Age and Knowledge Exchange: Ability, Motivation, and Opportunities

Book chapter draft for the 2021 SIOP Organizational Frontiers Series volume *Age and Work: Advances in Theory, Methods, and Practice*

Laura Dietz[1], Anne Burmeister[2], and Ulrike Fasbender[1]

[1] Department of Psychology, Justus-Liebig University Gießen

[2] Department of Organisation and Personnel Management, Erasmus University Rotterdam

Author Note

Laura Dietz https://orcid.org/0000-0003-2750-0710

Anne Burmeister https://orcid.org/0000-0003-3980-7947

Ulrike Fasbender https://orcid.org/0000-0001-6711-5732

We have no known conflict of interest to disclose.

Correspondence concerning this draft should be addressed to Laura Dietz, Department of Psychology, Unit: Work and Organizational Psychology, Justus-Liebig-Universität Gießen, Otto-Behaghel-Str. 10F, 35394, Gießen. Email: laura.dietz@psychol.uni-giessen.de

Abstract

Knowledge is a key asset in today's economy. Accordingly, there is, a growing interest of researchers and practitioners in knowledge exchange and retention. Against the backdrop of workforce aging and increasing age diversity, we deem it timely and worthwhile to synthesize research investigating how to effectively preserve knowledge in organizations. This chapter thus addresses the topic of age and knowledge exchange by adopting the ability-motivation-opportunity framework to provide a summary of how, why, and when employees across the lifespan engage in knowledge exchange. First, we clarify key concepts relevant to age and knowledge exchange. Second, we examine the ability to exchange knowledge through the lens of age-related changes in cognitive abilities and expertise. Third, we break down the motivation to exchange knowledge against the background of age-related motives and goals. Fourth, we analyze the opportunity to exchange knowledge against the background of age norms and their impact on HR practices and organizational culture. In summary, we find arguments suggesting that younger employees are more able and motivated to receive knowledge, while older employees are more able and motivated to share knowledge. Organizations can promote knowledge exchange processes beyond individuals' lifespan-related tendencies by supporting younger employees in sharing and older employees in receiving knowledge. Finally, we point out directions for future research (e.g., introducing an age-based perspective to explore knowledge hiding) and provide practical implications based on the current state of research (e.g., raise awareness of potential obstacles and implement practices to foster age-diverse knowledge exchange).

Keywords: knowledge exchange, workforce aging, age diversity, ability-motivation-opportunity framework

Age and Knowledge Exchange: Ability, Motivation, and Opportunities

Introduction

The challenges of the current demographic workforce development in many countries have been described using terms such as *demographic time bomb* and *pension brain drain*. These terms highlight the potential tension between the increasing importance of knowledge as a valuable resource at work and the increasing demographic risk of the aging of workforces (Strack et al., 2008; see also Chapter 2 for an overview on workforce age trends and projections) . Employees build up expertise across their lifespan (Mannucci & Yong, 2018) and large numbers of older and retiring employees pose the risk of valuable knowledge getting lost.

Research has started to examine this phenomenon, addressing it from the perspectives of succession management and knowledge retention (Burmeister & Deller, 2016; Rothwell, 2005), as well as intergenerational learning and relational human resources (HR) management practices that enable knowledge-based interactions between older and younger employees (Gerpott & Fasbender, 2020; Moore & Klein, 2020). Initial evidence suggests that focusing on knowledge retention from older employees and facilitating knowledge exchange between older and younger employees benefits organizations as well as employees (Harvey, 2012). Organizations can safeguard valuable expertise and maintain productivity levels (Strack et al., 2008) and age-diverse employees benefit because these knowledge-based interactions are aligned with their age-specific motivational orientations (i.e., generativity striving for older employees and development striving for younger employees; Gerpott & Fasbender, 2020).

It thus seems timely and worthwhile to provide an overview of research on age and knowledge exchange to summarize how, why, and when employees across the lifespan engage in knowledge exchange. More specifically, we use the ability-motivation-opportunity framework

(Appelbaum et al., 2000; Blumberg & Pringle, 1982) to organize this chapter and to highlight which employees, from an age perspective, have the ability, motivation, and opportunities to exchange knowledge. We include insights capturing knowledge exchange experiences for employees across the lifespan and refer to age-diverse knowledge exchange (i.e., between two colleagues of different ages) to explore the role of knowledge exchange against the backdrop of workforce diversity. In doing so, we draw from lifespan psychological theories about ability (e.g., cognitive aging; Cavanaugh & Blanchard-Fields, 2006), motivation (e.g., socioemotional selectivity theory; Carstensen, 1992), and opportunity (e.g., organizational age norm theory; Lawrence, 1988) and we enrich these theoretical foundations with empirical research evidence (see also Chapter 7 for an integration of lifespan theories).

Age and Knowledge Exchange at Work: Central Concepts

Older and younger employees can engage in a variety of knowledge-related behaviors. *Knowledge exchange* (also called knowledge transfer) consists of two components: Knowledge receiving and knowledge sharing (Wang & Noe, 2010). *Knowledge receiving* (also called knowledge seeking, knowledge acquisition) is defined as employees searching for knowledge from their colleagues. *Knowledge sharing* (also called knowledge providing, knowledge donating) refers to the process of making one's knowledge, skills, and abilities available to others. In contrast, *knowledge hiding* goes beyond the absence of knowledge sharing, describing the deliberate attempt to withhold knowledge requested by others (Connelly et al., 2012). While knowledge can be exchanged at higher levels (e.g., between teams, departments, or organizations; please see Chapter 9 for insights on age at higher organizational levels), we focus on knowledge exchange between coworkers to be able to delineate the role of employee age at the individual level.

Past research has used the terms age-diverse and intergenerational interchangeably when referring to knowledge exchange between coworkers from different age groups. The conceptual and practical difficulty of disentangling age, period, and cohort effects that has been specified in critical reviews of research on generational differences (e.g., Costanza & Finkelstein, 2015; Rudolph et al., 2020; please also see Chapter 6) , has been recognized in research on knowledge exchange in the context of aging and age-diverse workforces. For example, researchers acknowledged that the specification of age differences between younger and older study participants (e.g., 10 or 15 years), is arbitrary but allows for the empirical examination of the phenomenon of interest (e.g., Burmeister, Gerpott et al., in press; Burmeister, Hirschi et al., in press; Fasbender & Gerpott, 2021). Researchers concluded that at the heart of both perspectives are the potential differences between older and younger employees, regardless of whether these stem from their chronological age or birth cohort (Schmidt & Muehlfeld, 2017). Following this logic, we include research on both intergenerational and age-diverse knowledge exchange in our review, but we adopt theoretical perspectives that explain why, how, and when employee age rather than birth cohort shapes knowledge exchange.

The Ability-Motivation-Opportunity Framework: A Lens to Analyze Factors That Drive Age-Diverse Knowledge Exchange

According to the ability-motivation-opportunity (AMO) framework, work performance (and related behaviors such as knowledge exchange) has three antecedents: ability, motivation, and opportunity (Appelbaum et al., 2000; Blumberg & Pringle, 1982). Ability reflects the physiological and cognitive factors that enable an individual to perform a task (e.g., information processing speed, expertise). Motivation refers to psychological and cognitive factors that influence an individual's willingness to perform a task (e.g., goals, values, emotions).

Opportunity describes environmental factors that promote or hinder the performance of a task (e.g., tools, norms, policies). The AMO framework has been applied to explain various age-related processes and outcomes at work, such as the extension of working lives (Pak et al., 2019) and age-based knowledge management in the health care sector (Profili et al., 2019). We use the AMO framework to synthesize the scattered and interdisciplinary research on antecedents of age-diverse knowledge exchange. Table 1 provides a schematic overview of the state of research on age and knowledge exchange structured according to the AMO framework.

Who is Able to Exchange Knowledge?

Cognitive Abilities and Expertise

Theories of cognitive aging specify a decrease in fluid cognitive abilities (i.e., innate information processing capacity, such as problem solving) and an increase in crystallized cognitive abilities (i.e., accumulated knowledge and experience, such as verbal skills) across the lifespan (Ackerman, 2011; Cattell, 1971; Cavanaugh & Blanchard-Fields, 2006). Expertise refers the acquisition of the skill(s) of an expert through practice or experience (Ackerman, 2011) and is associated with older age. While acquiring expertise depends on one's level of fluid cognitive abilities for most domains of expertise (i.e., those in which more knowledge leads to increased performance), crystallized cognitive abilities grow increasingly important when becoming an expert because one's existing knowledge serves as the foundation for new knowledge (P. L. Ackerman, 2011).

Knowledge Receiving. Given that fluid cognitive ability, which is associated with learning, declines steadily after young adulthood, older employees may be faced with issues in receiving knowledge. This is supported by findings showing a negative relationship between age and learning outcomes in trainings for older workers (Kubeck et al., 1996). Moreover, research

suggests that to support older worker knowledge receiving, certain conditions such as time flexible learning forms (e.g., self-paced and autonomous learning) need to be in place (Zwick, 2015). Research on expertise paints a mixed picture regarding the reception of knowledge. On the one hand, experts have a body of knowledge to which they can link new information (Ackerman, 2011), which can give them an advantage in knowledge receiving (Grand et al., 2016; Fasbender et al., in press). However, research indicates that the success of knowledge receiving for experts depends on how knowledge is shared. Indeed, the expertise reversal effect describes how additional information can have a positive effect on novices' (i.e., individuals with less expertise) knowledge receiving, as it helps them internalize new knowledge, but can hinder experts' knowledge receiving if it contradicts their existing knowledge (Kalyuga et al., 2003). Put differently, while older workers and experts need the right conditions to receive knowledge and learn, younger workers and novices might find it easier to receive knowledge due to their fluid cognitive capabilities.

Knowledge Sharing. In contrast, their increased crystallized cognitive abilities should enable older employees to share their accumulated knowledge and experience with others. Having a large amount of knowledge should also make experts ideal knowledge providers. For instance, being an expert in a domain is linked to knowledge-sharing intentions via the expert's perceived importance of their own contribution (Moser, 2017). Research also showed that older workers are perceived as able to share knowledge (Burmeister, Fasbender et al., 2018) and that younger workers value their unique and highly contextualized company-specific knowledge, which they gained through experience (Gerpott et al., 2019). However, having a lot of knowledge does not necessarily entail being able to share it with others. On the contrary, research indicates that experts may have to deal with cognitive limitations when it comes to

estimating the performance of novices (Hinds, 1999). This is due to the increasing abstraction and automation of experts' knowledge, who therefore struggle to relate to and share knowledge with novices (Hinds & Pfeffer, 2003). In contrast, younger workers and novices might have more difficulties sharing knowledge. While younger workers can share their metacognitive knowledge (e.g., strategies for information search and problem solving) with older workers (Gerpott et al., 2019), they tend to be perceived as less able to share knowledge (Burmeister, Fasbender et al., 2018). Research thus suggests that older workers are better positioned to share their knowledge with others compared to younger workers and novices.

Knowledge Exchange. Research indicates that an individual's amount of knowledge may not necessarily be relevant to knowledge exchange, but instead non-redundant types of knowledge between younger and older colleagues lay the foundation for age-diverse knowledge exchange (Geeraerts et al., 2016). Accordingly, complementarity in age-based cognitive abilities might be crucial to facilitate knowledge exchange between age-diverse coworkers. Regarding reciprocal knowledge exchange in case of expertise differentials, it is assumed that, within the context of a specific domain of expertise, novices are unable to reciprocate an expert's shared knowledge by sharing knowledge on their own (Moser, 2017). Although novices cannot contribute their own knowledge to the knowledge sharing process, findings suggest that the act of knowledge sharing itself may benefit experts (Darnis & Lafont, 2015). Thus, the interplay of knowledge sharing and knowledge receiving in knowledge exchange with novices may lead to experts being able to view their knowledge from a different, more naïve perspective and connect existing knowledge structures in novel ways. Wilkesmann and Wilkesmann (2011) describe how, in practice, knowledge receiving by novices and knowledge sharing by experts can simultaneously foster routines as well as innovation in organizations.

Conclusion

Theories on cognitive aging and expertise present a mixed picture. Changes in fluid and crystallized cognitive abilities across the lifespan suggest that it becomes more difficult to receive novel knowledge with increasing age. In line with this, research on expertise suggests that domain-specific accumulated knowledge supports the acquisition of new knowledge in the same domain. Accordingly, while younger employees are better able to acquire novel knowledge, they are not yet able to draw on the same body of knowledge as older employees, which may inhibit their understanding of knowledge that is shared with them. Regarding knowledge sharing, older, as well as younger employees, appear to be able to contribute non-redundant knowledge to knowledge exchanges, while older employees can draw on a greater wealth of knowledge due to their crystallized cognitive abilities. Moreover, despite their accumulated expertise, experts may struggle to effectively share their knowledge with novices.

Who is Motivated to Exchange Knowledge?

Motives and Goals

Lifespan development theories address the developmental challenges and opportunities that individuals encounter throughout their lifespan (Baltes, 1987). Socioemotional selectivity theory (Carstensen, 1992) suggests that due to changes in perceptions of remaining time (i.e., "time left in life" vs. "time since birth"), individuals adjust their motivational orientations across the lifespan. Accordingly, older individuals who perceive their remaining time as constrained, prioritize socioemotional goals, such as *generativity goals*, over *developmental goals*, which are prioritized at younger ages. Empirical as well as meta-analytic research supports that the prevalence of generativity goals increases with age, whereas the prevalence of developmental

goals declines with age in line with the predictions of socioemotional selectivity theory (Doerwald et al., 2021; Penningroth & Scott, 2012).

Knowledge Receiving. Developmental goals are future-oriented and emphasize professional advancement, for instance through knowledge receiving. Employing a need fulfillment perspective, Burmeister et al. (2020) showed that motivational benefits of receiving knowledge are particularly salient for younger employees as they can fulfill their needs for autonomy, competence, and relatedness. As a result, younger employees are particularly motivated to receive knowledge. Further, younger workers tend to perceive themselves as knowledge receivers (Burmeister, Fasbender et al., 2018) and prefer job characteristics that are associated with gaining new experiences (e.g., Zaniboni et al., 2013), which often entails knowledge receiving. Similarly, individuals' desire for personal growth, which includes the acquisition of new knowledge, declines with increasing age (Inceoglu et al., 2012), suggesting that younger employees are more motivated to receive knowledge compared to their older counterparts.

Knowledge Sharing. Generativity goals fall into the category of socioemotional goals, which in general are present-oriented and emphasize the employee's prompt emotional gratification. At work, generativity goals reflect an employee's intentions to support younger colleagues, for instance by sharing knowledge (e.g., Kooij et al., 2011). Burmeister et al. (2020) showed that knowledge sharing fulfills older workers' needs for autonomy, competence, and relatedness, as it allows them to act out their need for generative activities in the workplace, apply their existing knowledge, and connect with younger colleagues. As a result, older employees are particularly motivated to share knowledge. In addition, the motivation to share knowledge is positively related to the age of the knowledge sender (Prelog et al., 2019) and older

employees tend to perceive themselves as knowledge senders (Burmeister, Fasbender et al., 2018). Doerwald et al. (2021) also list knowledge sharing among the stereotypical work-related generative behaviors for older employees, suggesting that older employees are more motivated to share knowledge compared to their younger counterparts.

Knowledge Exchange. The simultaneous activation of both developmental and generativity goals might be beneficial for age-diverse knowledge exchange (Gerpott & Fasbender, 2020). For instance, in a case study, Gerpott et al. (2017) established how mutual learning and teaching can be enabled in a formalized, age-diverse training setting. They illustrated how, throughout a multi-year course, older and younger participants became aware of their distinct knowledge resources and exchanged knowledge with each other. The roles of knowledge sender and receiver fluctuated depending on the temporal context within the training and the type of knowledge. Fasbender et al. (in press) investigated the age-specific interplay of knowledge sharing and knowledge receiving at a dyadic level and demonstrated that generativity striving as well as development striving account for knowledge exchange behaviors of older and younger colleagues. Specifically, they found that employees' generativity striving was related to their knowledge sharing, which in turn predicted their colleagues' reception of knowledge. A higher score on development striving additionally predicted knowledge receiving for younger employees.

Conclusion

Lifespan development theories, in particular socioemotional selectivity theory, suggest that employees differ in their focus on developmental goals versus socioemotional goals, such as generativity goals. Specifically, higher age is typically associated with a stronger focus on generativity goals, whereas lower age is associated with a stronger focus on developmental

goals. Knowledge sharing can satisfy both developmental and generativity goals, while knowledge receiving is predominantly aligned with developmental goals.

Who Has the Opportunity to Exchange Knowledge?

Age Norms

Even if employees are able and motivated to share and receive knowledge, knowledge exchange processes rise and fall with environmental factors facilitating or obstructing knowledge-related behaviors (e.g., Siemsen et al., 2008). In this regard, age-related normative beliefs describing who is perceived as a capable knowledge sender or receiver are a central factor influencing the knowledge exchange opportunities the work environment provides to its employees. In particular, *age norms* are defined as widespread assumptions about the typical age of individuals occupying particular organizational roles (Lawrence, 1988).

Knowledge Receiving. Burmeister, Fasbender et al. (2018) revealed the prevalence of age norms concerning the perceived ability and perceived motivation of one's colleagues. They showed that younger employees were perceived as more capable and motivated to receive knowledge in comparison to their older counterparts. These assumptions also translated to the behavioral level, showing that the age of one's colleague was positively related to one's knowledge receiving, and negatively related to one's knowledge sharing. Such normative assumptions are also evident in the mentoring literature, in which younger and less experienced mentees typically receive knowledge (Russell & Adams, 1997). Even when older employees take on the role of mentees, they do not receive certain types of mentoring that younger mentees receive (i.e., career mentoring; Finkelstein et al., 2003), which may be due to the presumption that older employees do not need such knowledge. Moreover, older employees are stereotypically viewed as resistant to change and as having a lower ability to learn (Ng &

Feldman, 2012; Posthuma & Campion, 2009), and therefore receive fewer training opportunities (Lazazzara et al., 2013), despite empirical counterevidence (Ng & Feldman, 2012). Accordingly, from a normative point of view, younger employees are perceived as knowledge recipients.

Knowledge Sharing. In contrast to perceptions on knowledge receiving, Burmeister, Fasbender et al. (2018) reported that older employees were perceived as less able, but more motivated to share knowledge compared to younger employees. As a complement to the role of younger employees as mentees, older and more experienced employees are often assumed to be mentors and thus knowledge senders in the mentoring literature (Russell & Adams, 1997). Furthermore, De Blois and Lagacé (2017) revealed older employees perceive themselves as willing to share their knowledge with younger colleagues and that this perception informs older employees' communication patterns in order to accommodate younger employees. Greller and Stroh (2004) indicated that stereotypical beliefs may act like self-fulfilling prophecies, underlining that, from a normative point of view, older employees are seen as knowledge senders.

Knowledge Exchange. Although we have illustrated the prevalence of age norms in identifying who receives the opportunity to receive and share knowledge, organizations are introducing practices to break through these norms and enable bidirectional knowledge exchange where all employees, regardless of age, can share and receive knowledge. For instance, reverse mentoring, which reverses the roles of mentor and mentee, has been identified as an efficient tool for age-diverse knowledge exchange (Gadomska-Lila, 2020). Further, Satterly et al. (2018) propose intergenerational mentoring, in which the positive aspects of reverse mentoring are embraced while overcoming its hierarchical framework. Intergenerational mentoring focuses on the strengths and skills of all employees, regardless of their age, which are examined against the

needs of the workforce and matched accordingly to achieve the best possible fit between knowledge resources and knowledge needs.

Age-inclusive HR Practices and Organizational Culture

Research suggests that characteristics of the organizational environment such as equal access to training and development and age-independent promotions and the promotion of age-inclusive organizational culture can influence employee behavior (i.e., knowledge exchange) because employees interpret these characteristics as signals of what is expected of them (Boehm et al., 2013). Accordingly, employees within an organization create a collective understanding of how to deal with knowledge in an age-diverse context based on these behavioral guidelines they are exposed to.

Knowledge Receiving. Sammarra et al. (2017) list several different approaches organizations can implement to ensure knowledge retention from older and retiring employees to their younger colleagues. In addition to simply writing down existing knowledge, this includes direct contact arrangements with knowledge recipients such as apprentice programs, job shadowing, coaching, and mentoring.

Knowledge Sharing. Gerpott et al. (2019) proposed that organizations can facilitate knowledge sharing by taking steps to create perceptions of psychological safety (i.e., the feeling that knowledge, thoughts, or ideas can be shared within a safe space without having to fear repercussions for expressing them). Further, they suggest that reducing age discrimination and treating all employees equally, regardless of age, should provide a platform for knowledge sharing. In line with this, Fasbender and Gerpott (2021) uncovered that perceptions of age discrimination hinder older employees' knowledge sharing, but that HR development practices

targeted at older employees (i.e., HR activities that facilitate the professional development of older employees and support lifelong learning) promote their knowledge sharing.

Knowledge Exchange. The examples above show that organizations can target knowledge receiving and knowledge sharing behaviors specifically, but scholars suggest that knowledge management-related HR practices should be constructed as "bidirectional learning experiences rather than unidirectional teaching activities" (Sammarra et al., 2017, p. 176). Schmidt and Muehlfeld (2017) argued that job autonomy, leadership characteristics, and organizational culture have positive effects on age-diverse knowledge exchange, while age discrimination culture has negative effects. Since then, research showed that age-diversity climate (i.e., shared perceptions regarding age diversity-related policies, practices, and procedures within an organization; Boehm et al., 2013) and age-diverse knowledge exchange are positively related (Lagacé et al., 2019). Further, age-inclusive HR practices can facilitate age-diverse knowledge exchange via an age-diversity climate (Burmeister, van der Heijden et al., 2018). In addition, Sammarra et al. (2017) argued that organizations could leverage the motivational shift from extrinsic rewards (e.g., bonuses, praise) to intrinsic rewards (e.g., pleasure from performing a task) that occurs with increasing age by implementing reward systems that create opportunities for older and younger employees alike to share and receive knowledge.

Knowledge Management Technology and Systems

Overall, research suggests that, although age-related differences and preferences regarding the use of knowledge management technology and systems (e.g., corporate wikis, expertise locator systems, electronic collaboration systems) exist, their impact at work may be rather limited. Research on the influence of technology on knowledge exchange is still in its

early stages. Yet, more general findings provide evidence for age-related differences regarding the general use of technology, suggesting that younger individuals utilize a wider range of technologies overall, but that age differences in use depend strongly on the technology domain (e.g., older individuals prefer telephones vs. younger individuals prefer cellphones; Olson et al., 2011). Oftentimes, younger individuals are classified as digital natives, whereas older individuals are regarded as digital immigrants, hinting at the age groups' levels of familiarity and comfort with the use of technologies. With respect to the learnability of software systems, Arning et al. (2016) emphasized the increasing importance of considering age-related user-specific requirements to ensure optimal learning conditions for new technologies. Referring specifically to the context of knowledge exchange at work, Widen et al. (2020) suggested that, despite the frequently echoed differences in older and younger employees' attitude toward the use of technology, "dynamics and demands for efficient knowledge sharing rather than age dictate how and when employees use technology for knowledge sharing" (p. 846).

Conclusion

There is a wide variety of prevalent normative beliefs about who is suited to share and receive knowledge at work. Beliefs that discourage certain age groups to share or receive knowledge may be particularly damaging to knowledge exchange processes. One reason for this is that normative beliefs translate into HR practices, such as who gets to participate in work-related trainings or how mentoring programs are implemented. To address this, the literature highlights age-inclusive HR practices, which take into account the needs and abilities of employees of different ages and help to create a positive age-diversity climate, as one solution to foster knowledge exchange between younger and older employees. Preliminary findings on the

role of technology in creating opportunities for knowledge exchange suggest that the age of the employees involved is of limited importance.

Discussion

In this chapter, we adopted the AMO framework to synthesize the literature on age and knowledge exchange related to the three antecedents ability, motivation, and opportunity. We found that several arguments in the ability and motivation literature suggest that younger employees are more able and motivated to receive knowledge, while older employees are more able and motivated to share knowledge. Regarding opportunities, younger workers are perceived as knowledge receivers and older workers as knowledge senders, which influences the knowledge sharing process. Organizations can intervene and promote knowledge exchange through age-inclusive HR practices and organizational culture. Table 1 presents an overview of the current state of research as we have synthesized it in the chapter and offers a starting point for us to specify directions for future research.

Future Research Directions

Overall, we suggest three directions for future research to move the field forward. First, there is a lack of research on age and knowledge hiding, except for research theorizing on the impact of different types of fear on knowledge hiding (Gerpott & Fasbender, 2020). While the antecedents of knowledge hiding have been explored to some extent (e.g., Anand et al., 2020; Fasbender, 2018), we urge future research to additionally consider an age-based perspective to explore knowledge hiding, because it constitutes behavior that may have serious long-term consequences for knowledge retention in organizations.

Second, we suggest that greater attention should be paid to the influence the three factors in the AMO framework exert on each other. For instance, Nguyen et al. (2019) propose that

contextual factors shaping the influence of motivation on knowledge sharing remain unclear and emphasize the value of exploring and contrasting online and physical settings. While we argue above that technology does not seem to shape the opportunities for employees of different age groups to exchange knowledge, such technological advancements may have an impact on age-related motivation. For instance, age has been identified as a central moderator of the link between attitude toward technology and work motivation (Elias et al., 2012), suggesting that the components of the AMO framework may exert influences on each other. Thus, we encourage future research to take a closer look at the interplay of ability, motivation, and opportunity to exchange knowledge and how it impacts knowledge exchange behaviors.

Third, future research can complement current research by examining how and when knowledge that is shared by one employee is received and used by another employee. Ability, motivation, and opportunity-related factors of both older and younger employees might influence the more dynamic and relational process of responding to each other's knowledge-related behaviors. For example, older employees may respond better to modest and agreeable younger knowledge seekers, whereas expertise and status may be important signs to guide younger employees in their search for knowledge providers. Moreover, situational factors could also be considered, for instance in comparing how the context in which knowledge exchange takes place (e.g., public vs. private situations) influences the effectiveness of knowledge exchange and exploring how the age of knowledge sender and receiver respectively plays into this connection.

Practical Implications

Research on age-related knowledge exchange suggests several approaches that organizations can implement. First, evidence suggests that older and younger employees differ in their ability and motivation to adopt the roles of knowledge sender versus receiver, which is

further exacerbated by normative beliefs (Finkelstein et al., 2013). To make optimal use of everyone's knowledge in the organization, regardless of age, organizations need to create awareness and implement practices (e.g., age-inclusive climate, reverse mentoring) to counteract these tendencies (Boehm et al., 2013). For example, organizations could implement trainings to reduce identity-related barriers by focusing on commonalities between different age groups. They could furthermore improve age-diverse employees' knowledge-based understanding by raising awareness for the knowledge of one's colleagues and encouraging them to reflect on their own knowledge (Burmeister, Gerpott, et al., in press).

Second, organizations can use employees' age-related motivations and goals as a cue to guide their knowledge-related behaviors. We have highlighted that the generativity motive associated with knowledge sharing increases with age, while the development motive associated with knowledge receiving declines with age (e.g., Kooij et al., 2011). Considering this as a starting point, organizations can activate older employees' developmental motives to foster knowledge behaviors that are not naturally promoted by age-related motives. In this regard, it may be possible to introduce reward systems that take into account age-related reward preferences concerning sharing and receiving knowledge and thus promote behaviors beyond employees' age-related need for generativity and development (Sammarra et al., 2017). For instance, younger employees could be remunerated with extrinsic rewards (e.g., monetary bonuses) for engaging in knowledge exchange, whereas older employees could receive intrinsic rewards (e.g., framing knowledge reception as a social interaction in line with older employees' stronger focus on socioemotional goals).

References

Ackerman, P. L. (2011). Intelligence and Expertise. In R. J. Sternberg & S. B. Kaufman (Eds.), *Cambridge handbooks in psychology. The Cambridge handbook of intelligence* (pp. 847–860). Cambridge University Press. https://doi.org/10.1017/CBO9780511977244.042

Anand, A., Centobelli, P., & Cerchione, R. (2020). Why should I share knowledge with others? A review-based framework on events leading to knowledge hiding. *Journal of Organizational Change Management*, *33*(2), 379–399. https://doi.org/10.1108/JOCM-06-2019-0174

Appelbaum, E., Bailey, T., Berg, P., & Kalleberg, A. L. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. Cornell Univ. Press.

Arning, K., Himmel, S., & Ziefle, M. (2016). You can(’t) teach an old dog new Ttricks: Analyzing the learnability of manufacturing software systems in older users. In J. Zhou & G. Salvendy (Eds.), *Lecture Notes in Computer Science: Vol. 9755. Human Aspects of IT for the Aged Population. Healthy and Active Aging: ITAP 2016. Lecture Notes in Computer Science* (Vol. 9755, pp. 277–288). Springer. https://doi.org/10.1007/978-3-319-39949-2_27

Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology*, *23*(5), 611–626. https://doi.org/10.1037/0012-1649.23.5.611

Blumberg, M., & Pringle, C. D. (1982). The missing opportunity in organizational research: Some implications for a theory of work performance. *Academy of Management Review*, *7*(4), 560–569. https://doi.org/10.5465/amr.1982.4285240

Boehm, S. A., Kunze, F., & Bruch, H. (2013). Spotlight on Age-Diversity Climate: The Impact of Age-Inclusive HR Practices on Firm-Level Outcomes. *Personnel Psychology*, n/a-n/a. https://doi.org/10.1111/peps.12047

Burmeister, A., & Deller, J. (2016). Knowledge Retention From Older and Retiring Workers: What Do We Know, and Where Do We Go From Here? *Work, Aging and Retirement*, *2*(2), 87–104. https://doi.org/10.1093/workar/waw002

Burmeister, A., Fasbender, U., & Deller, J. (2018). Being perceived as a knowledge sender or knowledge receiver: A multistudy investigation of the effect of age on knowledge transfer. *Journal of Occupational and Organizational Psychology*, *91*(3), 518–545. https://doi.org/10.1111/joop.12208

Burmeister, A., Gerpott, F. H., Hirschi, A., Scheibe, S., Pak, K., & Kooij, D. T.A.M. (in press). Reaching the heart or the mind? Test of two theory-based training programs to improve interactions between age-diverse coworkers. *Academy of Management Learning & Education*.

Burmeister, A., Hirschi, A., & Zacher, H. (in press). Explaining age differences in the motivating potential of intergenerational contact at work. *Work, Aging and Retirement.* Advance online publication. https://doi.org/10.1093/workar/waab002

Burmeister, A., van der Heijden, B., Yang, J., & Deller, J. (2018). Knowledge transfer in age-diverse coworker dyads in China and Germany: How and when do age-inclusive human resource practices have an effect? *Human Resource Management Journal*, *28*(4), 605–620. https://doi.org/10.1111/1748-8583.12207

Burmeister, A., Wang, M., & Hirschi, A. (2020). Understanding the motivational benefits of knowledge transfer for older and younger workers in age-diverse coworker dyads: An actor-partner interdependence model. *The Journal of Applied Psychology*, *105*(7), 748–759. https://doi.org/10.1037/apl0000466

Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional selectivity theory. *Psychology and Aging*, *7*(3), 331–338. https://doi.org/10.1037//0882-7974.7.3.331

Cattell, R. B. (1971). *Abilities: Their structure, growth, and action*. Houghton Mifflin.

Cavanaugh, J. C., & Blanchard-Fields, F. (2006). *Adult development and aging* (5. ed.). *International student edition*. Wadsworth Thomson Learning. http://www.loc.gov/catdir/enhancements/fy1409/2005922847-d.html

Connelly, C. E., Zweig, D., Webster, J., & Trougakos, J. P. (2012). Knowledge hiding in organizations. *Journal of Organizational Behavior*, *33*(1), 64–88. https://doi.org/10.1002/job.737

Costanza, D. P., & Finkelstein, L. M. (2015). Generationally Based Differences in the Workplace: Is There a There There? *Industrial and Organizational Psychology*, *8*(3), 308–323. https://doi.org/10.1017/iop.2015.15

Darnis, F., & Lafont, L. (2015). Cooperative learning and dyadic interactions: two modes of knowledge construction in socio-constructivist settings for team-sport teaching. *Physical Education and Sport Pedagogy*, *20*(5), 459–473. https://doi.org/10.1080/17408989.2013.803528

De Blois, S., & Lagacé, M. (2017). Understanding Older Canadian Workers' Perspectives on Age and Aging in the Context of Communication and Knowledge Transfer. *Canadian Journal of Communication*, *42*(4). https://doi.org/10.22230/cjc.2017v42n4a3071

Doerwald, F., Zacher, H., van Yperen, N. W., & Scheibe, S. (2021). Generativity at work: A meta-analysis. *Journal of Vocational Behavior*, *125*, 103521. https://doi.org/10.1016/j.jvb.2020.103521

Elias, S. M., Smith, W. L., & Barney, C. E. (2012). Age as a moderator of attitude towards technology in the workplace: work motivation and overall job satisfaction. *Behaviour & Information Technology*, *31*(5), 453–467. https://doi.org/10.1080/0144929X.2010.513419

Fasbender, U. (2018). Knowledge Retention from Older Workers. *Academy of Management Proceedings*, *2018*(1), 10229. https://doi.org/10.5465/AMBPP.2018.10229abstract

Fasbender, U., & Gerpott, F. H. (2021). To share or not to share: A social-cognitive internalization model to explain how age discrimination impairs older employees' knowledge sharing with younger colleagues. *European Journal of Work and Organizational Psychology*, *30*(1), 125–142. https://doi.org/10.1080/1359432X.2020.1839421

Fasbender, U., Gerpott, F. H., & Unger, D. (in press). Give and Take? Knowledge Exchange between Older and Younger Employees as a Function of Generativity and Development Striving. *Journal of Knowledge Management.* Advance online publication. https://doi.org/10.1108/JKM-11-2020-0856

Finkelstein, L. M., Allen, T. D., & Rhoton, L. A. (2003). An examination of the role of age in mentoring relationships. *Group & Organization Management*, *28*(2), 249–281. https://doi.org/10.1177/1059601103028002004

Finkelstein, L. M., Ryan, K. M., & King, E. B. (2013). What do the young (old) people think of me? Content and accuracy of age-based metastereotypes. *European Journal of Work and Organizational Psychology*, *22*(6), 633–657. https://doi.org/10.1080/1359432X.2012.673279

Gadomska-Lila, K. (2020). Effectiveness of reverse mentoring in creating intergenerational relationships. *Journal of Organizational Change Management*, *ahead-of-print*(ahead-of-print), 123. https://doi.org/10.1108/jocm-10-2019-0326

Geeraerts, K., Vanhoof, J., & van den Bossche, P. (2016). Teachers' perceptions of intergenerational knowledge flows. *Teaching and Teacher Education*, *56*, 150–161. https://doi.org/10.1016/j.tate.2016.01.024

Gerpott, F. H., & Fasbender, U. (2020). Intergenerational Learning in Age-Diverse Meetings: A Social Comparison Perspective. In A. L. Meinecke, J. A. Allen, & N. Lehmann-Willenbrock (Eds.), *Research on Managing Groups and Teams: Volume 20. Managing meetings in organizations* (pp. 185–206). Emerald Publishing. https://doi.org/10.1108/S1534-085620200000020009

Gerpott, F. H., Lehmann-Willenbrock, N., & Voelpel, S. C. (2017). A Phase Model of Intergenerational Learning in Organizations. *Academy of Management Learning & Education*, *16*(2), 193–216. https://doi.org/10.5465/amle.2015.0185

Gerpott, F. H., Lehmann-Willenbrock, N., Wenzel, R., & Voelpel, S. C. (2019). Age diversity and learning outcomes in organizational training groups: the role of knowledge sharing and psychological safety. *The International Journal of Human Resource Management*, 1–28. https://doi.org/10.1080/09585192.2019.1640763

Grand, J. A., Braun, M. T., Kuljanin, G., Kozlowski, S. W. J., & Chao, G. T. (2016). The dynamics of team cognition: A process-oriented theory of knowledge emergence in teams. *The Journal of Applied Psychology*, *101*(10), 1353–1385. https://doi.org/10.1037/apl0000136

Greller, M. M., & Stroh, L. K. (2004). Making the Most of "Late-Career" for Employers and Workers Themselves. *Organizational Dynamics*, *33*(2), 202–214. https://doi.org/10.1016/j.orgdyn.2004.01.007

Harvey, J. ‐ F. (2012). Managing organizational memory with intergenerational knowledge transfer. *Journal of Knowledge Management*, *16*(3), 400–417. https://doi.org/10.1108/13673271211238733

Hinds, P. J. (1999). The curse of expertise: The effects of expertise and debiasing methods on prediction of novice performance. *Journal of Experimental Psychology: Applied*, *5*(2), 205–221. https://doi.org/10.1037/1076-898X.5.2.205

Hinds, P. J., & Pfeffer, J. (2003). Why organizations don't "know what they know": Cognitive and motivational factors affecting the transfer of expertise. In M. Ackerman, V. Pipek, & V. Wulf (Eds.), *Sharing Expertise: Beyond Knowledge Management* (pp. 3–22). MIT Press.

Inceoglu, I., Segers, J., & Bartram, D. (2012). Age-related differences in work motivation. *Journal of Occupational and Organizational Psychology*, *85*(2), 300–329. https://doi.org/10.1111/j.2044-8325.2011.02035.x

Kalyuga, S., Ayres, P., Chandler, P., & Sweller, J. (2003). The Expertise Reversal Effect. *Educational Psychologist*, *38*(1), 23–31. https://doi.org/10.1207/S15326985EP3801_4

Kooij, D. T. A. M., Lange, A. H. de, Jansen, P. G. W., Kanfer, R., & Dikkers, J. S. E. (2011). Age and work-related motives: Results of a meta-analysis. *Journal of Organizational Behavior*, *32*(2), 197–225. https://doi.org/10.1002/job.665

Kubeck, J. E., Delp, N. D., Haslett, T. K., & McDaniel, M. A. (1996). Does job-related training performance decline with age? *Psychology and Aging*, *11*(1), 92–107. https://doi.org/10.1037/0882-7974.11.1.92

Lagacé, M., van de Beeck, L., & Firzly, N. (2019). Building on Intergenerational Climate to Counter Ageism in the Workplace? A Cross-Organizational Study. *Journal of*

Intergenerational Relationships, *17*(2), 201–219. https://doi.org/10.1080/15350770.2018.1535346

Lawrence, B. S. (1988). New wrinkles in the theory of age: Demography, norms, and performance ratings. *Academy of Management Journal*, *31*(2), 309–337. https://doi.org/10.5465/256550

Lazazzara, A., Karpinska, K., & Henkens, K. (2013). What factors influence training opportunities for older workers? Three factorial surveys exploring the attitudes of HR professionals. *The International Journal of Human Resource Management*, *24*(11), 2154–2172. https://doi.org/10.1080/09585192.2012.725077

Mannucci, P. V., & Yong, K. (2018). The differential impact of knowledge depth and knowledge breadth on creativity over individual careers. *Academy of Management Journal*, *61*(5), 1741–1763. https://doi.org/10.5465/amj.2016.0529

Moore, A. L., & Klein, J. D. (2020). Facilitating Informal Learning at Work. *TechTrends*, *64*(2), 219–228. https://doi.org/10.1007/s11528-019-00458-3

Moser, K. S. (2017). The Influence of Feedback and Expert Status in Knowledge Sharing Dilemmas. *Applied Psychology*, *66*(4), 674–709. https://doi.org/10.1111/apps.12105

Ng, T. W. H., & Feldman, D. C. (2012). Evaluating Six Common Stereotypes About Older Workers with Meta-Analytical Data. *Personnel Psychology*, *65*(4), 821–858. https://doi.org/10.1111/peps.12003

Nguyen, T.-M., Nham, T. P., Froese, F. J., & Malik, A. (2019). Motivation and knowledge sharing: a meta-analysis of main and moderating effects. *Journal of Knowledge Management*, *23*(5), 998–1016. https://doi.org/10.1108/jkm-01-2019-0029

Olson, K. E., O'Brien, M. A., Rogers, W. A., & Charness, N. (2011). Diffusion of Technology: Frequency of Use for Younger and Older Adults. *Ageing International*, *36*(1), 123–145. https://doi.org/10.1007/s12126-010-9077-9

Pak, K., Kooij, D. T.A.M., Lange, A. H. de, & van Veldhoven, M. J.P.M. (2019). Human resource management and the ability, motivation and opportunity to continue working: A review of quantitative studies. *Human Resource Management Review*, *29*(3), 336–352. https://doi.org/10.1016/j.hrmr.2018.07.002

Penningroth, S. L., & Scott, W. D. (2012). Age-related differences in goals: Testing predictions from selection, optimization, and compensation theory and socioemotional selectivity theory. *International Journal of Aging & Human Development*, *74*(2), 87–111. https://doi.org/10.2190/AG.74.2.a

Posthuma, R. A., & Campion, M. A. (2009). Age Stereotypes in the Workplace: Common Stereotypes, Moderators, and Future Research Directions†. *Journal of Management*, *35*(1), 158–188. https://doi.org/10.1177/0149206308318617

Prelog, N., Ismagilova, F. S., & Boštjančič, E. (2019). Which employees are most motivated to share knowledge – the role of age-based differentiation in knowledge-sharing motivation. *Changing Societies & Personalities*, *3*(1), 52–67. https://doi.org/10.15826/csp.2019.3.1.060

Profili, S., Sammarra, A., Dandi, R., & Mascia, D. (2019). Clinicians' ability, motivation, and opportunity to acquire and transfer knowledge: An age-driven perspective. *Health Care Management Review*, *44*(3), 216–223. https://doi.org/10.1097/hmr.0000000000000187

Rothwell, W. J. (2005). *Effective succession planning: Ensuring leadership continuity and building talent from within* (3rd ed.). AMACOM American Management Association.

Rudolph, C. W., Rauvola, R. S., Costanza, D. P., & Zacher, H. (2020). Generations and Generational Differences: Debunking Myths in Organizational Science and Practice and Paving New Paths Forward. *Journal of Business and Psychology*, 1–23. https://doi.org/10.1007/s10869-020-09715-2

Russell, J. E.A., & Adams, D. M. (1997). The changing nature of mentoring in organizations: An introduction to the special issue on mentoring in organizations. *Journal of Vocational Behavior*, *51*(1), 1–14. https://doi.org/10.1006/jvbe.1997.1602

Sammarra, A., Profili, S., Maimone, F., & Gabrielli, G. (2017). Enhancing Knowledge Sharing in Age-Diverse Organizations: The Role of HRM Practices. In S. Profili, A. Sammarra, & L. Innocenti (Eds.), *Advanced Series in Management. Age Diversity in the Workplace* (Vol. 17, pp. 161–187). Emerald Publishing Limited. https://doi.org/10.1108/s1877-636120170000017009

Satterly, B. A., Cullen, J., & Dyson, D. A. (2018). The intergenerational mentoring model: an alternative to traditional and reverse models of mentoring. *Mentoring & Tutoring: Partnership in Learning*, *26*(4), 441–454. https://doi.org/10.1080/13611267.2018.1530172

Schmidt, X., & Muehlfeld, K. (2017). What's So Special About Intergenerational Knowledge Transfer? Identifying Challenges of Intergenerational Knowledge Transfer. *Mrev Management Revue*, *28*(4), 375–411. https://doi.org/10.5771/0935-9915-2017-4-375

Siemsen, E., Roth, A. V., & Balasubramanian, S. (2008). How motivation, opportunity, and ability drive knowledge sharing: The constraining-factor model. *Journal of Operations Management*, *26*(3), 426–445. https://doi.org/10.1016/j.jom.2007.09.001

Strack, R., Baier, J., & Fahlander, A. (2008). Managing demographic risk. *Harvard Business Review*, *86*(2), 119-28, 138.

Wang, S., & Noe, R. A. (2010). Knowledge sharing: A review and directions for future research. *Human Resource Management Review*, *20*(2), 115–131. https://doi.org/10.1016/j.hrmr.2009.10.001

Widen, G., Ahmad, F., Siven, T., & Ivantsova, E. (2020). Understanding generational differences in knowledge sharing. In *Proceedings of the European Conference on Knowledge Management* (pp. 841–849). Reading: ACIL. https://doi.org/10.34190/EKM.20.209

Wilkesmann, M., & Wilkesmann, U. (2011). Knowledge transfer as interaction between experts and novices supported by technology. *VINE*, *41*(2), 96–112. https://doi.org/10.1108/03055721111134763

Zaniboni, S., Truxillo, D. M., & Fraccaroli, F. (2013). Differential effects of task variety and skill variety on burnout and turnover intentions for older and younger workers. *European Journal of Work and Organizational Psychology*, *22*(3), 306–317. https://doi.org/10.1080/1359432X.2013.782288

Zwick, T. (2015). Training older employees: what is effective? *International Journal of Manpower*, *36*(2), 136–150. https://doi.org/10.1108/IJM-09-2012-0138

Table 1

Overview of the state of research on the relations between knowledge-related behaviors within the AMO framework and research gaps

			Ability	Motivation	Opportunity		
Knowledge-related behaviors			**Cognitive abilities and expertise**	**Motives and goals**	**Age norms**	**HR[a] practices & organizational culture**	**Knowledge management technology**
	Theoretical frameworks		Cognitive aging theory, theory of expertise	Lifespan development (e.g., socioemotional selectivity theory)	Organizational age norm theory, social identity and self-categorization theories, interactional model of cultural diversity, social exchange theory		
Knowledge Exchange	Knowledge Receiving	O	+/–	–	–	?	○
		Y	+/–	+	+/–	?	○
	Knowledge Sharing	O	+/–	+	+/–	+	○
		Y	+/–	–	–	?	○
	Knowledge Hiding	O	?	?	?	?	?
		Y	?	?	?	?	?

Note. O = older age. Y = younger age. Plus sign (+) = positive relation to respective knowledge-related behavior. Minus sign (–) = negative relation to respective knowledge-related behavior. Plus and minus sign (+/–) = mixed findings regarding relation to respective knowledge-related behavior. Circle (○) = no significant relation to respective knowledge-related behavior. Question mark (?) = insufficient amount of research to adequately assess the research state.

[a] HR = human resource.