, leading to negative outcomes (Butt et al., 2023). Consequently, KH leads to distrust and conflict within teams, thereby affecting team performance.

**Organizational performance** refers to the overall performance of an organization in achieving its strategic goals and objectives, including financial performance, market performance, and operational efficiency (Richard et al., 2009). As knowledge is a core resource for organizations, any hindrance in knowledge flow significantly diminishes the organization's overall effectiveness and competitive advantage (Grant, 1996). KH disrupts employees and teams from fully utilizing the knowledge and resources available within the organization, thus harming organizational performance.

**Hypothesis 11:** KH will be negatively related to creativity (H11a), innovation (H11b), employee performance (H11c), team performance (H11d), and organization performance (H11e).

## 2.3. Boundary conditions of KH

### 2.3.1. Demographic factors

Age, education, and tenure have all been proposed as possible boundary conditions that could influence the relationships between HR practices and KH behavior. According to SDT (Ryan & Deci, 2000), people will perceive that their sense of relatedness to their coworkers and organization increases if they are older, more educated, and have more experience working for a company. These people will react to HR practices more favorably, since they are better able to practice self-reflection and self-regulation.

Older workers typically have more life experience and knowledge, which can help them comprehend the detrimental effects of KH behavior (Ng & Feldman, 2008). Higher education levels also frequently aid in the growth of analytical skills, problem-solving aptitudes, and a deeper understanding of organizational dynamics (Mumford, 2000). Due to their improved awareness of the value of cooperation and information sharing for organizational success, older or more educated employees will be more responsive to HR practices that address KH behavior. Longer employment in an organization may result in greater comprehension of or attachment to its attainable principles and goals, as well as closer bonds with coworkers (Ng & Feldman, 2010). Employees with longer tenure may therefore be more likely to support HR policies that encourage information sharing and deter KH behavior. Taken together, we hypothesize the following:

**Hypothesis 12:** Age moderates the relationship between HR practices and KH, such that empowerment-enhancing (H12a), motivation-enhancing (H12b), and skill-enhancing (H12c) HR practices will be more effective in reducing KH behavior as age increases.

**Hypothesis 13:** Education moderates the relationship between HR practices and KH, such that empowerment-enhancing (H13a), motivation-enhancing (H13b), and skill-enhancing (H13c) HR practices will be more effective in reducing KH behavior for employees with higher education levels.

**Hypothesis 14:** Tenure moderates the relationship between HR practices and KH, such that longer tenure in an organization will strengthen the impact of empowerment-enhancing (H14a), motivation-enhancing (H14b), and skill-enhancing (H14c) HR practices on reducing KH behavior.

According to extant research, demographic characteristics may affect how employees feel about their boss and the organization, which may have an impact on how they behave (Podsakoff et al., 2009). In particular, change, relational, and task-oriented leadership styles are less likely to reduce KH behavior with increased age, education, and tenure of employees, while destructive leadership will be stronger in enhancing KH. Employees who are older, more educated, and have held a position for a longer period of time tend to feel more autonomous and independent and are less inclined to blindly obey instructions from their bosses (Kooij et al., 2018). The three constructive leadership styles mentioned above would rely on a more directive and structured approach and be less successful in lowering KH among these individuals. But when employees feel helpless and unable to resist their leaders' influence, damaging leadership styles that use coercion and threats are more likely to raise KH behavior. As such:

**Hypothesis 15:** Age moderates the relationship between leadership and KH, such that change-oriented (H15a), relational-oriented (H15b), and task-oriented (H15c) leadership will display weaker negative relationships with KH behavior among older employees, while destructive leadership (H15d) will show a stronger positive relationship with KH behavior among those people.

**Hypothesis 16:** Education moderates the relationship between leadership and KH, such that change-oriented (H16a), relational-oriented (H16b), and task-oriented (H16c) leadership will display weaker negative relationships with KH behavior among highly educated employees, while destructive leadership (H16d) will show a stronger positive relationship with KH behavior among those people.

**Hypothesis 17:** Tenure moderates the relationship between leadership and KH, such that change-oriented (H17a), relational-oriented (H17b), and task-oriented (H17c) leadership will display weaker negative relationships with KH behavior for employees with longer tenure, while destructive leadership (H17d) will show a stronger positive relationship with KH behavior among those people.

Demographic considerations will also help moderate the relationships between personality traits and KH. In particular, increased age, education, and tenure may influence the association between adaptive personality traits and KH behavior, because employees with more experience and knowledge are more likely to share what they know and less likely to keep it to themselves (Cabrera et al., 2006).

Furthermore, individuals with longer tenure, higher education, and older age might also be more set in their ways, making them more resistant to change. This ingrained behavior can lead to unfavorable attitudes toward knowledge management, such as KH behavior (Gond et al., 2017). As a result, these demographic factors could strengthen the links between maladaptive personality traits and KH. We thus hypothesize:

**Hypothesis 18:** Age moderates the relationship between personality traits and KH, such that adaptive personality traits (H18a) will be more effective in reducing KH among older employees, while maladaptive personality traits (H18b) will have stronger relationships with KH among those people.

**Hypothesis 19:** Education moderates the relationship between personality traits and KH, such that adaptive personality traits

(H19a) will be more effective in reducing KH among highly educated employees, while maladaptive personality traits (H19b) will have stronger relationships with KH behavior among those people.

**Hypothesis 20:** Tenure moderates the relationship between personality traits and KH, such that adaptive personality traits (H20a) will be more effective in reducing KH for employees with longer tenure, while maladaptive personality traits (H20b) will have stronger relationships with KH behavior among those people.

### 2.3.2. Contextual factor

It has been established that power distance is a crucial cultural factor that affects people's behavior and values in organizations (Hofstede, 1984). According to Huang et al. (2017), people from high-power-distance cultures are more responsive to hierarchical relationships and authority. When it comes to job security and status recognition, employees in high power distance cultures will regard skill-enhancing HR practices favorably (Taras et al., 2012). This is because these practices are seen as a means to secure their positions or enhance their status within the organization. Furthermore, these practices act as a safeguard against behaviors that might be perceived as threats to the established order (such as KH behavior). The cost of losing status is particularly high in such cultures, so workers are less likely to engage in actions that might jeopardize their standing.

It is also essential to understand that high power distance cultures strongly emphasize collective goals over individual aspirations (Buckley et al., 2010). As a result, motivation-enhancing HR practices, which often focus on individual aspirations, might be perceived as less effective in reducing KH behavior. Furthermore, empowerment-enhancing HR practices may be less effective in curbing KH behavior if staff members in high-power-distance cultures fail to see the advantages of taking on additional responsibility.

**Hypothesis 21:** Power distance moderates the relationship between HR practices and KH, such that the efficacy of skill-enhancing HR practices (H21a) in reducing KH will be stronger in a high-power-distance culture compared to those in a low-power-distance culture, whereas the relationships between both empowerment-enhancing (H21b) and motivation-enhancing HR practices (H21c) and KH will be weaker in high power distance cultures.

People in high power distance cultures are more inclined to accept hierarchical relationships and, based on cultural values and norms linked with power distance (Hofstede, 1984), may perceive persons in positions of authority as being less approachable or relatable. As a result, in high power distance cultures, leadership styles that emphasize developing relationships, such as relational-oriented leadership, will be less successful in lowering KH (Gürlek, 2020). Similarly, task-oriented leadership will be less successful in reducing KH behavior in a high-power-distance culture because it is viewed as being too goal-oriented and may not offer the support necessary for staff members to feel comfortable sharing knowledge (Cao, 2022). In contrast, people are more likely to embrace innovation and change in low power distance societies (Hofstede, 1984). As a result, change-oriented leadership may be more effective in those cultures, given that they place a strong emphasis on achieving objectives or encouraging change (Adebayo, 2005).

Furthermore, it is expected that destructive leadership will show a stronger positive association with KH behavior in high power distance cultures. Such cultures often emphasize hierarchy and deference to authority (Hofstede, 1984), and subordinates are less likely to challenge or confront destructive leaders for fear of disrupting the established hierarchy or facing repercussions. This fear can lead to an unspoken tolerance of destructive leadership practices. Instead of challenging this leadership approach, there could be a greater occurrence of KH behavior amongst employees, because such work environments can discourage open knowledge sharing, thereby promoting KH behavior as a defensive



mechanism or a survival strategy within these cultural contexts.

**Hypothesis 22:** Power distance moderates the relationship between leadership and KH, such that change-oriented (H22a), relational-oriented (H22b), and task-oriented (H22c) leadership will be more effective in reducing KH in a low-power-distance culture compared to a high-power-distance culture, while destructive leadership (H22d) will display a stronger positive relationship with KH behavior in a high-power-distance culture compared to a low-power-distance culture.

Low-power-distance cultures are emblematic of egalitarian and respectful societies (Hofstede, 1984). Maladaptive personality traits inherently drive individuals towards self-centered behaviors and become particularly problematic in low-power-distance cultures (Cohen, 2016). When individuals with these traits engage in KH behaviors, they will undermine the societal expectation of open collaboration and mutual benefit. Low-power-distance cultures, characterized by egalitarianism and mutual respect, could make the negative impact of these traits on KH behaviors more noticeable.

In high power distance cultures, where hierarchy is accepted and authority is less likely to be questioned, knowledge is often perceived as power (Yuan & Zhou, 2015). Even individuals with adaptive personality traits may feel compelled to conform to these normative behaviors. Conversely, in low power distance cultures that emphasize equality and transparency, adaptive personality traits might be more effective in reducing KH. Openness, collaboration, and knowledge sharing are valued (Triandis, 1989); consequently, individuals with these traits not only conform to the societal norm but also actively promote the values that these cultures hold dear, thereby decreasing the likelihood of KH behaviors (LePine & Van Dyne, 2001). Therefore, we suggest:

**Hypothesis 23:** Power distance moderates the relationship between personality traits and KH, such that adaptive personality traits (H23a) will be more effective in reducing KH behavior in low-power-distance cultures, while the relationship between maladaptive personality traits (H23b) and KH will be stronger in those cultures.

### 2.3.3. Methodological factors

The precision of the study is likely to have an impact on the findings of the KH-outcomes connections. Two methodological moderators—rating source and time lag—are the focus of this investigation. Various rating sources, such as self-report, supervisor report, and coworker report, can be used to measure KH behavior and its consequences, with ratings from multiple sources offering a more thorough and accurate assessment of behavior and performance (Goffin & Gellatly, 2001). Ratings from a single source may be biased or mistaken and may not accurately reflect the whole spectrum of behavior or performance (Murphy & Cleveland, 1995). As a result, introducing rating source as a moderator variable can clarify whether the source of ratings utilized in the studies has an impact on the relationship between KH and its consequences.

Additionally, the time lag in measuring KH behavior and its outcomes could impact the relationship between these variables. Cross-sectional studies may only provide a static snapshot of the relationship of a given time period and may not take into account changes in behavior or performance over time. Longitudinal research would give a more thorough and accurate insight into the relationship by evaluating the variables at various intervals and accounting for changes over time (Ployhart & Vandenberg, 2010). Consequently, including time lag as a moderator may aid in identifying whether the observed relationship between KH and its outcomes is influenced by the timeframe used in the studies.

As we assume that the two aforementioned variables will influence the relationships, but do not know specifically how, we propose a research question rather than a hypothesis, in line with other meta-analyses (e.g., Cao et al. 2022; Lyubykh et al., 2022).

**Research Question:** Do the associations between KH and its outcomes differ by (a) measurement time lag, and (b) rating source?

## 3. Method

### 3.1. Literature search

To ascertain relevant studies incorporated into this meta-analysis, an exhaustive search of the literature was undertaken via multiple databases, comprising Web of Science, Scopus, PsycINFO, and ProQuest. To maintain efficiency while ensuring comprehensive coverage of the relevant literature, the selected databases were deemed to be sufficient for the scope of this study (Mongeon & Paul-Hus, 2016; Rethlefsen et al., 2021). The search string used for the literature search in this study is “knowledge hiding” or “hide knowledge” or “knowledge concealment” or “conceal knowledge” or “evasive hiding” or “playing dumb” or “rationalized hiding” (Supplementary A includes a full search string).

Second, Google Scholar and ResearchGate were used to verify the accuracy of online database search results. To diminish the potential for publication bias, this study incorporated unpublished works, including articles in press, conference papers and theses, from the aforementioned databases and search engines.

Third, manual searches were conducted by accessing high-ranked journals related to HRM, organizational behavior, leadership, as well as applied psychology (e.g., *Academy of Management Journal*, *Academy of Management Review*, *Human Resource Management Journal*, *Human Relations*, *Leadership Quarterly*, *Journal of Organizational Behavior*, *International Journal of Management Reviews*, etc.). The reference lists of the published KH-related meta-analyses (Araïn et al., 2024; Škerlavaj et al., 2023; Xiao, 2024) and recent KH qualitative reviews (e.g., Anand et al., 2022; Oliveira et al., 2021) were also checked to identify any relevant articles. Data were collected for the period ending in July 2024.

### 3.2. Inclusion criteria

To ensure the thoroughness and accuracy of the search procedure, the literature was systematically searched by two independent reviewers. The relevance of the headings and abstracts of all identified articles to the research issue was screened.

The following four inclusion standards were developed. First, as the focus of the meta-analysis was on the causes and effects of employees' KH in an organizational setting, studies on participant employees in work settings were required. Therefore, primary studies examining KH in non-work contexts, such as KH occurring in classrooms among kids (see Xu & Jiesen, 2022) were omitted. Second, to be considered, the research had to have examined one or more of the causes or consequences of KH, such as HR practices, leadership, personality attributes, behavioral and psychological outcomes, and performance-related outcomes. Third, a quantitative research design had to be applied to the studies. This study includes primary articles that showed a correlation between KH and at least one other variable, or that had enough data to create a correlation. Finally, we thoroughly examined samples for results that overlapped with those reported in other studies to guarantee uniqueness for each sample in the analysis.

At the identification stage, a preliminary search through databases turned up 1,849 articles, and manual searches turned up 61 more. At the screening stage, 649 duplicated articles were eliminated using the Endnote “Find Duplicates” function. The first author reviewed headings and abstracts of the remaining 1,261 records to determine whether the article could be categorized as empirical research looking at the causes (HR practices, leadership, and personality qualities) and effects (behavioral and psychological outcomes, and performance-related outcomes) of KH. A total of 617 documents were chosen from the initial screening for a thorough full-text review. The first and second authors then carried out the full-text screening to see whether the articles met the eligibility requirements. Finally, 248 studies with 267 distinct

samples were discovered through a thorough search and screening process (Supplementary B presents the reference list of included articles). Fig. 2 depicts the entire process using a PRISMA flow diagram (Moher et al., 2009).

### 3.3. Coding procedures

This study used HRM bundles (Subramony, 2009) to categorize HR practices into three groups: empowerment-enhancing, motivation-enhancing, and skill-enhancing. Yukl et al.'s (2002) integrated leadership framework (i.e., change-, task-, and relational-oriented leadership) and Schyns and Schilling's (2013) destructive leadership model both provide descriptions of the coding of leadership behaviors. Adaptive and maladaptive personality traits were used to categorize personality qualities (Millon & Davis, 1996). Consequences of KH included psychological, behavioral and performance-related outcomes. Psychological and behavioral outcomes were categorized into five groups: employee well-being, organizational citizenship behavior, turnover intention, negative psychological states, and defensive behavior (Ashforth & Lee, 1990; Guo et al., 2022; Khoreva & Wechtler, 2020; Podsakoff et al., 2000; Venz & Shoshan, 2022). Performance-related outcomes were divided into five categories: creativity, innovation, employee performance, team performance, and organizational performance (Amabile, 1988; Donate et al., 2022; Sonnentag & Frese, 2002).

This study coded three demographic moderators (age, education, and tenure), two methodological moderators (time lag and rating source), and one contextual moderator (power distance). Age (the average age) and education (the percentage of obtaining a bachelor's or above) are coded as continuous variables. For tenure, the numeric value is used to indicate the length of years a person has been employed or has held a particular position. The others are treated as categorical

variables. Consistent with previous meta-analyses employing cultural values as moderators (Cao et al., 2022; Lyubykh et al., 2022), for each sample, a power distance score was assigned according to the respective nation. Nations with high power distance index (PDI) scores (e.g., above 70) were considered as high-power distance (Hofstede, 2001). For research design, categories were created based on the utilized time lag. Studies with cross-sectional data (one wave) are coded as having a "0" time lag, while studies that used two waves or more are coded as having a "+1" time lag (Lipsey & Wilson, 2001). For rating sources, studies that use a single source to rate variables are coded as "single", while studies that use multiple sources (e.g., self-report, supervisor report, and peer report) are coded as "multiple" (Viswesvaran & Ones, 2000).

All measures were coded for the author, title, publication year, sample size, moderators, correlation, and Cronbach  $\alpha$ . When there were multiple correlations in the same relationship, such as with multidimensional measures, a composite sum score was utilized to guarantee the inclusion of each relationship only once (Hunter & Schmidt, 2004). If the primary study presented data from several samples, the results were coded as independent samples.

To ensure accuracy and consistency in the coding process, the coders met frequently to discuss and settle any discrepancies between their coding results. In cases where discrepancies could not be resolved through discussion, a third reviewer was consulted to make a final decision. To guarantee the reliability of the coding procedure, a random subset of 10 % of the studies was chosen and independently coded by both coders. Cohen's kappa coefficient (Sun, 2011) was used to measure the inter-coder concordance, which yielded a score of 0.95, indicating almost perfect agreement.

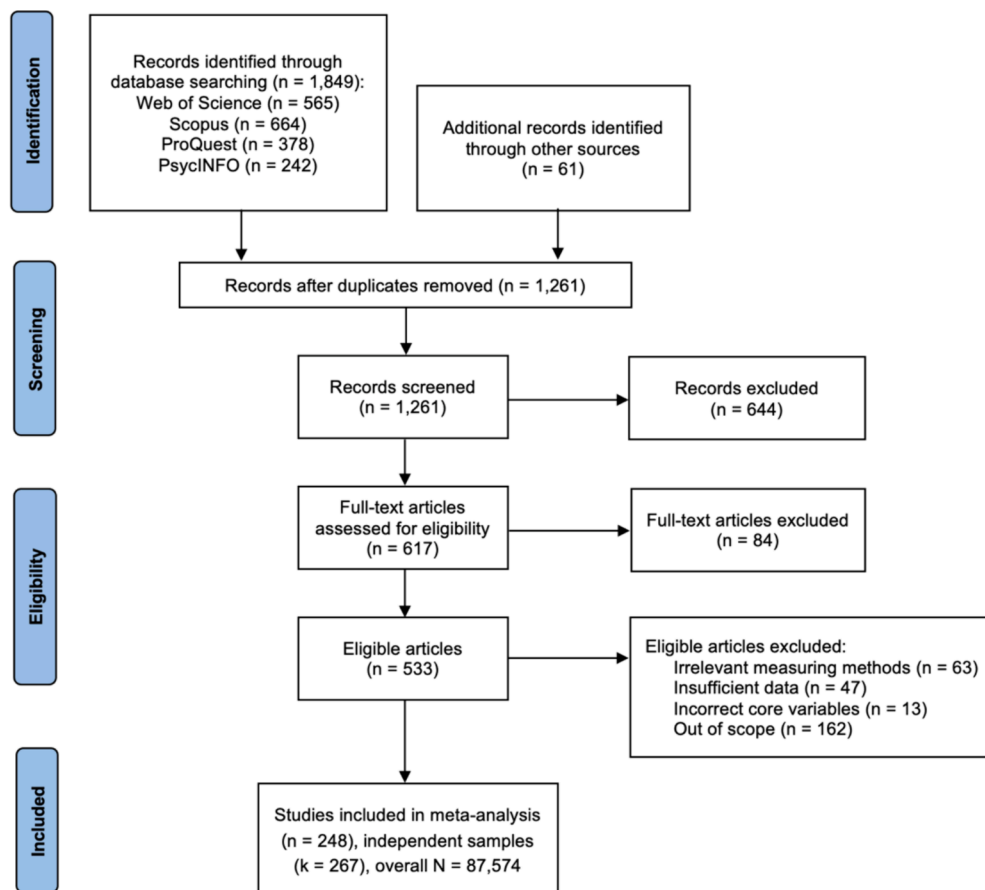


Fig. 2. PRISMA flowchart.

3.4. Statistical analysis

3.4.1. Bivariate analysis

A random-effects model (Hunter & Schmidt, 2004) was adopted and the R package “metacor” was used to conduct bivariate analysis (Laliberté & Laliberté, 2009). Unstandardized effect size (r) was observed, and correlations for the true population (ρ) were calculated to correct sampling error and measurement error (Hunter & Schmidt, 2004). The reliability coefficient (Cronbach alpha) was used to correct measurement errors in correlated variables (VG6 Module; Schmidt & Le, 2004). When reliabilities were not provided in the primary research, average reliabilities of corresponding variables were imputed (Judge et al., 2002). Following McKee-Ryan et al.’s (2005) suggestion, this study assumed a reliability of 1 for single-item measures.

Following Hunter and Schmidt’s (2004) suggestion, this study calculated the total count of independent studies related to the reported relationship (k), total sample size (N), observed correlation (r), corrected correlation (ρ), 95 % confidence intervals (CIs), Chi-square test of heterogeneity (Q), as well as the percentage of variance attributable to statistical artifacts (%Var). CIs excluding zero represent a statistically significant effect (Borenstein et al., 2009). This study, in accordance with the formula of Higgins et al. (2003), reported the percentage of variance due to artifacts (I<sup>2</sup>) and the variance of the distribution of true effect sizes (τ<sup>2</sup>). A significant Q value (i.e., p < 0.05), a lower %Var (i.e., lower than 75 %), a higher I<sup>2</sup> (i.e., greater than 75 %), or a larger τ<sup>2</sup> suggests the presence of potential moderators in the bivariate relationship.

3.4.2. Relative weight analysis

This study estimated a series of relative weight analyses for insights into the unique predictive role that the HR practices, leadership, and personality traits categories have on KH, respectively. By taking into account the precision and sample size of each study, relative weights analysis provides a more accurate representation of how each category contributes to the overall effect size estimate. This can help guarantee that the final effect size estimate is based on the most reliable and informative studies in the meta-analysis (Hedges & Vevea, 1998). This article used RWA syntax in R to calculate relative weights (Tonidandel & LeBreton, 2015).

3.4.3. Moderator analysis

To test the moderation effects of demographic, contextual, and methodological factors, meta-regression and subgroup analyses were conducted. The R package “metafor” was used to test the moderation effects for categorical variables and continuous variables (Viechtbauer,

2010). As for the effects of categorical moderators, a subgroup analysis was conducted (Cooper et al., 2019) and between-level Q tests were calculated (Borenstein et al., 2021). The meta-regression method was employed to investigate the effects of continuous moderators (Cooper et al., 2019). The computed z-value signifies the strength and direction of the associations between the continuous moderator and the effect size (Harrer et al., 2021).

4. Results

4.1. Bivariate correlation analysis

The meta-analysis of bivariate correlations of antecedents and KH is presented in Table 2. The meta-analytic results demonstrate that for the HR practices category, empowerment-enhancing HR practices are significantly negatively related to KH (ρ = -0.22, 95 % CI: -0.28, -0.08), supporting H1a. Motivation-enhancing practices show a statistically significant negative association with KH (ρ = -0.24, 95 % CI: -0.34, -0.14), thus H1b is supported. Consistent with H1c, a significant and negative relationship is found between skill-enhancing HR practices and KH (ρ = -0.23, 95 % CI: -0.33, -0.11).

Regarding the association between leadership and KH, change-oriented leadership is significantly and negatively associated with KH (ρ = -0.34, 95 % CI: -0.44, -0.12), which supports H3a. Relational-oriented leadership is negatively related to KH (ρ = -0.10, 95 % CI: -0.17, -0.01), supporting H3b. However, task-oriented leadership is insignificant with KH (ρ = 0.22, 95 % CI: -0.03, 0.34), thus H3c is not supported. Consistent with H4, an expected positive association is found between destructive leadership and KH (ρ = 0.41, 95 % CI: 0.27, 0.40). Notably, while the inclusion of eight studies for H3a is relatively modest, it substantially exceeds the minimum threshold for conducting a meta-analysis as recommended by Hoffman et al. (2007) and Valentine et al. (2010).

In terms of the association of personality traits with KH, adaptive personality traits are negatively related to KH (ρ = -0.17, 95 % CI: -0.25, -0.09), whereas maladaptive personality traits are significantly positively associated with KH (ρ = 0.52, 95 % CI: 0.34, 0.47). Therefore, this provides evidence to support H6 and H7.

The meta-analysis of bivariate correlations of KH and its consequences is displayed in Table 3. As for psychological and behavioral outcomes, KH shows significant and negative relationships with employee well-being (ρ = -0.20, 95 % CI: -0.28, -0.07) and organizational citizenship behavior (ρ = -0.20, 95 % CI: -0.29, -0.06), supporting H9a and H9b. Additionally, KH is positively associated with turnover intention (ρ = 0.41, 95 % CI: 0.19, 0.55), negative

**Table 2**  
Meta-analytic correlations of antecedents and KH.

	k	N	r	ρ	CI <sub>LL</sub>	CI <sub>UL</sub>	Var	Q	I <sup>2</sup>	τ <sup>2</sup>
<b>HR practices</b>										
Skill-enhancing	23	6,816	-0.19	-0.22	-0.28	-0.08	6.27 %	402.87	94.50 %	0.063
Motivation-enhancing	26	7,801	-0.24	-0.29	-0.34	-0.14	7.68 %	532.28	95.37 %	0.077
Empowerment-enhancing	22	6,687	-0.23	-0.26	-0.33	-0.11	6.47 %	405.45	94.83 %	0.065
<b>Leadership behavior</b>										
Change-oriented	8	2,928	-0.28	-0.34	-0.44	-0.12	5.90 %	150.19	95.34 %	0.059
Relational-oriented	68	24,743	-0.09	-0.10	-0.17	-0.01	10.70 %	2162.14	96.90 %	0.107
Task-oriented	12	2,963	0.18	0.22	-0.03	0.34	9.67 %	286.73	96.16 %	0.097
Destructive	68	20,554	0.34	0.41	0.27	0.40	9.64 %	1758.45	96.19 %	0.097
<b>Personality traits</b>										
Adaptive	31	7,898	-0.17	-0.21	-0.25	-0.09	5.52 %	475.65	93.69 %	0.055
Maladaptive	51	14,670	0.40	0.52	0.34	0.47	7.57 %	1129.85	95.57 %	0.076

Note. k = number of studies; N=total sample size; r = uncorrected mean correlation; ρ = sample-weighted and reliability-corrected population correlation; CI<sub>LL</sub> and CI<sub>UL</sub>=lower and upper bounds of the 95 % confidence interval; Var = percentage of variance attributed to statistical artifacts; Q=Chi-square test of heterogeneity; I<sup>2</sup> = proportion of observed variance in the observed correlation attributable to statistical artifacts; τ<sup>2</sup> = the variance of the distribution of true effect sizes.

**Table 3**  
Meta-analytic correlations of KH and consequences.

	k	N	r	$\rho$	CI <sub>LL</sub>	CI <sub>UL</sub>	Var	Q	I <sup>2</sup>	$\tau^2$
<b>Behavior and psychological outcomes</b>										
Employee well-being	28	16,223	-0.18	-0.20	-0.28	-0.07	8.56 %	661.74	85.54 %	0.086
Organizational citizenship behavior	28	8,651	-0.18	-0.20	-0.29	-0.06	10.14 %	1030.05	97.38 %	0.102
Turnover intention	15	9,942	0.38	0.41	0.19	0.55	17.84 %	883.49	95.92 %	0.179
Negative psychological states	40	11,573	0.38	0.49	0.30	0.46	8.37 %	1134.75	96.56 %	0.084
Defensive behavior	35	11,278	0.42	0.52	0.34	0.50	8.74 %	979.08	96.53 %	0.088
<b>Performance-related outcomes</b>										
Creativity	43	13,350	-0.14	-0.17	-0.23	-0.06	7.84 %	1073.74	96.09 %	0.078
Innovation	42	15,509	-0.11	-0.15	-0.22	-0.01	12.16 %	1626.30	97.48 %	0.122
Employee performance	62	15,838	-0.14	-0.19	-0.23	-0.04	14.51 %	2343.27	97.40 %	0.145
Team performance	16	4,642	-0.32	-0.37	-0.43	-0.21	5.95 %	315.02	95.24 %	0.060
Organizational performance	16	4,956	-0.22	-0.25	-0.39	-0.02	15.65 %	774.36	98.06 %	0.157

Note. k = number of studies; N=total sample size; r = uncorrected mean correlation;  $\rho$  = sample-weighted and reliability-corrected population correlation; Var = percentage of variance attributed to statistical artifacts; Q=Chi-square test of heterogeneity; I<sup>2</sup> = proportion of observed variance in the observed correlation attributable to statistical artifacts;  $\tau^2$  = the variance of the distribution of true effect sizes.

psychological states ( $\rho = 0.49$ , 95 % CI: 0.30, 0.46), and defensive behavior ( $\rho = 0.52$ , 95 % CI: 0.34, 0.50). Therefore, H10a, H10b, and H10c are supported.

Regarding performance-related outcomes, KH shows significant and negative relationships with creativity ( $\rho = -0.17$ , 95 % CI: -0.23, -0.06), innovation ( $\rho = -0.15$ , 95 % CI: -0.22, -0.01), employee performance ( $\rho = -0.19$ , 95 % CI: -0.23, -0.04), team performance ( $\rho = -0.37$ , 95 % CI: -0.43, -0.21), and organizational performance ( $\rho = -0.25$ , 95 % CI: -0.39, -0.02). Hence, H11a, H11b, H11c, H11d, and H11e are supported.

**4.2. Relative weight analysis**

The outcomes, in Table 4, are shown for the relative weight analysis. Motivation-enhancing HR practices have the greatest impact on the variation in KH among the three HR practices categories, and are responsible for 62.36 % of the overall variance. The relative weight of empowerment-enhancing HR practices on KH behavior is lower than that of motivation-enhancing HR practices, accounting for 17.13 %. Skill-enhancing HR practices have the smallest effect on KH (14.61 %). As a result, H2 is supported.

In support of H5, destructive leadership is responsible for the greatest portion of the variation in KH (38.98 %), followed by relational-

**TABLE 4**  
The relative importance of HR practices, leadership behavior, and personality traits on KH.

Category	Knowledge hiding	
	RW	RW%
<b>HR practices</b>		
Skill-enhancing HR practices	0.031	14.61 %
Motivation-enhancing HR practices	0.145	68.26 %
Empowerment-enhancing HR practices	0.036	17.13 %
Total		100 %
<b>Leadership behavior</b>		
Change-oriented leadership	0.074	18.25 %
Relational-oriented leadership	0.156	38.42 %
Task-oriented leadership	0.018	4.35 %
Destructive-oriented leadership	0.158	38.98 %
Total		100 %
<b>Personality traits</b>		
Adaptive personality traits	0.278	48.74 %
Maladaptive personality traits	0.293	51.26 %
Total		100 %

Note. RW=raw relative weight, RW%=percentage of rescaled relative weight.

oriented leadership (38.42 %) and change-oriented leadership (18.25 %). Task-oriented leadership is the smallest one when it comes to explaining KH (4.35 %).

Consistent with our expectation on the relevance of different personality traits, adaptive personality traits and maladaptive traits show similar contributions to KH (48.74 % and 51.26 %, respectively). Therefore, H8 is supported.

**4.3. Moderator analysis**

Due to the extensive number of moderators tested, we will only present significant findings related to the moderators (full findings are included in Supplementary D). As shown in Table 5, we found evidence that the demographic factor, age, moderates the relationships between HR practices and KH (H12). As predicted, with increased age, empowerment-enhancing (H12a) and skill-enhancing (H12c) HR practices both have stronger effects on reducing KH ( $p < 0.001$ ;  $B=.03$ ,  $z = 3.28$ ,  $p = 0.001$  and  $B=.03$ ,  $z = 3.37$ , respectively). In contrast to H15a, with increased age, change-oriented leadership has a stronger influence on reducing KH ( $B=.07$ ,  $z = 7.38$ ,  $p < 0.001$ ).

Evidence was found in support of the moderation effect of education upon the associations of leadership and KH (H16). The impact of task-oriented leadership ( $B=-0.07$ ,  $z = -3.42$ ,  $p < 0.001$ ) on KH is weaker when the education level is higher, which supports H16c. In contrast to H19b, adaptive personality traits have a weaker association with KH at higher education levels ( $B=-0.51$ ,  $z = -2.60$ ,  $p = 0.009$ ).

Contextual factor: power distance exhibited moderating effects on leadership-KH relationships (H22) (displayed in Table 6). In contrast to H22b, relational-oriented leadership exhibits more robust connections with reducing KH in high power distance settings ( $p < 0.001$ ; low power distance:  $\rho = -0.06$ , 95 % CI [-0.19, -0.08], high power distance:  $\rho = -0.11$ , 95 % CI [-0.11, -0.09]). Destructive leadership has a stronger association with KH at high power distance ( $p < 0.001$ ; low power distance:  $\rho = 0.35$ , 95 % CI [.28, 0.36], high power distance:  $\rho = 0.41$ , 95 % CI [.33, 0.36]), which provides evidence to support H22d.

Research question (a) aimed to understand which context of outcomes shows the most effectiveness under different data collection scenarios, such as one wave, two waves, and three waves. Regarding psychological and behavioral outcomes, time lag moderates KH-turnover intention relationship ( $p < 0.001$ ; one wave:  $\rho = 0.64$ , 95 % CI [.57, 0.70], two waves:  $\rho = 0.48$ , 95 % CI [.09, 0.70], three waves:  $\rho = 0.26$ , 95 % CI [.18, 0.29]), KH-negative psychological status relationship ( $p = 0.027$ ; one wave:  $\rho = 0.64$ , 95 % CI [.36, 0.69], two waves:  $\rho = 0.43$ , 95 % CI [.25, 0.39], three waves:  $\rho = 0.30$ , 95 % CI [.09, 0.36]) and KH-defensive behavior relationship ( $p < 0.001$ ; one wave:  $\rho = 0.66$ , 95 % CI [.45, 0.64], two waves:  $\rho = 0.58$ , 95 % CI [.25, 0.59], three

**Table 5**  
Meta-regression analyses for demographic moderators.

Moderator	Relationship	Estimate	SE	Z-value	CI <sub>LL</sub>	CI <sub>UL</sub>	Sig
Age	Empowerment-enhancing HR practices – KH	0.03	0.01	3.28	0.01	0.04	0.001
	Skill-enhancing HR practices – KH	0.03	0.01	3.37	0.01	0.04	<0.001
	Change-oriented leadership – KH	0.07	0.01	7.38	0.05	0.09	<0.001
Education	Task-oriented leadership – KH	-0.07	1.19	-3.42	-6.40	-1.73	<0.001
	Adaptive personality traits – KH	-0.51	0.19	-2.60	-0.89	-0.12	0.009

Note. SE=standard error; CI=confidence interval; LL=lower limit; UL=upper limit; Sig = p-value.

**Table 6**  
Subgroup analyses for contextual and methodological moderators.

Moderator	Relationship	Subgroup	k	r	ρ	CI <sub>LL</sub>	CI <sub>UL</sub>	Sig
Power distance	Relational-oriented leadership– KH	Low	4	-0.06	-0.06	-0.19	-0.08	<0.001
		High	60	-0.10	-0.11	-0.11	-0.09	
	Destructive leadership – KH	Low	4	0.32	0.35	0.28	0.36	<0.001
		High	57	0.35	0.41	0.33	0.36	
Time lag	KH – turnover intention	One wave	8	0.64	0.64	0.57	0.70	<0.001
		Two waves	4	0.45	0.48	0.09	0.70	
		Three waves	3	0.24	0.26	0.18	0.29	
	KH – negative psychological status	One wave	11	0.54	0.64	0.36	0.69	0.027
		Two waves	25	0.32	0.43	0.25	0.39	
		Three waves	3	0.23	0.30	0.09	0.36	
	KH – defensive behavior	One wave	14	0.55	0.66	0.45	0.64	<0.001
		Two waves	8	0.44	0.58	0.25	0.59	
		Three waves	13	0.25	0.30	0.14	0.36	
	KH – innovation	One wave	26	-0.02	-0.02	-0.13	0.10	0.014
		Two waves	13	-0.24	-0.31	-0.42	-0.04	
		Three waves	3	-0.42	-0.52	-0.65	-0.13	
	KH – employee performance	One wave	38	-0.03	-0.12	-0.14	0.09	0.005
		Two waves	10	-0.33	-0.39	-0.57	-0.04	
		Three waves	14	-0.29	-0.35	-0.40	-0.17	
	KH – team performance	One wave	3	-0.10	-0.11	-0.54	0.38	0.018
		Two waves	10	-0.33	-0.38	-0.43	-0.23	
		Three waves	3	-0.48	-0.55	-0.53	-0.41	
KH – organizational performance	One wave	13	-0.18	-0.21	-0.37	0.01	<0.001	
	Two waves	3	-0.62	-0.75	-0.69	-0.55		
Rating source	KH – negative psychological status	Single	28	0.42	0.54	0.31	0.52	0.048
		Multi	12	0.29	0.34	0.22	0.36	
	KH – employee performance	Single	39	-0.05	-0.12	-0.17	-0.07	0.018
		Multi	23	-0.28	-0.39	-0.40	-0.14	

Note. k = number of studies; r = uncorrected effect size; ρ = sample-weighted and reliability-corrected population correlation; Sig = p-value for the Q-test of significant differences between the two groups.

waves: ρ = 0.30, 95 % CI [.14, 0.36]). With the time lags increase, the relationships become weaker (shown in Table 6).

Further, we found that KH has stronger negative associations with performance-related outcomes when the data are collected with more than one wave. Specifically, when data are collected with two waves, the results on KH-employee performance relationship (p = 0.005, two waves: ρ = -0.39, 95 % CI [-0.57, -0.04]) and KH-organizational performance relationship (p < 0.001, two waves: ρ = -0.75, 95 % CI [-0.69, -0.55]) are the strongest compared to single-time data collection. The strongest negative relationships between KH and innovation (p = 0.014, three waves: ρ = -0.52, 95 % CI [-0.65, -0.13]), and between KH and team performance (p = 0.018, three waves: ρ = -0.55, 95 % CI [-0.51, -0.41]) are observed at three waves.

Research question (b) aimed to understand which aspect of consequences was most effective under single-source and multi-source data collection. We found that KH has a stronger positive association with negative psychological states when data is collected by a single source (p = 0.048; single: ρ = 0.54, 95 % CI [.31, 0.52], multi: ρ = 0.34, 95 % CI [.22, 0.36]). Furthermore, KH-employee performance relationship is stronger with multi-source data (p = 0.018; single: ρ = -0.12, 95 % CI [-0.17, -0.07], multi: ρ = -0.39, 95 % CI [-0.40, -0.14]).

## 5. Discussion

This meta-analysis investigates the antecedents, consequences, and boundary conditions of KH behavior, with a specific focus on HR practices, leadership, personality traits, and psychological, behavioral, and performance aspects. In addition, an analysis of relative weight is performed to determine the relative significance that each predictor variable has on changes in KH behavior. Furthermore, this meta-analysis examines the moderation roles played by demographic and contextual factors in the association of antecedents with KH behavior, as well as methodological considerations that affect the relationship between KH and its outcomes.

As to the antecedents and consequences of KH, our research suggests that HR practices have significant negative relationships with KH behavior. Among these, motivation-enhancing HR practices are identified as the strongest predictors of reducing KH behavior, which highlights their importance in shaping knowledge-sharing dynamics in organizations. In addition, this meta-analysis reveals the critical role of leadership styles in influencing KH behavior within organizations. Destructive leadership strongly predicts higher levels of KH, whereas change- and relational-oriented leadership styles are relevant to the

reduction of KH behavior. Interestingly, task-oriented leadership shows no significant impact on KH behavior. The findings emphasize the importance of focusing on leadership styles that foster a supportive, trusting, and innovative environment to mitigate KH and promote collaboration (Oubrich et al., 2021). Moreover, personality traits as an individual's inherent characteristics are identified as significant determinants of KH. Individuals with adaptive personality traits tend to be less inclined to conceal knowledge, whereas those with maladaptive personality traits exhibit a greater likelihood of doing so.

As for the consequences of KH, KH behavior negatively impacts employee well-being and OCB, while increasing turnover intention, negative psychological states, and defensive behavior. Our meta-analysis also found that KH behavior has negative effects on all aspects of performance-related outcomes. This suggests that KH behavior has far-reaching impacts on emotions, behavior and performance, hindering knowledge sharing and collaboration, lowering productivity and innovation, and ultimately impeding organizational success.

For boundary conditions, older age is found to enhance the effects of HR practices and leadership on reducing KH, and higher education is found to weaken the influence of leadership and personality traits on KH. As demographic factors can either enhance or weaken the relationship between these factors and KH behavior, interventions and strategies that are tailored to specific employee demographics can be designed to effectively mitigate KH. In addition, the meta-analysis underscores the importance of contextual factors such as power distance in moderating the associations between leadership styles, personality traits, and KH behavior. These findings highlight the need for organizations operating in different cultural contexts to consider the influence of contextual factors when designing strategies aimed at reducing KH.

Furthermore, methodological considerations such as measurement approach and study design are also discovered to partially impact the association between KH and its consequences. For psychological and behavioral outcomes, the results are stronger when single-time data collection is utilized compared to multiple data collection waves. However, a stronger negative correlation is found to exist between KH behavior and performance-related outcomes with multiple data collection waves. These findings reveal the impact of temporal effects are consistent with the perspective of Mitchell and James (2001), which suggests that single-time data collection methods result in stronger immediate correlations for psychological and behavioral outcomes. Additionally, data source presents a significant impact in moderating the relationship between KH and its outcomes. These findings emphasize the need for careful consideration of the measurement approach and study design when investigating the nexus of KH behavior and its consequences.

### 5.1. Theoretical implications

The findings of this meta-analysis have several pivotal theoretical implications. First, the incorporation of a wide range of antecedents and consequences of KH highlights the importance of theoretical models that take a comprehensive and integrative approach, supplementing the existing literature that calls for using this kind of method (Connelly & Zweig, 2015). As KH behavior can be explained through various facets of influence, whether organizational, team, or individual, this opens the door for more sophisticated theoretical frameworks that capture the dynamics between these various elements and KH behavior. Moreover, the broad, negative impacts of KH on its consequences elevate the perception of KH from a localized, individual hindrance to a pervasive, systemic issue with far-reaching consequences for organizations. Our study not only enriches the existing literature but also propels a rethinking of the theoretical perspectives on KH behavior, advocating for more integrated, nuanced models that reflect its multifaceted nature and wide-ranging impacts.

Second, the incorporation of HR practices as predictors of KH behavior marks a significant departure from existing meta-studies (i.e.,

Arain et al. (2024), Škerlavaj et al. (2023) and Xiao (2024)). This pioneering meta-analysis focusing on HR practices as antecedents of KH provides a comprehensive overview of the HR practices–KH relationship and emphasizes the significance of organizational-level elements in shaping employees' KH behavior (Makri & Scandura, 2010). Furthermore, our emphasis on empowerment- and motivation-enhancing HR practices, in line with the AMO theory, accentuates the pivotal roles of motivation and opportunity in shaping KH dynamics.

Third, by being the first to categorize leadership in the KH field as change-oriented, relational-oriented, task-oriented and destructive leadership, our study underscores the need for theoretical models that account for the full spectrum of leadership behaviors. The detailed categorization of leadership styles offers a more nuanced understanding of their influence on KH behavior (Mharapara et al., 2022). Furthermore, the finding that negative leadership styles constitute the closest category related to KH extends Baumeister et al.'s (2001) study on negativity bias.

Fourth, the meta-analysis's inclusion of personality traits as a predictor of KH uniquely extends relevant literature by identifying specific individual-level factors that may influence employees' KH behavior (Connelly et al., 2012). The study stresses the need for models of KH behavior that account for the specific personality traits (such as conscientiousness, openness to experience, and neuroticism) that may impact this behavior. This incorporation strengthens the theoretical landscape of KH, emphasizing the importance of individual differences in addition to group dynamics and organizational factors. This may further open up new avenues of research into the interplay between individual personality traits and other factors (e.g., organizational culture, job satisfaction, and employee engagement) in predicting KH behavior.

Fifth, this meta-analysis makes a contribution by identifying the negative consequences of KH behavior across psychological, behavior and performance perspectives, extending the literature, and highlighting the importance of theoretical models that account for the broad impact of this behavior (Connelly et al., 2019). In addition, we effectively address the existing inconsistent findings in the literature (e.g., Wang et al., 2018), unifying the literature on KH outcomes. This unification provides a more comprehensive understanding of the impacts of KH behavior, underscoring its universally detrimental effects on psychological, behavioral, and performance aspects. Consequently, our findings pave the way for the development and testing of more comprehensive models of KH within organizational settings. These refined models can incorporate a broader range of outcomes, thus offering a more nuanced view of the dynamics and implications of KH behavior.

Finally, this meta-analysis identifies the moderation roles of demographic and contextual factors contributing to the associations between KH behavior and its antecedents, which reinforces the need for theoretical frameworks that account for boundary conditions. The study's findings suggest that age, education, power distance, and other demographic and contextual factors are likely to shape the nexus between different antecedents and KH behavior. This highlights the importance of considering these factors when developing and refining theoretical models. Additionally, studies addressing the moderating role of methodological factors on the relationships between KH and its consequences provide valuable insights into the complex interplay between research design, measurement, and the observed effects of KH behavior, answering research calls to emphasize the importance of conducting moderator analyses (Hunter & Schmidt, 2004).

### 5.2. Practical implications

Organizations that seek to reduce KH behavior should prioritize efforts to enhance motivation-enhancing HR practices, as this is found to be the strongest predictor of lower levels of KH behavior. Employees are driven by various motivational factors; thus, implementing HR practices

that enhance motivation is the most effective strategy. These practices include establishing clear promotion paths and offering performance-based rewards (Sanders et al., 2018). Specifically, career path planning can assist employees in outlining their long-term career development. Leadership development programs, for example, guide high-potential employees through a series of training and job rotations, ultimately preparing them for senior management roles (Bialek & Hagen, 2022). Furthermore, regular public recognition and financial or non-monetary rewards can make employees feel that their efforts and contributions are appreciated, thereby further increasing their intrinsic motivation (Gagné & Deci, 2005).

Given the relative importance of the impact of empowerment-enhancing HR practices on KH, additional initiatives can be implemented to increase employees' sense of involvement and belonging. For instance, establishing structured feedback groups can play a significant role in ensuring that employees' voices are heard, and their feedback is not only valued but also acted upon. Moreover, feedback groups can serve as a platform for recognizing and addressing potential issues before they escalate, thereby improving overall organizational performance and employee satisfaction (Zhang & Bartol, 2010).

Organizations should be mindful of how different leadership styles affect KH behavior. Destructive leadership ought to be avoided, whilst relational-oriented leadership styles should be fostered to create a culture of openness and knowledge sharing (Alblooshi et al., 2021). Specifically, organizations should prioritize the establishment of strong interpersonal relationships and a supportive work environment. As suggested by Ragins and Kram (2007), implementing mentorship programs, where experienced employees guide and support new hires, can foster a culture of knowledge sharing and mutual support. Furthermore, regular and public recognition and rewards are necessary for employees who actively share knowledge and contribute to team success, thereby reinforcing positive behaviors and creating a collaborative work culture (Dong et al., 2017).

Moreover, organizations ought to consider the influence of personality on molding employees' KH behavior. Individuals with maladaptive personality traits can be identified through personality assessments during recruitment or regular employee evaluations. Once identified, targeted interventions can be implemented, such as coaching, mentoring, or training programs that focus on developing emotional intelligence, empathy, and effective communication skills to diminish their propensity for destructive behavior (Hudson, 2023).

As the findings underscore the significance of considering demographic and contextual factors as potential moderators, organizations need to tailor their interventions to account for these differences. This could include offering different training programs for employees of varying ages or educational backgrounds. Since older employees benefit more from empowerment-enhancing and skill-enhancing HR practices, targeted training programs (e.g., workshops and courses) that focus on new technologies and methodologies relevant to their roles could maximize their potential (Boerlijst, 2020). It is also suggested to include training courses on cultural sensitivity and adaptive leadership techniques to help leaders adopt more inclusive and participative leadership styles in high-power-distance cultures (Akanji et al., 2020).

## 6. Limitations and future research recommendations

This meta-analysis has several limitations that future research can address. First, the study only considers KH as a whole construct and does not divide it into evasive hiding, playing dumb, and rationalized hiding (i.e., its three categories). Most of the primary studies included in our meta-analysis did not differentiate KH into these three categories, which means that we had insufficient studies to be able to separate the KH construct. Such dimensions ought to be regarded in future primary studies to provide a more elaborate and nuanced picture of KH.

In addition, emerging trends and some important variables may have been excluded. Our meta-analysis study only involves variables that

meet the inclusion criteria in at least three empirical studies (Hoffman et al., 2007). For example, neutral personality traits were excluded from the meta-analysis due to inadequate primary studies. Additionally, emerging trends that affect KH, such as remote work or digital transformation, were also excluded. When there are adequate primary studies, future research could investigate how remote work environments influence KH behaviors, considering factors such as virtual communication and digital collaboration tools (Wang et al., 2021).

Further, although the categorization of HR practices, leadership, and personality traits in this meta-analysis relies on theoretical guidance, alternative categorizations cannot be ruled out. Future studies could consider alternative classifications to gain a more diverse understanding of the antecedents and outcomes of KH.

As for moderators, the study investigated the moderating roles of demographic, contextual, and methodological factors. Other variables such as emotions and attitudes could also be considered. However, the scarce relevant research restricts the ability to examine the impacts of such variables. Thus, primary studies should be conducted to fill the gaps that exist in the literature. Additionally, the current meta-analysis has an imbalanced number of studies across different moderator levels, and a low number of studies for specific moderator levels may influence the effect size of estimates in the subgroup analysis (Hoffman et al., 2007). Future studies could conduct more primary studies on KH that include moderator variables to expand the existing evidence base.

## CRedit authorship contribution statement

**Yang Shen:** Writing – original draft, Visualization, Validation, Software, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Sophie Lythreatis:** Writing – review & editing, Supervision. **Sanjay Kumar Singh:** Writing – review & editing, Supervision. **Fang Lee Cooke:** Writing – review & editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jbusres.2024.114963>.

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