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Too much to Know? The Cognitive Demands of Daily Knowledge Seeking and the Buffering Role of Coworker Contact Quality

Anne Burmeister

Erasmus University Rotterdam

Valeria Alterman

University of Miami

Ulrike Fasbender

University of Giessen

Mo Wang

University of Florida

Author Notes

Anne Burmeister, Rotterdam School of Management, Erasmus University. Valeria Alterman, Warrington College of Business, University of Florida. Ulrike Fasbender, Work and Organizational Psychology, University of Giessen. Mo Wang, Warrington College of Business, University of Florida. Correspondence regarding this article should be addressed to Anne Burmeister, Erasmus University, Postbus 1738, 3000 DR Rotterdam, Netherlands. Emails should be sent to: burmeister@rsm.nl.

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Abstract

To get their work done and achieve their daily work-related goals, employees seek knowledge from their coworkers. While the benefits of knowledge seeking have been established in the literature, we have yet to understand the potential downsides of daily knowledge seeking. We adopt a cognitive perspective to carve out the negative effect of daily knowledge seeking, while controlling for its established positive effect via perceived learning. Based on cognitive load theory, we argue that daily knowledge seeking produces intrinsic cognitive load that can hinder daily goal attainment through the experience of knowledge overload and subsequent resource depletion. However, the relational context in which knowledge seekers interact with knowledge sources represents an important contextual boundary condition. Coworker contact quality can mitigate the effect of knowledge seeking on knowledge overload because high coworker contact quality reduces extraneous (i.e., ineffective) and increases germane (i.e., productive) cognitive load that knowledge seekers experience when navigating the social interaction with knowledge sources. Under this condition, cognitive capacity is freed up and knowledge overload is less likely to occur. Based on an experience sampling study in which we collected data across 10 working days from 189 German employees, we found support for our hypotheses. An employee's knowledge seeking had a negative indirect effect on goal attainment via knowledge overload and subsequent resource depletion, however, the downsides of daily knowledge seeking became less pronounced when coworker contact quality increased. We discuss the implications of our findings for research on knowledge seeking and resource exchange behaviors.

Keywords: resource seeking; knowledge overload; coworker contact quality; cognitive load theory; learning; goal attainment

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To be effective and attain their work-related goals, employees need to frequently access knowledge from their coworkers. The increasingly interdependent and dynamic nature of work requires daily collaboration and coordination with others to get work done (Colbert et al., 2016; Grant & Parker, 2009). Seeking knowledge from coworkers, defined as the act of identifying and accessing coworker knowledge, can enable employees to solve problems more quickly and to deliver more high-quality work because coworkers can provide valuable complementary insights. Research has depicted knowledge seeking as a discretionary work behavior that creates learning-related opportunities (S. Lee et al., 2018; Zahra et al., 2020) and increases job satisfaction (Bauer et al., 2019), creativity (Černe et al., 2014; Wang et al., 2014), and general effectiveness at work (Bamberger, 2009; Lim et al., 2020).

Despite its numerous benefits, we argue that knowledge seeking can be associated with cognitive costs for the knowledge seeker that have yet to be examined. Knowledge seeking is a demanding cognitive and social interactional phenomenon that requires knowledge seekers to invest cognitive resources to solicit knowledge from others (Lim et al., 2020; Ringberg & Reihlen, 2008). Knowledge seekers need to invest resources to cognitively map out their knowledge seeking attempt and process the novel and complex incoming knowledge (Grand et al., 2016; Kwan & Cheung, 2006; Ringberg & Reihlen, 2008; Savolainen, 2015). In addition, knowledge seekers need to invest resources to manage the social interaction with knowledge sources, for example, by anticipating, processing, and responding to their informational cues (Andrews & Delahaye, 2000; Sias, 2005). Shedding light on the cognitive costs of daily knowledge seeking is important because research to date has mainly focused on the benefits of knowledge seeking (Zahra et al., 2020), examined consequences for knowledge sources rather than knowledge seekers (Cabrera & Cabrera, 2002), or highlighted socioemotional rather than cognitive costs of soliciting resources from

others (Lim et al., 2020; Menon et al., 2006). Our understanding of the consequences of daily knowledge seeking is thus incomplete.

In this study, we aim to extend our understanding of the consequences of daily knowledge seeking at work. To capture the potential negative cognitive effects of knowledge seeking, we acknowledge its dynamic within-person nature (Lim et al., 2020; Morrison & Vancouver, 2000). Knowledge seeking fluctuates at the daily level because employees make voluntary decisions about whether, how, and from whom to seek knowledge in response to situational opportunities or constraints (Morrison & Vancouver, 2000; Noe et al., 2014). This is relevant because the use of between-person designs might mask possible momentary or short-term cognitive effects involved in identifying and accessing knowledge sources (Savolainen, 2015), which can only be uncovered when studying daily fluctuations in knowledge seeking. We thus adopt a cognitive perspective and build on cognitive load theory (Sweller, 1988) to explicate a negative pathway through which knowledge seeking hinders daily goal attainment (i.e., the achievement of daily work-related goals; Sheldon & Elliot, 1999). Cognitive load theory explains the role of cognitive load during learning processes and states that individuals rely on the limited capacity of their working memory to process incoming information (Baddeley, 1992; Cowan, 2001), which can be exceeded by momentary processing requirements. Cognitive load theory thus provides a useful theoretical perspective to unveil the cognitive processes that determine the outcomes of daily knowledge seeking (Karr-Wisniewski & Lu, 2010; Lin, 2010; Oldroyd & Morris, 2012).

We argue that knowledge seeking can hinder an employee's daily goal attainment because knowledge seekers experience knowledge overload (a state in which an employee's knowledge processing capabilities are exceeded by momentary knowledge processing requirements; see Karr-Wisniewski & Lu, 2010), and subsequent resource depletion (i.e., employees' temporarily reduced capacity to regulate their cognition, emotions, and behavior; Baumeister et al., 1998). We expect that the cognitive demands of an employee's knowledge

seeking are situational and dynamic (Lim et al., 2000; Morrison & Vancouver, 2000) and exert short-term negative effects on an employee's goal attainment at the end of the workday (Schmeichel et al., 2003). We further establish coworker contact quality as a contextual boundary condition to recognize the social interactional nature of knowledge seeking and acknowledge that daily knowledge seeking is shaped by the relational context in which it unfolds (Ringberg & Reihlen, 2008; Sias, 2005). We argue that the negative pathway of knowledge seeking on goal attainment via knowledge overload and subsequent resource depletion becomes less pronounced with higher levels of coworker contact quality (i.e., positive, natural, and cooperative coworker interactions; Fasbender et al., 2020). This is because higher levels of coworker contact quality can reduce extraneous and increase germane cognitive load that knowledge seekers experience when navigating the social interaction with knowledge sources. Cognitive capacity for processing the incoming knowledge is freed up, such that overload is less likely to occur. While our focus is on depicting the cognitive demands of daily knowledge seeking, we aim to provide a more comprehensive account by controlling for the positive path via perceived learning (i.e., a sense of continually improving and getting better; Porath et al., 2012) and subsequent resource depletion. Figure 1 depicts our conceptual model.

With our study, we aim to make three main contributions. First, we aim to contribute to the literature on knowledge seeking in organizations by depicting not only its benefits but also its challenges. We acknowledge the cognitive foundations of knowledge seeking (Foss et al., 2010; Grand et al., 2016; Ringberg & Reihlen, 2008), and add the path of knowledge overload and subsequent resource depletion to gauge its negative consequences. In doing so, we advance the literature on resource seeking more generally, as this literature has so far mainly described the socioemotional costs (e.g., reputational loss, interpersonal strain), but not the potential cognitive costs of soliciting resources from others (Lim et al., 2020). As a result, we contribute to building a more comprehensive account of the consequences of

coworker knowledge exchanges by depicting negative effects of knowledge seeking from a cognitive perspective.

Second, we acknowledge that social interactions between knowledge seekers and knowledge sources are a core feature of the daily knowledge seeking process (Ringberg & Reihlen, 2008; Sias, 2005), by examining coworker contact quality as a contextual boundary condition. We examine whether the relational context (see Barron, 2003) characterized by coworker contact quality bounds the effect of an employee's knowledge seeking on knowledge overload as a between-person moderator, and thus provide organizations with a potential starting point for managing the cognitive demands of daily knowledge seeking. Our approach further specifies that our understanding of within-person variations in cognitive processes associated with knowledge seeking is incomplete without considering the relational context at the between-person level.

Third, knowledge seeking between employees is a central day-to-day activity at work (Bosua & Scheepers, 2007). With our study, we contribute to the nascent but growing literature on the daily (i.e., within-person) variations in coworker resource exchanges more generally (Bolino & Grant, 2016; Halbesleben & Wheeler, 2015; Koopman et al., 2016; Lanaj et al., 2016; Lim et al., 2020; Trougakos et al., 2015), and coworker knowledge exchanges more specifically (Morrison & Vancouver, 2000). By examining knowledge overload and subsequent resource depletion as short-term consequences of knowledge seeking, we highlight the relevance of research on within-person variations to expand our understanding of knowledge exchange behavior at work.

The Cognitive Demands of Daily Knowledge Seeking: Cognitive Load Theory

To elucidate the negative cognitive consequences of daily knowledge seeking, we draw on cognitive load theory (Sweller, 1988), which was originally introduced as an instructional design theory (Paas & van Merriënboer, 1994). Cognitive load theory bases its instructional recommendations on the principles of human cognitive

architecture that determine how people can consciously acquire and utilize information and knowledge during learning processes (see Sweller, 2010a for a detailed review of these principles).[1] It has mainly been used to identify instructional design features that facilitate learning and prevent working memory from being overloaded by optimizing cognitive load (Ginns & Leppink, 2019).

According to cognitive load theory, the total cognitive load in working memory during learning is determined by intrinsic, extraneous, and germane cognitive load. Intrinsic cognitive load represents the difficulty of information processing that is driven by the complexity and novelty of the incoming information and knowledge (van Merriënboer & Sweller, 2005). Complexity increases with the number of interdependent elements that need to be simultaneously processed in working memory to generate understanding (Sweller, 2010b). Further, novelty increases intrinsic cognitive load because novel information and knowledge has not yet been organized and stored in long-term memory, which means that individuals cannot utilize stored schemas to facilitate momentary information processing (Sweller, 2010b).

Both extraneous and germane cognitive load can be identified as extrinsic cognitive load because they are driven by contextual factors, which distinguishes them from intrinsic cognitive load. Extraneous cognitive load is defined as ineffective cognitive load as it does not contribute to schema construction in long-term memory and is determined by the way new information and knowledge is presented (Paas et al., 2003; van Merriënboer & Sweller, 2005).

[1] The literature on knowledge exchange suggests a hierarchical relationship between information and knowledge, where information refers to objective facts that are infused with understanding and knowledge refers to information that is personalized and enriched by personal experiences, beliefs, and meaning (Bender & Fish, 2000). As such, knowledge is more person-specific compared to information and research further suggests that people perceive an intuitive difference between the terms information and knowledge in the work context (Braf, 2002). CLT has been used in the past to describe more simple and straightforward information acquisition processes in educational settings (Sweller et al., 1998) as well as more advanced knowledge acquisition and problem-solving processes in a variety of settings (Sweller et al., 1988). Accordingly, the principles of human cognitive architecture advanced in CLT should apply to both information and knowledge seeking processes. If anything, as knowledge compared to information is more complex to transfer and to process, more rather than less cognitive load should be produced.

Inappropriate timing and sequencing as well as failure to provide examples are characteristics of ineffective presentation (Paas et al., 2003; Renkl, 2005). In social learning situations, where learners need to interact to enable information and knowledge exchange, extraneous cognitive load can be created by ineffective interindividual communication and coordination (Janssen et al., 2010). Extraneous cognitive load is more pronounced in low-quality interactions because learners are less likely to share common ground and provide engaged and helpful responses (Barron, 2003).

Germane cognitive load is defined as productive cognitive load and is produced by the cognitive resources devoted to constructing and automating cognitive schemata in long-term memory that can potentially enhance learning (Paas et al., 2003). Germane cognitive load is increased when instructional design features enable learners to devote working memory capacity to processing the incoming information and knowledge rather than addressing extraneous cognitive load (Sweller, 2010a). In social learning situations, high-quality interactions can facilitate germane cognitive load because learners can benefit from each other's inputs that facilitate understanding of the incoming information and knowledge (Kirschner et al., 2011). High-quality interactions can thus alleviate some of the intrinsic cognitive load placed on learners (Butson & Thomas, 2014; Costley, 2019).

In the workplace, knowledge seeking creates intrinsic cognitive load because employees tend to solicit complex and novel, rather than simple and mundane knowledge from others. In fact, it has been documented that knowledge seekers carefully select knowledge sources depending on their perceived capability and tend to request complex knowledge to manage the impression they make on others (Andrews & Delahaye, 2000; Morrison & Vancouver, 2000). In addition, knowledge seekers need to cognitively map out their knowledge seeking attempt by envisioning how to

request specific kinds of knowledge, and they need to process the incoming knowledge (Grand et al., 2016; Savolainen, 2015).

During knowledge seeking at work, extraneous and germane cognitive load are dependent on the interaction quality between knowledge seekers and sources. When extraneous cognitive load is created, germane cognitive load is reduced and vice versa. Extraneous cognitive load can be created by the ineffective ways in which knowledge sources present their knowledge and the interpersonal demands that result from having to navigate the social interaction with the knowledge sources (Huk & Ludwigs, 2009; Sweller, 2006). For example, knowledge sources might make it difficult to access their knowledge by being unresponsive, providing insufficient and disengaged responses, or by presenting their knowledge in a complicated way (Barron, 2003; Janssen et al., 2010; Webb, 1991). To contrast, germane cognitive load is created when knowledge sources are forthcoming and responsive and when the quality of the social interaction helps knowledge seekers to make sense of the incoming information. For example, knowledge sources can facilitate germane cognitive load by using easily accessible language, creating common ground when providing explanations, and responding openly rather than dismissively to follow-up questions. Taking together, intrinsic cognitive load is an inherent component in knowledge seeking at work, while extraneous and germane cognitive load are determined by the interaction quality between knowledge seekers and sources.

Cognitive load theory helps to specify how and when the interaction of intrinsic, extraneous, and germane cognitive load created by daily knowledge seeking leads to overload. It specifies that if total cognitive load exceeds one's momentary working memory capacity, so-called "working-memory overload" (Sweller et al., 1998, p. 275) or "cognitive overload" (Sweller et al., 1998, p. 289) is experienced. Overload of one's cognitive capacity by momentary information processing requirements is not uncommon because working memory capacity is limited (Sweller, 1988). While research has not come to a definite

conclusion on the number of elements that can be retained in working memory, research agrees that people can only process a very limited number of elements of novel information (Cowan, 2001). Accordingly, employees' ability to acquire and utilize new knowledge from coworkers is constrained by humans' limited working memory capacity (see bounded rationality; Simon, 1991). Building on the notion of cognitive overload in cognitive load theory (Sweller, 1988), knowledge overload is a state in which an employee's knowledge processing capabilities are exceeded by momentary knowledge processing requirements. We thus adopted the concept of general cognitive overload and applied it to the context of employee knowledge seeking, following the research on information overload (for a review see Eppler & Mengis, 2004). In line with research on information overload (Eppler & Mengis, 2004; Karr-Wisniewski & Lu, 2010; Oldroyd & Morris, 2012), we posit that knowledge overload, induced by knowledge seeking, can reduce goal attainment.

To explain why knowledge overload reduces an employee's daily goal attainment via resource depletion, we integrate recent advancements of cognitive load theory (Chen et al., 2018; Leahy & Sweller, 2019) with the model of episodic performance (Beal et al., 2005). Research on cognitive load theory has recently started to examine cognitive resource depletion as an extension of cognitive load theory (Chen et al., 2018; Ginns & Leppink, 2019; Leahy & Sweller, 2019). They demonstrated that the exertion of cognitive effort can lead to working memory resource depletion and hamper subsequent task performance.

To specify how exactly this depletion process unfolds, we utilize the work on episodic performance. According to Beal et al. (2005), employees need to regulate their attention and cognitive resource investment for optimal task performance. Exercising such regulation is effortful, consumes cognitive resources, and can lead to resource depletion (Baddeley et al., 1998; Muraven & Baumeister, 2000; Schmeichel, 2007). Resource depletion is particularly likely when employees experience

knowledge overload because being cognitively overtaxed leads to the experience of stress and anxiety (Eppler & Mengis, 2004; Zhou et al., 2017) and employees tend to invest additional cognitive resources to regulate such negative reactions (Bakker & Demerouti, 2007; Clercq & Belausteguigoitia, 2019; Galy & Melan, 2013; Hockey, 1993). This escalation of cognitive resource investment ultimately results in resource depletion (Zhou et al., 2017). Resource depletion, in turn, reduces an employee's momentary ability to deploy attention and cognitive resources toward task accomplishment (Schmeichel et al., 2003), which hinders task performance (Beal et al., 2005). Taken together, the attention and cognitive resources that an employee invests to respond to knowledge overload can lead to resource depletion, which, in turn, diminishes goal attainment because exercising executive control is more difficult when one's attentional and cognitive resources are depleted.

Hypotheses Development

The Negative Effect of Daily Knowledge Seeking on Goal Attainment via Knowledge Overload and Subsequent Resource Depletion

We propose that an employee's knowledge seeking in the morning is negatively associated with goal attainment at the end of the workday through knowledge overload and subsequent resource depletion. First, we argue that knowledge seeking can lead to knowledge overload. Employees can experience knowledge overload because knowledge seeking is associated with considerable cognitive processing requirements (i.e., intrinsic cognitive load) to generate and process incoming knowledge (Grand et al., 2016; Zahra et al., 2020). Employees not only need to process the incoming knowledge and integrate it into their existing knowledge reservoir (Grand et al., 2016), but also need to plan and execute their knowledge requests and manage the social interaction with knowledge sources (Lim et al., 2020; Savolainen, 2015). All these activities related to knowledge seeking occupy cognitive capacity in an employee's working memory (Huk & Ludwigs, 2009; Sweller, 2006). As these cognitive demands related to knowledge seeking are placed on employees cognitive

processing capacity in addition to the cognitive demands related to fulfilling the demands of their work role (Elsbach & Hargadon, 2006), employees can experience knowledge overload (Savolainen, 2015). In line with our argument, research showed that employees who engaged in knowledge seeking via social media experienced cognitive overload due to the cognitive effort required to seek, select, and integrate the large amounts of available knowledge (Bolisani et al., 2018).

Hypothesis 1: An employee's knowledge seeking is positively associated with knowledge overload.

Second, we argue that knowledge overload can lead to diminished daily goal attainment via resource depletion. Recent research on cognitive load theory clarified that the investment of cognitive effort can exhaust mental resources and lead to working memory resource depletion, which hampers subsequent task performance (Chen et al., 2018; Leahy & Sweller, 2019). More specifically, employees who experience knowledge overload are overwhelmed by the momentary knowledge processing requirements that exceed their cognitive capacity (Karr-Wisniewski & Lu, 2010). Employees are thus in a situation in which they feel overtaxed, which exhausts their mental resources and leads to an energy depletion process (Bakker & Demerouti, 2007; Clercq & Belausteguigoitia, 2019). Employees feel exhausted when they are cognitively overtaxed because they respond to high demands by mobilizing more resources and increasing their effort to protect their current performance levels (Hockey, 1993). As such, employees invest additional resources and effort to actively control their information processing, but this attempt to compensate the overtaxing through additional resource investments further drains their energy (Bakker & Demerouti, 2007; Hockey, 1993). Hence, an employee's attempt to actively respond to and reduce the experienced knowledge overload, temporarily depletes their resources and makes employees feel drained and unfocused. In line with our arguments, research reported that information overload is linked to fatigue (A. R. Lee et al., 2016).

We further argue that resource depletion hampers an employee's daily goal attainment. The extent to which an employee needs to invest resources to alleviate overtaxing momentary knowledge processing requirements drives the ebbs and flows in an employee's resource levels. When employees are resource depleted, their mental energy is running low, they feel drained, and their mind is unfocused (Clarkson et al., 2010; Lanaj et al., 2016). However, to achieve their daily work-related goals, employees need to direct their attention and cognitive resources toward task accomplishment (Beal et al., 2005; Sheldon & Elliot, 1999). Thus, in a state of depletion, employees lack the resources they need to intentionally manage their cognition, emotion, and behavior to facilitate daily goal attainment. Previous research has documented the maladaptive effects of depletion on performance-related employee outcomes, such as task performance and the engagement in prosocial behavior at work (Lanaj et al., 2014; Trougakos et al., 2015). In addition, a study among university students showed that depletion can reduce educational goal attainment (Milyavskaya & Inzlicht, 2017). Taken together, we thus expect that knowledge overload is negatively associated with daily goal attainment due to resource depletion.

Hypothesis 2: Knowledge overload is negatively associated with an employee's goal attainment via resource depletion.

Finally, by integrating our arguments, we predict that knowledge seeking is negatively associated with daily goal attainment through knowledge overload and subsequent resource depletion. First, knowledge seeking can lead to knowledge overload because generating and processing the incoming knowledge can exceed an employee's limited cognitive capacity. Second, knowledge overload can trigger subsequent resource depletion because an employee's attempt to deal with knowledge overload exhausts their cognitive resources. Third, resource depletion hampers an employee's daily goal attainment because they lack the resources needed to achieve their daily work-related goals.

Hypothesis 3: An employee's knowledge seeking is negatively associated with goal

attainment via knowledge overload and subsequent resource depletion.

The Moderating Role of Contact Quality: Buffering the Negative Path

Coworker contact quality enables more pleasant, productive, and cooperative interactions between employees (Carmeli et al., 2009; Noe et al., 2014), which reduces the cognitive resources that knowledge seekers need to invest to manage the social interaction with knowledge sources and thus limits knowledge overload. When coworker contact quality is lower (i.e., higher extraneous cognitive load, lower germane cognitive load), the link between knowledge seeking and knowledge overload is more pronounced but when coworker contact quality increases (i.e., higher germane cognitive load, lower extraneous cognitive load), the link between knowledge seeking and knowledge overload is buffered.

Coworkers who operate in a positive relational context characterized by high-quality contact are more likely to understand each other and engage in effective communication (Fay & Kline, 2011; Hansen et al., 2005; C. Liu et al., 2018). Accordingly, coworkers respond more effectively to the knowledge-related questions of knowledge seekers (Hansen, 1999; Lim et al., 2020), which reduces the effort that knowledge seekers need to invest in planning and framing their requests for knowledge. Research showed that knowledge seekers engage in less editing of their messages to knowledge sources when they are embedded in high-quality relationships (Sias & Jablin, 1995). In addition, with increasing coworker contact quality, knowledge sources are motivated to provide more complete knowledge to knowledge seekers (Hansen, 1999; Sias, 2005). More specifically, knowledge sources provide more elaborate explanations and more appropriate and engaged responses (Barron, 2003; Webb, 1991). For example, knowledge sources might respond in a timelier way and use language that is easier to understand for knowledge seekers (Webb, 1991). The greater assistance of knowledge sources reduces the cognitive resources that knowledge seekers need to invest to manage the social interaction.

Consequently, higher contact quality can reduce extraneous cognitive load and

increase germane cognitive load and thereby enable knowledge seekers to focus their limited cognitive capacity on processing the incoming knowledge (Hsiao et al., 2013; Huk & Ludwigs, 2009; Lin, 2010). Coworker contact quality thus buffers the effect of knowledge seeking on knowledge overload because knowledge seekers have more cognitive capacity available for knowledge processing, which reduces knowledge overload.

> *Hypothesis 4:* Contact quality moderates the positive relation between an employee's knowledge seeking and knowledge overload, such that the positive relation weakens as contact quality increases.

In integrating our arguments from Hypothesis 3 and 4, we propose that coworker contact quality buffers the negative link between an employee's knowledge seeking and daily goal attainment. More specifically, we expect coworker contact quality to diminish the effect of knowledge seeking on knowledge overload, such that the negative downstream consequences on daily goal attainment get less pronounced as contact quality increases.

> *Hypothesis 5:* The negative indirect relation between an employee's knowledge seeking and goal attainment via knowledge overload and subsequent resource depletion is moderated in the first stage by contact quality, such that the negative indirect relation weakens as contact quality increases.

Research Question: The Total Indirect Effect of Daily Knowledge Seeking

Research showed that seeking information and knowledge from others can facilitate the effectiveness of employees because it initiates a learning process (Bamberger, 2009; Miller & Jablin, 1991; Noe et al., 2014; Zhu et al., 2018). Employees who are learning experience "a sense that they are continually improving and getting better at what they do" (Porath et al., 2012, p. 250). Learning employees are more likely to attain their daily work-related goals because the experience of growth and competence is energizing (Green et al., 2017) and reduces the likelihood of feeling depleted (van den Broeck et al., 2008; van den Broeck et al., 2016). In addition, learning employees can explore and utilize the incoming

knowledge, thereby filling knowledge gaps and updating their knowledge (Mannucci & Yong, 2018; Zhu et al., 2018). As a result, learning employees have more resources available to attain their daily work-related goals. We thus modeled the positive path of knowledge seeking on daily goal attainment via perceived learning and subsequent resource depletion.

Given the potential simultaneous existence of negative and positive paths that link knowledge seeking and daily goal attainment, it seems worthwhile to explore whether the total indirect effect is positive or negative. This analysis sheds light on the relative strength of the opposing indirect effects and clarifies whether the positive path from knowledge seeking via perceived learning and resource depletion or the negative path via knowledge overload and resource depletion is more influential for daily goal attainment.

> *Research question:* Is the total indirect effect of an employee's knowledge seeking on daily goal attainment positive or negative, considering the negative path via knowledge overload and resource depletion and positive path via perceived learning and resource depletion?

Method

Sample and Procedure

Participants in our study were employed at various organizations in Germany. We commissioned an ISO 26362 certified online research company that manages a large research-only consumer and business panel to collect the data for this study. Based on meta-analytic findings, research showed that data generated through panel companies demonstrates similar psychometric properties and criterion validities compared to conventional data sources (Walter et al., 2019). Full-time employees, who complete their work during core business hours (i.e., are at work between 9am and 5pm), were recruited and informed about the requirements for study participation (e.g., filling out a baseline survey and three short daily surveys over 10 consecutive working days). The panel company compensated participants for their time with up to €26 based on their completion of the baseline and daily surveys (€1 for

completing the baseline survey and either €3 for participants who completed between 11-20 daily surveys in total (out of the 30 daily surveys), €15 for participants who completed between 21-26 daily surveys in total, or €25 for participants who completed between 27-30 daily surveys in total). We obtained institutional review board (IRB) approval from University of [blinded for review] (IRB #201801207).

Data collection proceeded in two phases in the Fall of 2018. In the first phase, the panel company contacted 5,721 employees and invited them to participate in the study. All employees received a link to the baseline survey hosted at Qualtrics.com wherein they indicated their willingness to participate, and provided socio-demographic information (i.e., gender, age, education level, tenure, and industry). They also responded to questions about their general coworker contact quality and time pressure at work. Two hundred and sixty-one employees agreed to participate in the study and filled out the baseline questionnaire.

In the second phase of the data collection, which started on the Monday of the following work week, participants completed three daily surveys (i.e., morning, noon, afternoon) for 10 workdays of two consecutive weeks. Participants were instructed to fill out the morning survey when they arrived at work, the noon survey before their lunch break, and the afternoon survey before they finished work. The panel company distributed the morning survey at 8am, the noon survey at 11:30am, and the afternoon survey at 4pm and further ensured that all daily surveys were closed two hours after distribution (morning survey at 10am, noon survey at 1:30pm, and afternoon survey at 6pm). Consistent with methodological recommendations (Fisher & To, 2012; Meade & Craig, 2012), we kept our daily surveys short (i.e., 2-5 minutes) to maintain employee engagement and avoid fatigue and distractions that may occur with longer surveys. Due to survey length concerns, we did not include attention check items. However, we screened each participant's response time and response pattern (Meade & Craig, 2012) in the final sample and did not find evidence of careless responding.

In the morning survey, we measured our day-level control variable (i.e., negative

affect), to rule out the possibility that the hypothesized negative consequences of knowledge seeking were caused by the mere start-of-the-workday negative mood (Rothbard & Wilk, 2011). In the noon survey, we measured knowledge seeking earlier in the day after participants had been working for several hours in order to allow knowledge seeking opportunities to occur. Even though knowledge seeking was our focal predictor and our research questions focused on the consequences of this behavior, we could not have measured it earlier (i.e., in the morning survey) because knowledge seeking is likely to occur after work is underway. Also, in the noon survey, it was important for us to assess employees' cognitive states to capture our hypothesized effects of knowledge seeking. As such, we measured knowledge overload and perceived learning in the noon survey. In the afternoon survey, we measured the subsequent outcomes: resource depletion and goal attainment. This sequencing of measurement timing ensured temporal separation between capturing the key mediator (i.e., knowledge overload) and the outcomes (i.e., resource depletion and goal attainment), which can mitigate common method variance (Podsakoff et al., 2003).

Of the 261 employees who completed the baseline survey, 37 participants did not participate in the daily part of the study and were excluded. The remaining 224 participants participated in the daily surveys (response rate of 86%). Of the 224 participants, 35 did not provide survey responses to at least three days out of the ten-day study period. They were removed from the final sample because at least three observations per person are recommended to appropriately model within-individual variations and to obtain a representative experience of the employee (Beal et al., 2013). Further, this approach is aligned with common practices in similar daily diary designs (e.g., Gabriel et al., 2018; Lanaj & Jennings, 2020). Thus, the final sample consisted of 189 employees (Level 2) who provided 1,612 day-level observations (Level 1), rendering a compliance rate of 85% (i.e., 1,612 / [189 × 10]). On average, the 189 participants participated on 8.53 days (*SD* = 2.02) and completed 2.74 surveys per day (*SD* = 0.51). For the final sample, the missing values in variables were

modeled using full-information maximum likelihood estimator.

Among the 189 participants, 44% were female. They had an average age of 43.08 years (*SD* = 10.78) and an average tenure of 11.19 years (*SD* = 9.23). Their highest education level ranged from high school degree to MBA/PhD; 25% had high school degree, 34% had completed vocational training, 38% had a bachelor's or master's degree, and 3% had an MBA/PhD degree. Participants came from a variety of industries, including professional services (25%), other (18%; open text field, e.g., agriculture, transportation), manufacturing (13%), trade (10%), administration and public services (10%), insurance and banking (9%), healthcare (6%), educational services (3%), research and development (3%), culture and media (2%), and craftsmanship (1%).

Daily Within-Person Measures

We applied all surveys in German and used a translation-back-translation procedure to translate the original English items into German (Brislin, 1970). One of the authors fluent in both English and German translated the original English items into German, and the other German-speaking author back-translated the items. Afterwards, the two authors compared the item translations to the original and resolved deviations. In doing so, we tried to keep the meaning of the translated items as close as possible to the original, while also improving readability for the participants (please see the Appendix for both the original English and the translated German items). If not indicated otherwise, participants responded on a 7-point scale ranging from 1 (S*trongly disagree*) to 7 (*Strongly agree*). In order to avoid participant fatigue (e.g., Christensen et al., 2003), we used short but established measures whose reliability and validity had been verified in published research. In doing so, we followed methodological recommendations (Beal, 2015; Uy et al., 2010) and standard practices (Lanaj et al., 2016; Trougakos et al., 2015).

Knowledge Seeking

We measured participants' knowledge seeking in the noon survey with the four-item

scale by Wilkesmann et al. (2009). More specifically, we adapted their four-item "obtaining knowledge"-scale to capture daily knowledge seeking by revising the wording to match our daily diary design. Participants rated their knowledge seeking behaviors over the course of that day's morning. A sample item is "This morning at work, I turned to my colleagues for advice regarding special procedures so that I learn them." Within-person reliability for this scale was .86.

Knowledge Overload

We measured participants' knowledge overload in the noon survey with the three-item scale by Karr-Wisniewski and Lu (2010). More specifically, we adapted their three-item "information overload" scale to the context of daily knowledge seeking. In doing so, we changed the word "information" to "knowledge" and adapted the wording to match our daily diary design. Participants rated their level of knowledge overload over the course of that day's morning. A sample item is "Today at work, since filling out the last questionnaire, I found that I was overwhelmed by the amount of knowledge I had to process." Within-person reliability for this scale was .80.

Perceived Learning

We measured participants' perceived learning in the noon survey with the five-item scale by Porath et al. (2012). Participants rated their perceived learning over the course of that day's morning. We thus adapted the wording of the items to match our daily diary design. A sample item is "Today at work, since filling out the last questionnaire, I continued to learn more and more as time went by." Within-person reliability for this scale was .78.

Resource Depletion

We measured participants' resource depletion in the afternoon survey with the five-item scale used by Lanaj et al. (2014), who had selected these items from the state self-control capacity scale developed by Twenge et al. (2004). Participants rated how they felt at that moment. A sample item is "I feel drained right now." Within-person reliability for this scale

was .92.

Goal Attainment

We measured participants' goal attainment in the afternoon survey with the two-item scale by Judge et al. (2005) that is based on research by Sheldon and Elliot (1999). Participants rated their progress toward and level of goal attainment over the course of that day. We thus adapted the wording of the items to match our daily diary design. The two items are "Today at work, since filling out the last questionnaire, I have made considerable progress toward attaining my goals" and "Today at work, since filling out the last questionnaire, I accomplished what I set out to do with my goals." The correlation between the two items was .61. Within-person reliability for this scale was .76.

Control Variables

We controlled for negative affect measured in the morning survey to rule out the possibility that the hypothesized negative consequences of knowledge seeking were caused by the mere start-of-the-workday negative mood (Rothbard & Wilk, 2011) rather than daily knowledge seeking behavior. Accordingly, unpleasant emotional states can reduce working memory capacity (Figueira et al., 2017; Rudolph & McGonagle, 2019), thereby making knowledge overload more likely. Further, as research showed that negative affect can lead to resource depletion (Bruyneel et al., 2009; Scheibe et al., 2021) and inhibit the attainment of important goals (Moberly & Watkins, 2010), we included negative affect as a control variable in our analysis. We measured negative affect with five items validated by Mackinnon et al. (1999). Participants responded to each item on a 5-point scale ranging from 1 (*Not at all*) to 5 (*Very much*) and were instructed to focus on how they felt "right now", rather than "in general" as in the original scale. A sample item is "upset." Within-person reliability for this scale was .81.

Between-Person Measures

Coworker Contact Quality

We measured participants' coworker contact quality in the baseline survey with the three-item scale used by Fasbender et al. (2020), based on the three-item contact quality scale developed by Voci and Hewstone (2003). Participants rated their general contact quality with coworkers on a 7-point scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The item stem "Contact with my coworkers is generally", was followed by the three items "positive," "natural," and "cooperative." Cronbach's alpha was .91.

Control Variables

We controlled for the cross-level main effect of time pressure at work on knowledge overload and moderating effect of time pressure at work on the link between knowledge seeking and knowledge overload because time pressure constitutes a critical job demand that can increase the load on employees' limited cognitive capacity (e.g., Baethge et al., 2019; Gerpott et al., 2020). It is thus reasonable to assume that those who have higher levels of time pressure at work would experience more knowledge overload on a day-to-day basis. Further, knowledge seeking may have a stronger effect on knowledge overload if employees are routinely under time pressure. Thus, controlling for the potential moderation effect of time pressure helps us to rigorously test the cross-level moderation effect of coworker contact quality. We measured time pressure in the baseline survey, using the three items used by Wu et al. (2014). Participants rated the extent to which they typically experience time pressure at work on a 7-point scale ranging from 1 (*Never*) to 7 (*Extremely often*). A sample item is "To what extent does your job require your working fast?" Cronbach's alpha was .82.

Analytical Strategy

Due to the nested data structure (days nested within individuals; please see Table 1 for estimates of the amount of within- and between-individual variance in our measures), we tested our model with multilevel modeling in Mplus 8.3. We used full-information maximum likelihood estimator to model missing values in our final sample in Mplus (Muthén & Muthén, 2012). Following recommendations by Preacher et al. (2010), we applied Monte

Carlo simulation procedures in the open-source software R (http://www.quantpsy.org) to create bias-corrected confidence intervals (CIs) for the mediation hypotheses and moderated mediation hypotheses.

More specifically, we tested our model by group-mean centering predictors at Level-1 (i.e., within-person level), as well as grand-mean centering predictors at Level-2 (i.e., between-person level; Enders & Tofighi, 2007). At Level-1, we specified the random effect of knowledge seeking on knowledge overload and kept all other Level-1 effects to be fixed (e.g., knowledge overload on resource depletion, resource depletion on goal attainment, direct effects of knowledge seeking on resource depletion and goal attainment, effects through perceived learning, and controlled effects for morning negative affect, perceived learning, day of the week, day of the study, and baseline measures).[2] At Level-2, we specified the effect of coworker contact quality on the random slope of knowledge seeking on knowledge overload. In addition, we specified the effect of our Level-2 control variable time pressure on the random slope of knowledge seeking on knowledge overload. The main effects of coworker contact quality and time pressure on all criterion variables were specified as fixed effects in order to provide a more robust test of the hypothesized relations in which the influence of general time-related job demands is removed.[3]

Following best practices for ESM research (Gabriel et al., 2019), we controlled for prior-day measure of each endogenous construct (i.e., Day T-1), day of the study, and day of

[2] Our multilevel model would not converge when all three hypothesized main effects were modeled as random effects simultaneously. We conducted piecemeal analysis to estimate each main effect in a separate random-effect model and found that there were significant between-person variances for the random effects from knowledge seeking to knowledge overload and from resource depletion to goal attainment. The between-person variance for the random effect from knowledge overload to resource depletion was not significant. However, the multilevel model still did not converge with estimating two random effects and one fixed effect simultaneously. Nevertheless, the mean estimates of the random effects obtained from the piecemeal analyses were highly similar to the estimates derived from our current model. Interested readers can contact the first author for the piecemeal analysis results.

[3] Removing the main effects of coworker contact quality and time pressure on resource depletion and goal attainment did not change the results or our substantive conclusions. Full details of the results of these analyses without these paths specified are available from the first author upon request.

the week to remove auto-regressive effects, partial out common source bias, and control for cyclical variation in daily states (Beal & Ghandour, 2011; Dello Russo et al., 2021; Scott & Barnes, 2011; Wang et al., 2017). From a theoretical perspective it was important to control for prior-day measures to account for possible spill-over effects. Given that one day's knowledge seeking behavior can result in lower daily goal attainment, employees may direct their attention and cognitive resources toward task accomplishment on subsequent days in order to make up for the loss in performance from the previous day. Removing these control variables (i.e., prior-day measure of each endogenous construct, day of the study, as well as day of the week) did not change the results or our substantive conclusions.

Results

Preliminary Analyses

Table 2 displays the means, standard deviations (within- and between-person), and intercorrelations of the variables. Before testing our hypotheses, we first conducted multilevel confirmatory factor analysis (CFA) to confirm the distinctiveness of our study variables (coworker contact quality, knowledge seeking, knowledge overload, perceived learning, resource depletion, and goal attainment), as well as controls (time pressure at work and negative affect). We tested the hypothesized eight-factor model by loading items on their respective latent factors. Results showed that the hypothesized model fit the data well (χ^2 = 426.88, *df* = 245, CFI = .98, TLI = .98, RMSEA = .02, $SRMR_{within}$ = .03 and $SRMR_{between}$ = .04).

Before proceeding, we tested several alternative models. Table 3 displays the descriptive statistics of these alternative CFA models' fit indices. First, to assess the potential existence of common variance attributable to simultaneous measurement, we tested three alternative CFA models that collapsed latent factors based on the timing of measurement. In particular, one alternative model specified items of coworker contact quality and time pressure (measured at baseline) to load on the same factor, one alternative model specified

items of knowledge seeking, knowledge overload, and perceived learning (measured at noon in the daily survey) to load on the same factor, and one alternative model specified items of resource depletion and goal attainment (measured at afternoon in the daily survey) to load on the same factor. The ranges of model fit indices of these three alternative models are as follows: $558.85 \leqslant \chi^2 \leqslant 1{,}994.39$; $246 \leqslant df \leqslant 247$; $.03 \leqslant$ RMSEA $\leqslant .07$; $.80 \leqslant$ CFI $\leqslant .96$; $.76 \leqslant$ TLI $\leqslant .96$; $.03 \leqslant SRMR_{within} \leqslant .10$; and $.04 \leqslant SRMR_{between} \leqslant .23$. Given that the model fit indices for these three alternative models were worse than that of the hypothesized eight-factor model, we were able to conclude that the measurement timing-related common variance was not a concern. Second, we also examined whether collapsing constructs based on similarity resulted in a better fitting model. Specifically, one alternative model specified the items of knowledge overload and resource depletion to load on the same factor, and another alternative model specified the items of knowledge overload and perceived learning to load on the same factor. The model fit indices of these two alternative models were as follows: χ^2s = 1,281.39 – 1,296.18; *dfs* = 246; RMSEAs = .05; CFIs = .88; TLIs = .86; $SRMRs_{within}$ = .06; $SRMRs_{between}$ = .04, suggesting that the eight-factor model fit the data better than these two models. Third, to more rigorously examine whether the eight-factor model was superior, we also tested all the other possible seven-factor models. The ranges of model fit indices of these three alternative models are as follows: $784.88 \leqslant \chi^2 \leqslant 2{,}191.21$; *df* = 246; $.04 \leqslant$ RMSEA $\leqslant .07$; $.78 \leqslant$ CFI $\leqslant .94$; $.74 \leqslant$ TLI $\leqslant .93$; $.04 \leqslant SRMR_{within} \leqslant .10$; and all $SRMR_{between}$ = .04, and are all worse than those of the eight-factor model. Therefore, we concluded that our hypothesized eight-factor model was superior, and the construct validity of our measures was supported.

One-way random-factor analysis of variance (ANOVA) results showed that there were sizable variances at the within-person level for knowledge seeking (intraclass correlation coefficient ICC[1] = .51, $F(188, 1423) = 10.06$, $p < .001$), knowledge overload (ICC[1] = .59,

$F(188, 1421) = 13.02$, $p < .001$), perceived learning (ICC[1] = .54, $F(188, 1423) = 11.25$, $p < .001$), resource depletion (ICC[1] = .58, $F(184, 1230) = 11.85$, $p < .001$), and goal attainment (ICC[1] = .37, $F(188, 1423) = 5.52$, $p < .001$). These results warrant use of multilevel modeling.

Hypotheses Testing

Unstandardized coefficient estimates of the final model are presented in Table 4. We calculated *pseudo-*R^2 for endogenous variables using Snijder and Bosker's (1999) formulas. We compared the full model (effects of control variables, main effects, and the interaction) to a baseline model (only effects of control variables). Specifically, the baseline model explained 11% of the variance in knowledge overload, 1% of the variance in perceived learning, 5% of the variance in resource depletion, and none of the variance in goal attainment. The full model explained an additional 4% of the variance in knowledge overload, an additional 11% of the variance in perceived learning, an additional 12% of the variance in resource depletion, and 18% of the variance in goal attainment.

We found an employee's knowledge seeking was positively related to knowledge overload ($\gamma = .12$, S.E. = .03, $p < .001$), supporting Hypothesis 1. Moreover, knowledge overload was positively associated with resource depletion ($\gamma = .13$, S.E. = .04, $p < .001$) and resource depletion was negatively associated with an employee's end of day goal attainment ($\gamma = -.12$, S.E. = .06, $p = .03$). In support of Hypothesis 2, the indirect relationship between an employee's knowledge overload and end of day goal attainment (via resource depletion) was negative and the confidence interval excluded zero (*indirect effect* = -.016, 95% bias-corrected CI [-.037, -.003]). Further, the indirect relationship between an employee's knowledge seeking and their end of day goal attainment via knowledge overload and subsequent resource depletion was negative and the confidence interval excluded zero as well (*indirect effect* = -.002, 95% bias-corrected CI [-.005, -.001], supporting Hypothesis 3.

In support of Hypothesis 4, we found that coworker contact quality mitigated the

positive effect of an employee's knowledge seeking on knowledge overload (γ = -.05, S.E. = .02, p = .04). Further, we used the Johnson-Neyman (J-N) technique to identify regions of moderator values at which the predictor-outcome relation is significantly different from zero (Gardner et al., 2017; Preacher et al., 2006). We found that the relation between knowledge seeking and knowledge overload was significant and positive when coworker contact quality was lower than 6.54 (see Figure 2). This means that this relation remained significant and positive from the lower bound of coworker contact quality observed (1.95; grand mean-centered value of -3.51) until the value reached 6.54 (grand-mean centered value of 1.08). Thus, knowledge seeking became not associated with knowledge overload when coworker contact quality reached a relatively higher value (see Figure 2).

In support of Hypothesis 5, we found that the indirect effect of knowledge seeking on goal attainment via knowledge overload and subsequent resource depletion was conditional on coworker contact quality, such that coworker contact quality buffered the link between knowledge seeking and knowledge overload. Accordingly, the difference between the conditional indirect effects for higher (+1 SD) compared to lower levels (-1 SD) of coworker contact quality was significant (*difference* = .001, 95% bias-corrected CI [.0001, .003]). Finally, we used the J-N technique to examine the region of significance for the conditional indirect effect of an employee's knowledge seeking on end of day goal attainment via knowledge overload and subsequent resource depletion (see Figure 3). We found that this moderated mediation effect was significant and negative when coworker contact quality was below 6.36 (a grand-mean centered value of .90). Therefore, at lower levels of coworker contact quality, an employee's knowledge seeking in the morning was negatively related to goal attainment at the end of the workday via knowledge overload and resource depletion. However, at higher levels of coworker contact quality (i.e., higher than 6.36), the indirect effect of knowledge seeking on goal attainment via knowledge overload and resource depletion became non-significant.

We followed the recommendation by Becker et al. (2015) to run analyses with and without control variables to improve the interpretation of our results. The removal of all control variables resulted in virtually the same results as those reported, with one exception. When removing time pressure at work, the moderation effect of coworker contact quality on the random slope between knowledge seeking and knowledge overload was not significant at the conventional level (γ = -.05, S.E. = .02, p = .05). It is plausible that when time pressure at work was included in the analysis it removed significant contamination in the hypothesized predictor-criterion relationship. In particular, part of the relationship between knowledge seeking (our predictor) and knowledge overload (our criterion, in this specific case) may be due to methodological or statistical artifacts, which might be corrected by including time pressure at work as a predictor of this relationship (Bernerth & Aguinis, 2016). Thus, time pressure at work may behave as a suppressor variable that suppresses, or controls for, irrelevant variance (Horst, 1941) in the random effect from knowledge seeking to knowledge overload. This suppression results in a decrease of contamination in the predictor-criterion relationship, therefore, helps to derive a more precise estimate of the effect of coworker contact quality. Although we cannot certify the exact reason for the shift in the results with the removal of this control variable, these are some potential explanations. Full details of the results of these analyses without the control variables are available from the first author upon request.

Testing the Research Question: The Total Indirect Effect of Daily Knowledge Seeking

Given the potential simultaneous existence of negative and positive paths that link knowledge seeking and daily goal attainment, we explored the total indirect effect (Preacher & Hayes, 2008). First, as shown in Table 4, we found that knowledge seeking was positively related to perceived learning (γ = .36, S.E. = .03, p < .001), perceived learning was negatively related to resource depletion (γ = -.13, S.E. = .04, p = .002), and resource depletion was negatively related to daily goal attainment (γ = -.12, S.E. = .06, p = .03). The indirect effect of

an employee's knowledge seeking on goal attainment via perceived learning was positive and the confidence interval excluded zero (*indirect effect* = .028, 95% bias-corrected CI [.009, .048]). Moreover, the indirect effect of an employee's knowledge seeking on goal attainment via perceived learning and subsequent resource depletion was positive and the confidence interval excluded zero (*indirect effect* = .006, 95% bias-corrected CI [.001, .013]).

Second, we examined our research question about the total indirect effect of daily knowledge seeking. The unstandardized negative indirect effect for the three-stage path via knowledge overload and subsequent resource depletion suggests that end of day goal attainment is expected to decrease by .0020 units (on its 7-point scale; *indirect effect* = -.002, 95% bias-corrected CI [-.005, -.001]) for every one-unit increase in knowledge seeking earlier in the day (also on a 7-point scale). The total positive indirect effect was calculated by summing the two-stage path via perceived learning with the three-stage path via perceived learning and subsequent resource depletion. This total positive indirect effect is significant (*indirect effect* = .034, 95% bias-corrected CI [.006, .060]). Finally, to address our research question, we calculated the total indirect effect by summing the negative indirect effect with the total positive indirect effect. This total indirect effect is positive and significant (*indirect effect* = .032, 95% bias-corrected CI [.012, .067]), suggesting that although a negative effect of daily knowledge seeking on goal attainment via knowledge overload and resource depletion exists, the positive effect via perceived learning and subsequent resource depletion overweighs it.

Discussion

In this study, we depicted the challenges of daily knowledge seeking based on cognitive load theory (Sweller, 1988), while controlling for the positive path via perceived learning. We theorized that both the cognitive and social interactional processes of knowledge seeking would create cognitive load for employees, which could hinder daily goal attainment depending on coworker contact quality. We found that an employee's knowledge seeking in

the morning could hinder their daily goal attainment through the experience of knowledge overload at noon and subsequent resource depletion. We also found that coworker contact quality buffered the effect of daily knowledge seeking on knowledge overload and thereby diminished the subsequent impact on goal attainment via resource depletion. Our study demonstrates the cognitive demands of daily knowledge seeking and thereby provides a novel cognitive perspective on negative consequences of discretionary resource seeking behavior from the perspective of knowledge seekers.

Theoretical Implications

Our findings offer several relevant theoretical implications. First, research on the downsides of discretionary work behavior typically focuses on resource providers as agents who bear the personal and professional costs of their discretionary behavior, while resource recipients are positioned as passive targets, who reap the benefits of the additional effort of their coworkers (Nadler, 2015). These studies demonstrate that resource providers can experience reduced well-being and goal attainment due to the time and energy they invest in supporting others in addition to attaining their own daily work-related goals (Bolino et al., 2013; Bolino & Grant, 2016; Koopman et al., 2016; Lanaj et al., 2016). Our findings complement this research stream on resource providing, by delineating the cognitive costs of resource seeking and by depicting how the cognitive costs of knowledge seeking translate into reduced employee effectiveness. Specifically, we delineate the cognitive (i.e., processing of the incoming knowledge) and interpersonal components (i.e., managing the social interaction with knowledge sources) that define knowledge seeking processes to explain why an employee's knowledge seeking can lead to reduced goal attainment due to knowledge overload and resource depletion. In doing so, we broaden existing research by specifying how resource seekers, and not only resource providers, can experience negative effects of their discretionary behavior. We thus contribute to building a more comprehensive account of the consequences of discretionary work behavior from the perspective of knowledge seekers.

Our exploration of the total indirect effect of daily knowledge seeking on goal attainment revealed that the positive indirect effect via perceived learning (and subsequent resource depletion) overweighs the negative indirect effect via knowledge overload (and subsequent resource depletion). This finding suggests that the cognitive demands that are created by daily knowledge seeking need to be considered when encouraging employees to seek knowledge from others. However, the benefits of daily knowledge seeking are more pronounced, highlighting the overall beneficial effects of knowledge flows between coworkers.

Second, our findings about the cognitive costs of daily knowledge seeking complement the nascent research stream about socioemotional costs of soliciting resources from others at work. This research stream used between-person designs to highlight the potential negative effects of resource seeking for employees' self-image, reputation, and social integration within the organization (Lim et al., 2020). Employees who seek resources from others are likely to feel indebted to the resource provider, which leads to perceptions of inferiority (Kramer et al., 1995), and represents a potential threat to their reputation in the organization (Borgatti & Cross, 2003; Menon et al., 2006). In addition, active advice seekers are more likely to be avoided and thus experience social isolation (Agneessens & Wittek, 2012), because coworkers consider the opportunity costs of advice giving and aim to protect their limited time (Blau, 1955; Lim et al., 2020). The exploration of the socio-emotional costs of resource seeking at the between-person level is particularly useful to shed light on the more long-term consequences of soliciting resources from others. We complement this research by adopting a cognitive perspective and highlighting that knowledge seeking places substantial demands on an employee's working memory capacity and associated executive function. Due to the nature of knowledge seeking processes, knowledge seekers are thus likely to face short-term cognitive consequences, such as knowledge overload, and these cognitive consequences have been masked in research that focused on more stable socioemotional consequences at the

between-person level. Thus, with our findings, we highlight the need to understand the short-term cognitive consequences of resource seeking behavior in organizations.

Third, we advance existing research on resource seeking by positioning coworker contact quality as a between-person moderator of the consequences of daily variations in knowledge seeking. Specifically, we reveal that the detrimental consequences of knowledge seeking on daily goal attainment via knowledge overload and resource depletion can be mitigated by coworker contact quality. In our study, with a sample that reported relatively high average levels of coworker contact quality (M = 5.46 on a 7-point scale, SD = 0.99), coworker contact quality had to be very high (6.36 on a 7-point scale) to buffer the negative downstream consequences of daily knowledge seeking on an employee's effectiveness. This finding generally aligns well with the literature on the benefits of positive social interactions at work (Dutton & Heaphy, 2003; Fasbender et al., 2020; Heaphy & Dutton, 2008), especially for responding to workplace demands. For example, research showed that social support can buffer the negative consequences of workplace demands, such as role stress (Chiu et al., 2015; Chou & Robert, 2008; Iwata & Suzuki, 1997). With our focus on knowledge seeking as a cognitively demanding daily activity, we provide an empirical referent of the type of workplace demands whose effects are shaped by positive workplace relationships. Our findings highlight the relevance of the quality of coworker interactions when seeking knowledge from others.

In addition, our findings align with the literature on knowledge flows and learning experiences in organizations more generally. This research demonstrated that positive and trusting relationships at work are of paramount importance for the extent to which employees are able and willing to exchange information and knowledge (Burmeister et al., 2018; Hsu & Chang, 2014; Nifadkar et al., 2019; Sias, 2005) and engage in learning at work (Blume et al., 2010; Lauzier & Mercier, 2018; Massenberg et al., 2015). Our research demonstrates that coworker contact quality creates a relational work context in which employees can engage in

daily knowledge seeking without facing the detrimental consequences of being overloaded. We thus emphasize that within-person variations in cognitive processes at work, such as employee knowledge seeking, need be understood as phenomena that are embedded within relational work contexts (Lin, 2010).

Practical Implications

Our findings provide important implications for practitioners who aim to facilitate the effectiveness of their employees in seeking out knowledge from others at work. Our findings show that organizations need to be aware about the cognitively demanding nature of daily knowledge seeking. More specifically, organizations must acknowledge that daily knowledge seeking does not only have benefits, such as increasing employees' perceived learning, but that knowledge seeking also creates intrinsic and extrinsic cognitive load that can lead to the experience of knowledge overload, subsequent resource depletion and reduced goal attainment. Such negative effect is more likely to materialize if employees seek knowledge from coworkers with whom they have not (yet) established high-quality relationships.

In low-quality relationships, knowledge seekers are likely to experience knowledge overload because knowledge providers are less forthcoming and can present their knowledge in a less accessible way that produces extraneous and limits germane cognitive load. To reduce extraneous and increase germane cognitive load, organizations can train their employees to share their knowledge in a manner that makes understanding and processing the incoming knowledge easier. For example, employees can learn how to ask potential recipients about their level of prior knowledge and to communicate their expert knowledge without using jargon. In addition, the exchange of knowledge is less cognitively demanding when the exchange partners view it as a collaborative knowledge-building activity, where they build on each other's inputs and provide engaged responses (Barron, 2003). Organizations can use these insights to mitigate the potential negative cognitive effects of daily knowledge seeking.

Limitations and Future Research Directions

Despite our theoretical and practical contributions, our findings need to be interpreted considering several limitations of our study. First, our variables were self-reported by employees. Given our research question, we think that self-report measures are reasonable means of assessing the states that were relevant to understand the cognitive demands of daily knowledge seeking (e.g., knowledge overload, resource depletion). In addition, we adopted several recommended practices to mitigate the possible bias due to common-source variance (Podsakoff et al., 2003). For example, we time-separated the measurements of knowledge seeking and knowledge overload at noon from the measurements of resource depletion and goal attainment in the afternoon. Nonetheless, the use of self-report measures raises concerns of common-source variance which may have created inflated relations between our variables. Thus, future research can use measures from different rating sources to cross-validate our findings. For example, knowledge seeking could be measured from other informants such as coworkers as knowledge sources. Relatedly, our use of a self-report measure to capture learning might raise validity concerns, as it may not reflect employees' *actual* learning, but rather their *perceived* learning. Studies that aim to capture actual learning typically use knowledge tests or task performance as indicators of learning (e.g., Niessen et al., 2012; Wielenga-Meijer et al., 2011). However, self-report measures are also frequently used (e.g., Furlan et al., 2019; Jiang et al., 2020) and seem to be reasonable indicators of learning as demonstrated by positive association between actual and perceived learning (Arbaugh & Benbunan-Finch, 2006). Nevertheless, future research may utilize objective measures, such as knowledge tests or objective performance measures, to capture learning.

Second, some of our variables were assessed at the same time, such as knowledge seeking and knowledge overload as well as resource depletion and goal attainment. To address this shortcoming in our design, we controlled for the effects of same variables at Day T-1, therewith providing a more rigorous test of the hypothesized effects (Gabriel et al., 2019;

Wang et al., 2013). Nevertheless, future research may conduct within-person field experiments to support causal inferences (Song et al., 2018). To design a within-person field experiment, scholars may manipulate the level of knowledge seeking behavior by either prompting or restraining the level of knowledge seeking in the morning and then follow-up on participants' behavior during the workday.

Third, while we explain 12-18% of the variance in our focal variables, our results show that the indirect effects are small. The indirect effects are small because we examine the implications of knowledge seeking earlier in the day on goal attainment in a three-stage serial mediation model. Further, although small, our indirect effects are similar to other studies with similar designs in the literature (e.g., Foulk et al., 2018; K. Lee et al., 2016; W. Liu et al., 2017; Loi et al., 2020; Uy et al., 2017). Despite the small size of our serial indirect effects, we uncover a meaningful negative effect of daily knowledge seeking.

Fourth, we did not generate insights into the episodic influence of an employee's prior knowledge, the type of knowledge they seek every day, and their daily contact quality on knowledge overload, resource depletion, and goal attainment. Future research should complement our findings and clarify whether the experience of knowledge overload is dependent on the prior knowledge of knowledge seekers or the nature of the knowledge that is solicited as suggested in cognitive load theory (Sweller, 1988, 2010a). For example, on a day where an employee seeks knowledge that is less complex or novel, they should be less likely to experience knowledge overload because the availability of prior knowledge in long-term memory and their skills in accessing this stored knowledge can alleviate demands on working memory capacity (see Ericsson & Delaney, 2007; van Merriënboer & Sweller, 2005). With regard to the influence of knowledge types on learning (K.-W. Lee, 2019), future research can build on existing typologies of knowledge (e.g., know-what, know-how, know-when, and know-why; Alavi & Leidner, 2001), to understand whether the cognitive demands of daily knowledge seeking are dependent on the type of knowledge that is solicited from others. In

addition, future research could examine whether day-level coworker contact quality with the specific knowledge sources from whom knowledge was sought (rather than general contact quality), shapes the cognitive effects of an employee's knowledge seeking. This would complement our understanding of contact quality as a general characteristic of the relational work context by clarifying the episodic importance of the quality of social interactions for daily knowledge seeking. To do so, future research needs to employ episodic daily diary designs (see e.g., Dimotakis et al., 2011) to capture and characterize knowledge seeking episodes in more detail.

Fifth, based on the literature on the nature of knowledge exchange behavior among employees, we argued that knowledge seeking requires not only cognitive but also social interactional costs. Thus, another potential limitation and future research direction to consider is that we did not directly measure the social interactional costs of knowledge seeking in our study. To isolate and capture the amount of cognitive effort that knowledge seekers need to invest to solicit knowledge from others, future research can use laboratory simulations and experiments. For example, researchers could work with confederates as knowledge sources to create experimental conditions with varying difficulty of accessing someone else's knowledge. Further, researchers could video tape interactions between knowledge sources and knowledge seekers to capture the exact micro-behaviors that knowledge seekers need to engage in to solicit knowledge from others. These interactions could then be examined using behavioral coding schemes (e.g., Gerpott et al., 2019).

Finally, the examination of contextual boundary conditions was beyond the scope of our research, but the extent to which knowledge seeking has detrimental consequences is likely to depend on organizational support for knowledge seeking and sharing and associated organizational norms (Bock et al., 2006; Cheng & Coyte, 2014). These ideas need to be explored by future research to extend our understanding of the consequences of daily knowledge seeking.

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Table 1

Within and Between Variance in Study Variables

Variable	Within-Individual Variance (e2)	Between-Individual Variance (r2)	Within-Individual Variance (%)	ICC(1)
Knowledge Seeking	1.06	1.11	49%	.51
Knowledge Overload	0.71	1.00	41%	.59
Perceived learning	0.73	0.86	46%	.54
Resource Depletion	0.90	1.24	42%	.58
Goal Attainment	0.97	0.56	63%	.37

Note. The percentage of variance within-individuals was calculated as e2/(e2 + r2). ICC(1) was calculated as 1- within-individual variance.

Table 2

Means, Standard Deviations, Reliabilities, and Correlations Among the Focal Variables

Variables	*M*	*SD* *within*	*SD* *between*	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Time Pressure at Work	4.22		1.13	(.82)	-.03	.18*	.37**	-.01	.24**	-.04	.22**	.16*	.35**	.02	.23**	-.06
2. Coworker Contact Quality	5.46		0.99		(.91)	.16*	-.18*	.31**	-.36**	.47**	-.31**	.20**	-.17*	.30**	-.35**	.52**
3. Knowledge Seeking (Day T-1)	3.55	1.48	1.14			(.92)	.44**	.73**	.09	.29**	.14	.99**	.45**	.74**	.10	.31**
4. Knowledge Overload (Day T-1)	2.45	1.31	1.07			.08**	(.89)	.28**	.52**	-.12	.47**	.46**	.98**	.31**	.53**	-.15*
5. Perceived Learning (Day T-1)	4.08	1.26	0.99			.28**	.07*	(.88)	-.10	.47**	-.05	.76**	.31**	.98**	-.09	.47**
6. Resource Depletion (Day T-1)	2.90	1.47	1.19			.02	.13**	-.08**	(.96)	-.45**	.55**	.10	.52**	-.09	.99**	-.46**
7. Goal Attainment (Day T-1)	4.77	1.23	0.88			.04	.01	.07*	-.11**	(.75)	-.29**	.30**	-.11	.46**	-.44**	.94**
8. Negative Affect (Day T)	1.35	0.64	0.52			.01	.06*	-.02	.03	-.01	(.81)	.14	.47**	-.04	.54**	-.30**
9. Knowledge Seeking (Day T)	3.55	1.48	1.11			-.07**	-.07*	-.05	-.04	.08**	.01	(.86)	.48**	.77**	.11	.30**
10. Knowledge Overload (Day T)	2.46	1.30	1.05			-.03	-.05	-.07**	.04	-.01	.01	.13*	(.80)	.33**	.54**	-.15*
11. Perceived Learning (Day T)	4.09	1.26	0.97			-.03	-.05	-.05	-.07*	.07*	-.03	.45**	.07**	(.78)	-.08	.48**
12. Resource Depletion (Day T)	2.88	1.47	1.17			.03	.01	-.07*	-.08**	-.01	.05	.00	.12**	-.10**	(.92)	-.46**
13. Goal Attainment (Day T)	4.77	1.24	0.85			.03	-.02	.01	.03	.01	-.03	.09**	.02	.12**	-.13**	(.76)

Note. Between-person correlations are above the diagonal (range $N_{\text{Level-2}}$ = 180-189) and within-person correlations are below the diagonal (range $N_{\text{Level-1}}$ = 1,151-1,612). Reliabilities are in parentheses along the diagonal.
* $p < .05$, ** $p < .01$.

Table 3

Descriptive Statistics of Alternative CFA Models' Fit Indices

	$\chi 2$	*df*	AIC	BIC	RMSEA	CFI	TLI	$SRMR_{within}$	$SRMR_{between}$
8-factor model	426.88	245	84,357.48	84,928.31	.02	.98	.98	.03	.04
Models with constructs collapsed based on time measured									
Baseline (7 factors)	558.85	246	84,569.02	85,134.47	.03	.96	.96	.03	.23
Noon (6 factors)	1,994.39	247	86,925.85	87,485.92	.07	.80	.76	.10	.04
Afternoon (7 factors)	787.81	246	84,936.30	85,501.75	.04	.94	.93	.04	.04
Models with constructs collapsed based on similarity									
Knowledge overload and resource depletion (7 factors)	1,281.39	246	85,756.03	86,321.48	.05	.88	.86	.06	.04
Knowledge overload and perceived learning (7 factors)	1,296.18	246	85,775.23	86,340.68	.05	.88	.86	.06	.04
All other alternative 7-factor model combinations									
Best fitting model	784.88	246	84,936.85	85,502.30	.04	.94	.93	.04	.04
Worst fitting model	2,191.21	246	87,178.69	87,744.14	.07	.78	.74	.10	.04

Note. $N_{\text{Level-1}} = 1{,}612$, $N_{\text{Level-2}} = 189$.

Table 4

Unstandardized Coefficients Estimates and Standard Errors in the Model

Variables	Knowledge Overload (Day T)		Perceived Learning (Day T)		Resource Depletion (Day T)		Goal Attainment (Day T)	
	Estimate	*SE*	*Estimate*	*SE*	*Estimate*	*SE*	*Estimate*	*SE*
Level-1 (Within-person level)								
Intercept	2.48**	.07	4.05**	.07	2.93**	.08	4.73**	.05
Day of the week	.01	.02	-.02	.02	-.01	.02	.03	.02
Day of the study	-.05**	.01	.06**	.01	-.02	.01	.00	.01
Knowledge Overload (Day T-1)	-.07	.04						
Perceived Learning (Day T-1)			-.06	.03				
Resource Depletion (Day T-1)					-.10**	.04		
Goal Attainment (Day T-1)							.00	.05
Negative Affect (Day T)	.02	.07	-.08	.05	.11	.07	-.04	.10
Knowledge Seeking (Day T)[a]	.12**	.03	.36**	.03	.04	.04	.05	.04
Knowledge Overload (Day T)					.13**	.04	.03	.04
Perceived Learning (Day T)					-.13**	.04	.08*	.04
Resource Depletion (Day T)							-.12*	.06
Residual variance at Level-1	.64**	.05	.55**	.04	.86**	.07	.93**	.08
Level-2 (Between-person level)								
Time Pressure at Work	.32**	.07	.02	.07	.26**	.08	-.05	.05
Coworker Contact Quality	-.19*	.08	.25**	.07	-.44**	.09	.43**	.06
Time Pressure at Work x Knowledge Seeking	.02	.03						
Coworker Contact Quality x Knowledge Seeking	-.05*	.02						

Residual variance at Level-2	.85**	.09	.81**	.09	.98**	.11	.39**	.05

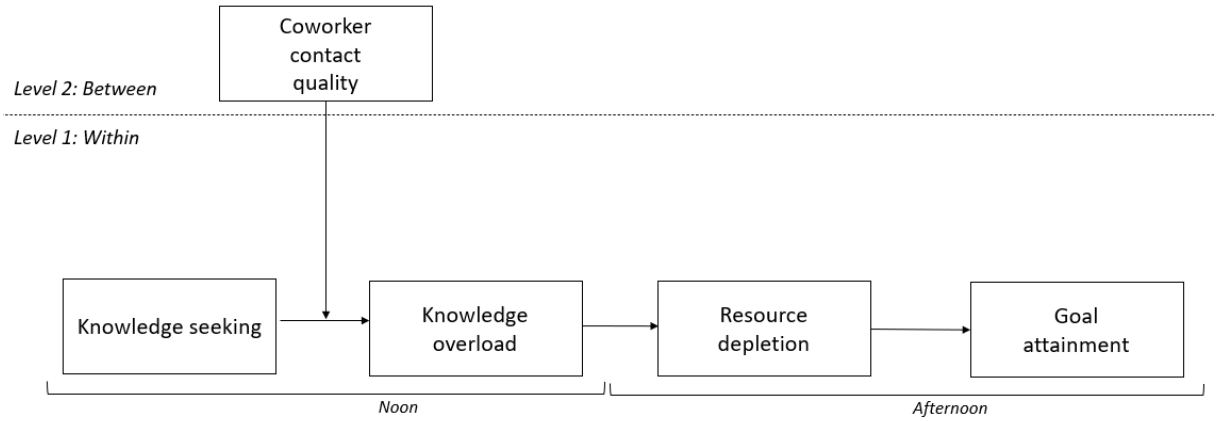
Note. $N_{\text{Level-1}}$ = 1,612, $N_{\text{Level-2}}$ = 189.

[a] The effect of Knowledge Seeking was estimated as a random slope on Knowledge Overload and on Perceived Learning; all other effects were estimated as fixed slopes.

* $p < .05$, ** $p < .01$.

Figure 1

Hypothesized Model



Note. Control variables not represented in this figure: Prior-day measure of each endogenous construct, day of the study, day of the week, morning negative affect, perceived learning, and participants' time pressure at work.

Figure 2

Region of Significance for the Moderating Effect of Coworker Contact Quality on the Relation Between an Employee's Knowledge Seeking and Knowledge Overload

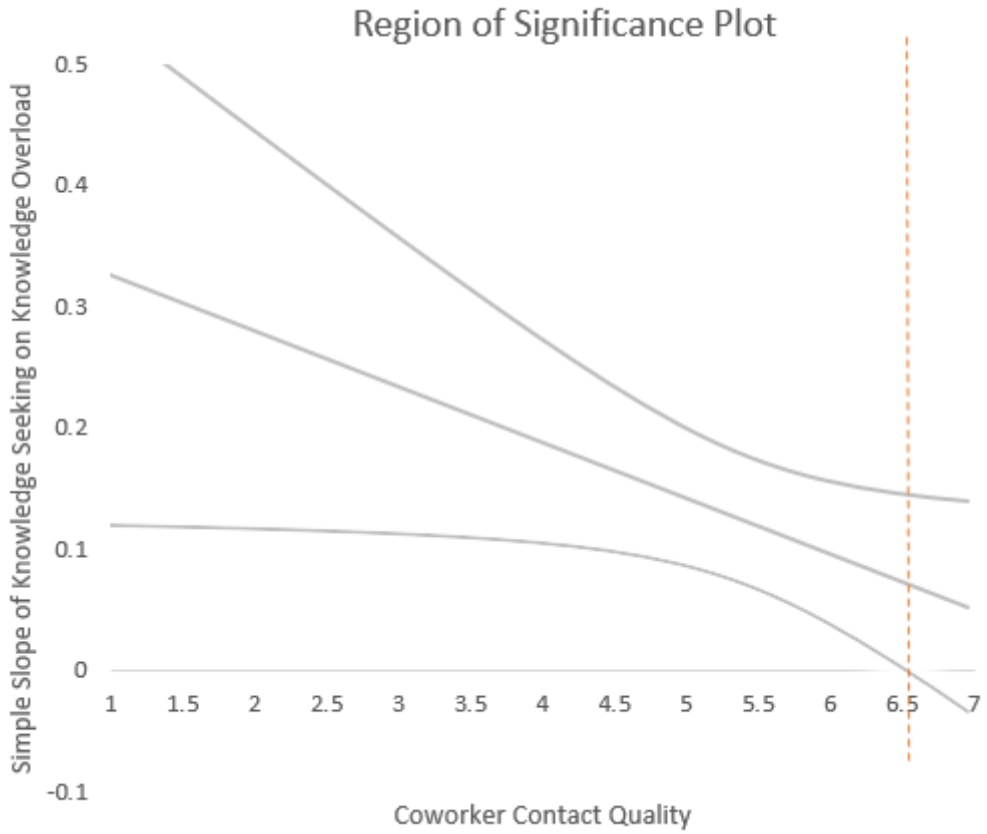
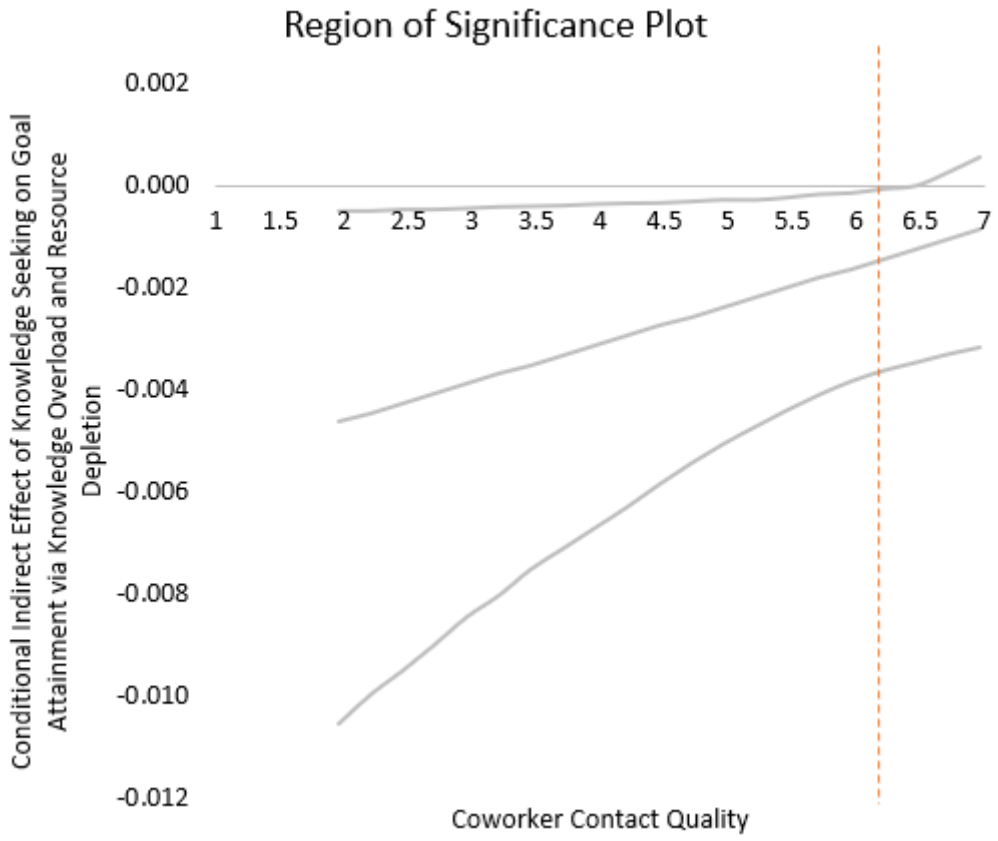


Figure 3

Region of Significance for the Moderating Effect of Coworker Contact Quality on the Relation Between an Employee's Knowledge Seeking and Goal Attainment via Knowledge Overload and Subsequent Resource Depletion



Appendix

Daily Within-Person Measures

Knowledge Seeking

Original English items
This morning at work, ...

1. ... I learned a lot by observing my colleagues doing their job.
2. ... I turned to my colleagues for advice regarding special procedures so that I learn them.
3. ... I invested effort into gaining knowledge from my colleagues.
4. ... I learned a lot by asking my colleagues for advice.

Translated German items
Heute Morgen bei der Arbeit, ...

1. ... habe ich viel dadurch gelernt, dass ich meinen Arbeitskollegen bei der Arbeit zugesehen habe.
2. ... habe ich mich an meine Arbeitskollegen gewendet für Ratschläge hinsichtlich besonderer Vorgehensweisen, so dass ich diese lernen kann.
3. ... habe ich mich bemüht, Wissen von meinen Arbeitskollegen aufzunehmen.
4. ... habe ich viel dadurch gelernt, dass ich meine Arbeitskollegen um Rat gefragt habe.

Knowledge Overload

Original English items
Today at work, since filling out the last questionnaire, ...

1. ... I was often distracted by the excessive amount of knowledge available to me.
2. ... I found that I was overwhelmed by the amount of knowledge I had to process.
3. ... my problem was with too much knowledge to synthesize instead of not having enough knowledge.

Translated German items
Heute bei der Arbeit, seit dem Ausfüllen des letzten Fragebogens, ...

1. … war ich häufig abgelenkt aufgrund der hohen Menge an Wissen, dass mir zur Verfügung stand.
2. … war ich überfordert mit der Menge an Wissen, die ich zu verarbeiten hatte.
3. … hatte ich eher zu viel Wissen als zu wenig Wissen, das ich verarbeiten musste.

Perceived Learning

Original English items
Today at work, since filling out the last questionnaire, ...

1. ... I found myself learning.
2. ... I continued to learn more and more as time went by.
3. ... I saw myself continually improving.
4. ... I was not learning.
5. ... I have developed a lot as a person.

Translated German items
Heute bei der Arbeit, seit dem Ausfüllen des letzten Fragebogens, ...

1. … habe ich etwas gelernt.
2. … habe ich mehr und mehr gelernt, je mehr Zeit verging.
3. … habe ich mich kontinuierlich verbessert.
4. … habe ich nichts gelernt.
5. …habe ich mich als Person entwickelt.

Resource Depletion

Original English items
Please indicate how you feel right now.

1. I feel drained right now.
2. My mind feels unfocused right now.
3. Right now, it would take a lot of effort for me to concentrate on something.
4. Right now, my mental energy is running low.
5. Right now, I feel like my willpower is gone.

Translated German items
Bitte geben Sie an, wie Sie sich in diesem Moment fühlen.

1. Ich fühle mich gerade ausgelaugt.
2. Ich kann mich gerade nicht fokussieren.
3. Es würde mich gerade viel Aufwand kosten, mich auf etwas zu konzentrieren.
4. Ich habe gerade wenig mentale Energie.
5. Ich habe gerade keine Willenskraft mehr.

Goal Attainment

Original English items
Today at work, since filling out the last questionnaire, ...

1. ... I have made considerable progress toward attaining my goals.
2. ... I accomplished what I set out to do with my goals.

Translated German items
Heute bei der Arbeit, seit dem Ausfüllen des letzten Fragebogens, ...

1. ... habe ich wesentliche Fortschritte bei der Erreichung meiner Ziele gemacht.
2. ... habe ich erreicht was ich mir vorgenommen hatte.

Control Variable: Negative Affect

Original English items
Below are words that describe different feelings and emotions. Please indicate how you feel right now.

1. Afraid
2. Upset
3. Nervous
4. Scared
5. Distressed

Translated German items
Unten finden Sie Begriffe, die unterschiedlichen Gefühle und Emotionen beschreiben. Bitte geben Sie an, wie Sie sich in diesem Moment fühlen.

1. Bekümmert
2. Verärgert
3. Nervös
4. Ängstlich
5. Gereizt

Between-Person Measures

Coworker Contact Quality

Original English items
Contact with my coworkers is generally…

1. ... positive
2. ... natural
3. ... cooperative

Translated German items
Der Kontakt zu meinen Kollegen ist im Allgemeinen...

1. ... positiv
2. ... natürlich
3. ... kooperativ

Control Variable: Time Pressure at Work

Original English items

Please answer the following questions regarding your typical experience at work.

1. To what extent does your job require your working fast?
2. To what extent is there not enough time for you to do your job?
3. To what extent do you feel there is not enough time for you to finish your work?

Translated German items

Bitte beantworten Sie die folgenden Fragen hinsichtlich Ihrer typischen Arbeitserfahrung.

1. In welchem Ausmaß fordert Ihr Job, dass Sie schnell arbeiten?
2. In welchem Ausmaß haben Sie nicht genug Zeit, um Ihren Job zu erledigen?
3. In welchem Ausmaß haben Sie das Gefühl, dass Sie nicht genug Zeit haben, um Ihre Arbeit zu beenden?