Running head: AGE DIVERSITY AND ORGANIZATIONAL PERFORMANCE

Leveraging Age Diversity for Organizational Performance:

An Intellectual Capital Perspective

Yixuan Li
Purdue University

Yaping Gong
Hong Kong University of Science and Technology

Anne Burmeister
Erasmus University Rotterdam

Mo Wang
University of Florida

Valeria Alterman
University of Miami

Alexander Alonso
Society for Human Resource Management

Samuel Robinson
Society for Human Resource Management

Abstract

The global trend of increasing workplace age diversity has led to growing research attention to the organizational consequences of age-diverse workforces. Prior research has primarily focused on the statistical relationship between age diversity and organizational performance without empirically probing potential mechanisms underlying this relationship. Adopting an intellectual capital perspective, we posit that age diversity affects organizational performance via human and social capital. Furthermore, we examine workplace functional diversity and age-inclusive management as two contingent factors shaping the effects of age diversity on human and social capital. Our hypotheses were tested with a large manager-report workplace survey data from the Society for Human Resource Management ($N = 3,888$). Results indicate that age diversity was positively associated with organizational performance through the mediation of increased human and social capital. In addition, functional diversity and age-inclusive management amplified the positive effects of age diversity on human and social capital. Our research sheds light on how age-diverse workforces may create value through cultivating knowledge-based organizational resources (i.e., human and social capital).

Key words: age diversity; human capital; social capital; functional diversity; age-inclusive management

Leveraging Age Diversity for Organizational Performance:

An Intellectual Capital Perspective

Most developed economies have been and are currently experiencing a major change in age composition (Nagarajan, Wada, Fang, & Sixsmith, 2019; United Nations, 2015; Wheaton & Crimmins, 2013). For example, in the U.S., the percentage of workers aged 55 or above had risen from 13% in 2000 (U.S. General Accounting Office, 2001) to 24% in 2019 (U.S. Bureau of Labor Statistics, 2019). Such a trend of an aging population is clearly reflected in increasing workplace age diversity (i.e., the distribution of differences among members with respect to age; Harrison & Klein, 2007) (Boehm, Baumgaertner, Dwertmann, & Kunze, 2011; Profili, Sammarra, & Innocenti, 2017; Pytlovany & Truxillo, 2017; Wegge & Meyer, 2020). Given the co-existence of multiple generations in workplaces, scholars have paid growing attention to the impact of age diversity on organizational performance (see Boehm & Kunze, 2015 for a review).

Although scholars have offered various theoretical explanations for the relationship between age diversity and organizational performance, the underlying mechanisms remain largely untested. In particular, scholars have proposed that age diversity can be a valuable firm resource that renders competitive advantage (Backes-Gellner & Veen, 2013; Li, Chu, Lam, & Liao, 2011); however, we know little about how age diversity might create value by cultivating different types of organizational resources. Indeed, Roberson, Holmes, and Perry (2017) have called for research applying integrative, process-based perspectives to clarify such resource-based mechanisms. Answering their research call, we take a process-based view to investigate how (mechanisms) and when (boundary conditions) age diversity affects organizational performance using a unique, large workplace data set collected by the Society for Human Resource Management (SHRM) from 2016 to 2017. We build on the intellectual capital

perspective and examine how age diversity impacts an organization's performance by shaping its human and social capital. Intellectual capital refers to the sum of knowledge that organizations accumulate and utilize for achieving competitive advantage (Subramaniam & Youndt, 2005). Two of its prominent aspects are human capital (i.e., the knowledge, skills, and abilities residing within and utilized by individual employees; Schultz, 1961) and social capital (i.e., the knowledge embedded within, available through, and utilized by employees' social connections; Nahapiet & Ghoshal, 1998).

Based on the cognitive, affective, and behavioral differences of age-diverse employees (Rhodes, 1983; Salthouse, 2012, 2019; Truxillo, Cadiz, & Hammer, 2015; Warr, 1994, 2001), we expect age diversity to enhance organizational performance through the betterment of human capital. This is because age-diverse incumbents complement each another to form a complete portfolio of knowledge, skills, and abilities (KSAs) and perspectives that can help the organization deal more effectively with a wider variety of tasks and contingencies (Grant, 1996). Furthermore, drawing upon the socioemotional selectivity theory (Carstensen, 1993, 1998), we expect age diversity to enhance organizational performance through the betterment of social capital. As employees from different age groups develop complementary social ties, they help the organization form a rich collection of internal and external connections (Tsai & Ghoshal, 1998). In addition, organizations vary in the extent to which they capitalize on age-diverse workforces to enhance their performance (Boehm et al., 2011; De Meulenaere, Boone, & Buyl, 2016; Wegge, Roth, Neubach, Schmidt, & Kanfer, 2008). In this respect, we investigate whether workplace functional diversity (i.e., the extent to which employees work in diverse functional areas; Blau, 1970; Bunderson & Sutcliffe, 2002) and age-inclusive management (i.e., fair, nondiscriminatory, and inclusive treatment of employees of all age groups with regard to

organizational practices, policies, and procedures; Kossek, Su, & Wu, 2017; Parker & Andrei, 2020) facilitate age diversity to render human and social capital, respectively.

This study contributes to the current literature in several ways. First, while prior research has primarily examined the statistical relationship between age diversity and organizational performance (e.g., Backes-Gellner & Veen, 2013; Grund & Westergård-Nielsen, 2008; Ilmakunnas, Maliranta, & Vainiomäki, 2004; Østergaard, Timmermans, & Kristinsson, 2011), we unpack the intellectual capital-based processes underlying this relationship. More specifically, we distinguish human and social capital as two theoretical mechanisms, because they reflect different knowledge-based resources. Whereas human capital resides within individual employees (Pennings, Lee, & van Witteloostuijn, 1998), social capital stems from social connections and the evolvement of interpersonal relationships (Nahapiet & Ghoshal, 1998).

Furthermore, we extend the literature by identifying functional diversity and age-inclusive management as important contingencies for the intellectual capital-based processes of age diversity. On the one hand, the current literature suggests that the impact of age diversity on organizational performance critically depends on the nature of tasks (e.g., task complexity; Bowers, Pharmer, & Salas, 2000; Sturman, 2003). At the organizational level, functional diversity is particularly relevant, because it captures the extent to which an organization's work tasks cover a broad range of job functions (Damanpour, 1996). On the other hand, human resource management research urges the examination of age-focused diversity management as a contingency (Boehm, Kunze, & Bruch, 2014). Although Choi and Rainey (2010) investigated the contingent effect of general diversity management on the relationship between age diversity and unit performance, they did not find a significant effect. Because organizations' management

practices can vary across diversity attributes (Boehm & Dwertmann, 2015), we reason that age-focused diversity management may matter more to an organization's capability of leveraging age-diverse workforces in particular.

Finally, we contribute to the workplace aging research in general. The aging literature has primarily focused on the effects of age on individual performance (Henkens & van Dalen, 2013; Salthouse, 2012; Sturman, 2003; Wang, Olson, & Shultz, 2013; Warr, 1994). A set of meta-analyses (McEvoy & Cascio, 1989; Ng & Feldman, 2008; Waldman & Avolio, 1986) have demonstrated that age is unrelated to core task performance, but related to other facets of performance (e.g., citizenship behavior, aggression, and absenteeism). Yet, such individual-level aging effects do not translate into organization-level performance through the simple sum of individual outcomes (Backes-Gellner & Veen, 2013). Rather, complementarities may exist among different age groups, such that the whole is more than the sum of its parts (Ennen & Richter, 2010). Therefore, it is theoretically compelling to take a collective approach and examine the value of age-diverse employees as a whole for an in-depth understanding about aging workforces (Boehm et al., 2014).

Literature Review

Although age is associated with cognitive declines in novel problem solving and processing efficiency (e.g., speed, memory, and reasoning; Salthouse, 2009, 2010, 2019), negative relationships between age and workplace functioning are rarely observed. Salthouse (2012) provides several important explanations for the weak association between age and job performance. First, older employees' disadvantage in terms of less-novel processing can be complemented by their accumulated knowledge, especially when dealing with familiar situations (Salthouse, 2019).[1] Second, the existence of factors beyond cognitive ability, such as task-

specific skills (Salthouse, 1984) and emotional competence (Beitler, Scherer, & Zapf, 2018), can be acquired with experience and thus represent a form of experienced-based compensation. Third, the nature of individuals' jobs changes over time, such that people alter what they do and how they do it to leverage individual strengths and thus remain functioning at a high level (Beier & Kanfer, 2013; Kanfer & Ackerman, 2004; Warr, 1994). This is consistent with selective optimization with compensation theory (Baltes & Baltes, 1990), which maintains that people prioritize tasks that align with their KSAs and use tactics and technology to compensate for declines in abilities to maximize functioning. Taken together, individual-level research on the relationship between age and job performance points to the theoretical plausibility that complementarities exist among age-diverse employees due to their cognitive, affective, and behavioral differences (Truxillo et al., 2015; Wang et al., 2013).

In particular, complementarities of different age groups can be informed by various theories. First, cognitive aging theory and associated research suggests that individuals' cognitive ability changes over their life span. Specifically, fluid intelligence, which is most associated with working memory, abstract reasoning, attention, and processing of novel information, decreases as people age (Bugg, Zook, DeLosh, Davalos, & Davis, 2006; Salthouse, 2009, 2010, 2019). Therefore, younger employees may find it easier to deal with new situations and are more open to different alternatives and solutions. In contrast, crystallized intelligence, which represents broad aspects of learned or experiential knowledge (e.g., reading, writing, language comprehension, and job-relevant expertise) and involves skilled judgment habits that "…have become crystallized as the result of earlier learning application of some prior, more fundamental general ability to these fields," (Cattell, 1963, pp. 2–3), increases as people age (Beier & Kanfer, 2013; Rietzschel, Zacher, & Stroebe, 2016; Salthouse, 2012, 2019). Older

employees are thus more likely to make quicker connections to their prior experience, oversee the broader environment, and perceive problems in a more integrative way (Kim & Hall, 2013). Taken together, different age groups may possess varied problem-solving abilities that constitute a more comprehensive portfolio of human skills in the organization (Kanfer & Ackerman, 2004).

Second, socioemotional selectivity theory (Carstensen, 1993, 1998) can explain age differences in social connections and affective responses. According to this theory, human goals can be categorized as acquiring knowledge and maximizing positive socioemotional experiences (Carstensen, Isaacowitz, & Charles, 1999). Individuals' perceptions of time play a key role in assigning importance to these two goals: seeing the future as expansive and limitless leads to valuing information acquisition and seeing the future as limited leads to valuing positive socioemotional experiences (Carstensen, 1993, 1998; Beier & Kanfer, 2013). In light of this theory, employees of different ages are motivated to form and maintain different types of social connections. Younger employees may choose to focus more on information gathering and develop a larger scope of social connections as information sources, while older employees are more likely to focus on emotional regulation and develop close and targeted social connections (Burmeister, Wang, & Hirschi, 2019; Wang, Burlacu, Truxillo, James, & Yao, 2015). Simply put, employees from different age groups may vary in their social interaction patterns and form complementary connections for organizational use. In addition, this theory provides a framework for understanding age-related differences in certain affective and behavioral responses. For example, due to older people's emphasis on socioemotional goals, they tend to have greater emotional competence (e.g., emotional regulation, stress management, and conflict management; Beitler et al., 2018; Carstensen & Mikels, 2005; Davis, Kraus, & Capobianco, 2009; Isaacowitz

& Blanchard-Fields, 2012; Mather & Carstensen, 2005) and exhibit better citizenship (Ng & Feldman, 2008).

Third, according to continuity theory (Atchley, 1989), individuals employ concepts and experiences they have acquired to adapt to life changes. One premise of this theory is that compared with younger employees, older employees are more likely to preserve existing internal continuity (i.e., the mental structure of ideas, temperament, affect, experiences, preferences, dispositions, and skills) and external continuity (i.e., social roles, activities, living arrangements, and relationships) when making adaptive choices (von Bonsdorff & Ilmarinen, 2013). As such, when it comes to learning, younger employees are more likely to engage in diverse types and forms of learning and to absorb a variety of information and knowledge from different sources; whereas older workers are more likely to intentionally select and reflect on their learning content to optimize their experiences (Kim & Hall, 2013). These learning-pattern differences may give rise to diverse knowledge associated with different age groups. For example, younger employees may hold more up-to-date technical knowledge, while older employees may possess richer professional skills and expert knowledge (Burmeister & Deller, 2016).

Hypotheses Development

Age Diversity and Intellectual Capital

We expect age diversity to enhance human capital. Based on the aging theories reviewed earlier, employees from different age groups possess complementary KSAs, such that the aggregation of individual KSAs as a set represents a larger stock of human capital. More specifically, regarding knowledge, whereas older employees normally have valuable job-specific and social knowledge, younger employees may be equipped with more up-to-date scientific and technical knowledge obtained from outside the organization (Burmeister & Deller, 2016;

Harvey, 2012; Joe, Yoong, & Patel, 2013). In terms of skills, older employees tend to have better political and social skills, because they have accumulated rich experiences in understanding informal rules and navigating complex relationships, whereas younger employees are often more skillful in identifying and accessing new information using advanced learning tools (Gerpott, Lehmann-Willenbrock, & Voelpel, 2017; Wang et al., 2013). In terms of abilities, younger employees have higher fluid intellectual abilities and more flexible knowledge structures, which enable them to operate effectively in dynamic, ambiguous, and complex environments (Bugg et al., 2006; Mannucci & Yong, 2018). On the other hand, older employees possess higher crystallized intellectual abilities and can better utilize their prior experience to solve new problems (Rietzschel et al., 2016; Wang et al., 2013). Age-diverse employees thus complement each other and together render a more comprehensive and varied set of KSAs that address a wider range of tasks and contingencies facing an organization.

In a similar vein, we expect age diversity to benefit social capital. According to the socioemotional selectivity theory, younger employees focus more on information−gathering and thus tend to develop a larger number of peripheral social connections, while older employees focus on emotional regulation and thus tend to develop close and targeted relationships (Fung, Carstensen, & Lang, 2001; Fung, Stoeber, Yeung, & Lang, 2008). Moreover, due to the differences of goal priorities between younger and older employees (i.e., knowledge acquisition vs. positive socioemotional experiences), employees from different age groups may target different types of social connections. As an example, younger employees have more contacts formed through education or based on technology, while older employees may develop more connections with communities and volunteer organizations (Gerpott et al., 2017; McDonald & Mair, 2010). In addition, even when interacting with the same social contacts, younger and older

employees may attend to and obtain different types of information due to their differences in

knowledge structure and information processing (Gerpott et al., 2017; Gong, 2003). Taken

together, an age-diverse organization tends to have more varied social ties, which help to

maintain a more comprehensive structure of internal connections across functional areas, as well

as a richer set of connections to diverse segments of external environment and various outside

stakeholders (e.g., customers, suppliers, investors, community, and government). Beyond that,

employees from different age groups can complement and learn from each other, facilitating

knowledge integration and thus adding value to the internal social capital. For example, older

workers may transfer their accumulated KSAs via training and mentoring and provide younger

workers with wisdom on how to address interpersonal conflict and stressful situations (Beitler et

al., 2018; Burmeister & Deller, 2016; Isaacowitz & Blanchard-Fields, 2012). Thus, we

hypothesize:

> **Hypothesis 1.** *Age diversity is positively related to (a) human capital and (b) social*
> *capital.*

Intellectual Capital and Organizational Performance

We expect human capital to relate positively to organizational performance. According to

the resource-based view (Barney, 1991), competitive advantage stems from resources that are

valuable, rare, and difficult to imitate or substitute. Human capital has long been considered to

satisfy these criteria and serve as an important intangible resource that explains performance

differences among firms (Acedo, Barroso, & Galan, 2006; Grant, 1996; Wright, McMahan, &

McWilliams, 1994). Importantly, since employees develop their firm-specific KSAs gradually

within an organizational context, human capital is generally embedded in an organization's

complex social system, making it more useful for certain organization (Hatch & Dyer, 2004;

Takeuchi, Lepak, Wang, & Takeuchi, 2007). Such firm specificity makes human capital difficult to imitate or substitute. More specifically, human capital mainly contributes to organizational performance in two ways. First, human capital helps employees achieve high performance and thus enhances organizational effectiveness (Hsu, 2008). For example, partners in professional service firms can utilize their superior KSAs to deliver high-quality service to their clients and thereby enhance organizational performance (Hitt, Bierman, Shimizu, & Kochhar, 2001). Second, human capital allows the organization to access diverse knowledge domains and increase its capacity to absorb and deploy knowledge from those domains, which help refine work processes and improve routines (Subramaniam & Youndt, 2005; Youndt & Snell, 2004). Supporting this argument, meta-analytic evidence has substantiated the positive relationship between human capital and organizational performance (Crook, Todd, Combs, Woehr, & Ketchen, 2011).

We also expect social capital to relate positively to organizational performance. In line with the resource-based view (Barney, 1991), social capital describes valuable knowledge embedded within social connections, which are often too complex to be deciphered and imitated by competitors, thus rendering competitive advantage (Chisholm & Nielsen, 2009; Gupta, Huang, & Yayla, 2011; Maskell, 2000). More specifically, social capital can generate value for organizations in two ways. First, social capital indicates rich connections with diverse stakeholders, which help the organization obtain valuable knowledge and information from various sources. With such knowledge, organizations can better identify and exploit market opportunities to develop competitive advantage (Danneels, 2008; Hambrick, 1982; Lavie, 2006; Nonaka & Takeuchi, 1995). Second, social capital suggests a more complete structure of social interactions (Tsai & Ghoshal, 1998), which can improve organizational performance by

facilitating the exchange and recombination of resources (e.g., information, products, personnel, and support; Tsai & Ghoshal, 1998) and enhancing the synchronization and pacing of processes (Jiang & Liu, 2015; Yuan, Fulk, Monge, & Contractor, 2009; Yuan, Monge, & Fulk, 2005). Supporting this argument, research has shown a positive relationship between social capital and organizational performance (Acquaah, 2007; Andrews, 2010; Maurer, Bartsch, & Ebers, 2011; Shaw, Duffy, Johnson, & Lockhart, 2005; see Westlund & Adam, 2010 for a meta-analysis). Taken together with Hypotheses 1a and 1b, we hypothesize:

Hypothesis 2. (a) Human capital and (b) social capital are positively related to organizational performance.

Hypothesis 3. (a) Human capital and (b) social capital mediate the positive relationship between age diversity and organizational performance.

The Moderating Role of Functional Diversity

Organizations may vary in the extent to which they capitalize on age-diverse workforces to enhance performance. In particular, the literature on age and individual performance points to the importance of considering the nature of tasks as a contingency. For example, Sturman (2003) found that task complexity moderated the relationship between employee age and job performance, such that older employees benefit more in jobs with high complexity. Taking organizational tasks into theoretical consideration, we propose workplace functional diversity, which captures the extent to which work tasks cover a broad range of job functions that require diverse KSAs, perspectives, and connections (Damanpour, 1996), as an important facilitator for age diversity to render intellectual capital.

More specifically, we propose that functional diversity amplifies the positive relationship between age diversity and human capital. As previously discussed, age diversity renders a more

complete portfolio of KSAs to deal with a wider range of tasks and contingencies. Such a portfolio of KSAs is particularly valuable to workplaces with high functional diversity. This is because functionally diverse workplaces possess varied task demands and impose differentiated job responsibilities (Glick, Miller, & Huber, 1993; Kimberly & Evanisko, 1981; Keck, 1997; Knight et al., 1999). As a result, they need to access a more diverse reservoir of KSAs to operate effectively (Cheung, Gong, Wang, Zhou, & Shi, 2016; Damanpour, 1991, 1996). In other words, in workplaces with high functional diversity, a complete portfolio of KSAs is more important for the development of human capital. Supporting this argument, De Meulenaere et al. (2016) have found that larger firm size, which is associated with a more fine-grained division of labor, amplifies the positive effect of age diversity on labor productivity. To summarize, workplaces with high (vs. low) functional diversity may benefit more from the comprehensive and varied set of KSAs available in age-diverse workforces such that the positive effect of age diversity on human capital is more pronounced.

In addition, we expect functional diversity to strengthen the positive relationship between age diversity and social capital. As previously discussed, age-diverse workplaces tend to have a more varied and comprehensive collection of social connections inside and outside the organization. Such social ties are particularly valuable in functionally diverse workplaces because they need to connect to diverse external stakeholders to fulfill tasks and responsibilities from related job functions (Ancona & Caldwell, 1992). In particular, different functional areas respond to demands from various types of customers, suppliers, and other constituencies (Glick et al., 1993), which increase the value of comprehensive and varied external connections. In addition, functionally diverse workplaces need to integrate KSAs within and between different functional areas through interpersonal communication and coordination, as these areas need

reciprocal inputs to plan, implement, and evaluate activities to accomplish organizational goals (Bunderson & Sutcliffe, 2002; Simons, Pelled, & Smith, 1999). The internal social connections elicited by age diversity are thus particularly useful to functionally diverse workplaces, because informal lateral relations facilitate knowledge flows and coordination (Tsai, 2002). Taken together, we hypothesize:

Hypothesis 4. Functional diversity moderates the positive effects of age diversity on (a) human capital and (b) social capital, such that these effects are stronger for organizations with high (vs. low) functional diversity.

Hypothesis 5. Functional diversity moderates the indirect effects of age diversity on organizational performance via (a) human capital and (b) social capital, such that these indirect effects are stronger for organizations with high (vs. low) functional diversity.

The Moderating Role of Age-Inclusive Management

Although age-diverse workforces possess a fundamental knowledge architecture for cultivating valuable intellectual capital, their capabilities of leveraging age diversity for such purpose may vary, depending on the extent to which they can effectively mobilize the knowledge residing within individuals and their social connections. Accordingly, we propose age-inclusive management as an important amplifier that unleashes the potential of age diversity to promote intellectual capital by effectively integrating employees of all age groups into the fabric of the organization.

More specifically, we propose that age-inclusive management amplifies the positive relationship between age diversity and human capital. As previously discussed, age diversity can enhance human capital via the formation of a more complete portfolio of KSAs. Yet, due to the tacitness of knowledge (Grant, 1996; Nonaka, 1994) and the resulting difficulty of knowledge

transfer (i.e., stickiness of transfer; see Szulanski, 1996), such a portfolio may not automatically transform into valuable knowledge resources that can be used by organizations to achieve competitive advantage. According to the resource-based view, employees with unique KSAs must be organized for productive use in order to create values (Barney, 1991; Barney & Wright, 1998). In this regard, age-inclusive management can be an important part of unleashing the benefits of age diversity for organizational use. This is because age-inclusive management promotes fairness and eliminates discrimination by implementing equitable practices that provide employees of all age groups equal opportunities to succeed (Dwertmann, Nishii, & Van Knippenberg, 2016). As such, it creates an inclusive environment whereby inputs from employees of all age groups are valued by and integrated into the organization. In addition, organizations that implement age-inclusive management are more likely to be perceived as just, trustworthy, and long-term oriented, which fosters employees to utilize their individual knowledge for performing core tasks in order to contribute to organizational goals (Chung, Liao, Jackson, Subramony, Colakoglu, & Jiang, 2015).

In addition, we propose that age-inclusive management can amplify the positive relationship between age diversity and social capital. Similar to individual-based knowledge, connection-based knowledge does not automatically transform into social capital valuable for competitive advantage. Rather, it requires incumbent members to actively search for relevant information through social connections and deliberately assimilate, absorb, and process such information for organizational use (Collins & Clark, 2003). By providing all age groups equal access to resources and opportunities to succeed, age-inclusive management highlights the inclusion of every member into the organization and values input from all employees regardless of their ages (Boehm & Dwertmann, 2015; Dwertmann et al., 2016; Mor Barak, 2013). To

reciprocate, employees are more willing to actively connect the organization to various knowledge sources that can add value to the firm (Boehm et al., 2014; Chung et al., 2015; Gonzalez & DeNisi, 2009). In addition, the implementation of age-inclusive management practices creates an appreciative, fair, and non-discriminatory work environment for age-diverse employees (Boehm & Dwertmann, 2015). As a result, employees of all age groups can be involved and integrated into the organization's activities, which helps refine its internal knowledge architecture. Supporting this argument, Moon (2018) has found that a supportive diversity climate can strengthen the positive relationship between age diversity and social capital. In addition, Boehm et al. (2014) have found that age-inclusive HR practices promote an age-diversity climate, which in turn facilitates collective social exchange and subsequent company performance. Taken together, we hypothesize:

Hypothesis 6. Age-inclusive management moderates the positive effects of age diversity on (a) human capital and (b) social capital, such that these effects are stronger for organizations with high (vs. low) age-inclusive management.

Hypothesis 7. Age-inclusive management moderates the indirect effects of age diversity on organizational performance via (a) human capital and (b) social capital, such that these indirect effects are stronger for organizations with high (vs. low) age-inclusive management.

We depict the hypotheses in a research model in Figure 1.

[Insert Figure 1]

Method

Data

We used the Annual Workplace Survey data (2016–2017) by the Society for Human Resource Management (SHRM) to test our hypotheses. Our study was approved as exempt by

the Institutional Review Board at the University of Florida (protocol # IRB201800185; title: "Antecedents and consequences of organizational HR practices"). Respondents were asked to refer to their current workplace (i.e., a stand-alone business location) when answering survey questions. While a firm may have multiple business locations, a workplace is a stand-alone entity with a single business address (Osterman, 1994). We consider workplace-level survey data to be more appropriate for this study for the following reasons. First, different workplaces of the same firm may possess different employee compositions and implement varying management practices (Lepak, Liao, Chung, & Harden, 2006). Second, because workplaces are smaller in scope, key informants (e.g., HR managers) are more familiar with their specific management practices and employee compositions (Batt, 2002; Gerhart, Wright, & McMahan, 2000; Takeuchi, Chen, & Lepak, 2009). Third, age-based knowledge exchange often occurs within a physical boundary that facilitates interactions among employees (Wang & Zatzick, 2019).

The Workplace Survey's respondents were a random sample of SHRM members located in the U.S. In total, 49,091 members consisting of HR managers, HR executives, or general managers were randomly sampled from the SHRM membership database (population coverage rate = 17.4%) and invited to participate in the two-wave surveys. Participants received recertification credits for participation. A total of 4,641 responses were collected (response rate = 9.5%). After deleting dropout cases during the survey (13.0%) and excluding 150 non-profit workplaces (3.2%), the final sample included managerial responses from 3,888 workplaces. Although our absolute sample size was large, which to some extent mitigates potential concerns on sampling coverage, the low response rate may relate to systematic response biases. Relatedly, we compared the Wave 2 participants to nonparticipants on control variables and independent variables assessed in Wave 1. There were no significant differences in control variables (i.e.,

organizational age, workplace size, percentage of employees under difference age groups, percentage of full-time employees, union density, workplace ownership, status of the workplace, gender diversity, turnover rate), age diversity, functional diversity, and age-inclusive management. The organizations' ages averaged 51.23 years ($SD = 39.40$) and the average workplace size was approximately 304 employees ($SD = 549.00$).

Measures

The variables were measured in two separate waves. Specifically, the control variables, independent variable (age diversity), and moderators (functional diversity and age-inclusive management) were measured as of August 2016. The mediators (human capital and social capital) and dependent variable (organizational performance) were measured as of February 2017.

Age diversity. In the Workplace Survey, employees were classified into the following categories: (1) percentage of employees below 40, (2) percentage of employees between 40 and 50, (3) percentage of employees between 50 and 60, and (4) percentage of employees above 60. According to Harrison and Klein (2007), the conceptualization of a specific diversity dimension determines its operationalization. The current study mainly involves theoretical arguments about information and decision-making (Carter & Phillips, 2017; Van Knippenberg, De Dreu, & Homan, 2004), and thus age diversity should be operationalized in the form of variety. Following prior age-diversity research (e.g., Fritzsche, Wegge, Schmauder, Kliegel, & Schmidt, 2014; Moon, 2018; Wegge et al., 2012), we computed this variable with Blau's index (Blau, 1977), the most commonly used index of diversity for qualitatively different demographic and functional categories (Bell, Villado, Lukasik, Belau, & Briggs, 2011; Harrison & Klein, 2007). Specifically,

the formula is $1 - \sum p_k^2$, where p is the proportion of employees in the kth category. The index ranges from 0 to 1, with larger values representing greater levels of diversity.

Functional diversity. The Workplace Survey asked respondents to report the percentages of employees from the following functional areas (Bunderson & Sutcliffe, 2002): sales or marketing, manufacturing, finance or accounting, personnel/HR, distribution or warehouse, research and development, equipment management, administrative support, and general management. Following previous research (e.g., Bunderson & Sutcliffe, 2002; Cannella, Park, & Lee, 2008; Carpenter & Fredrickson, 2001; Cheung et al., 2016), we measured functional diversity using Blau's index (Blau, 1977). Specifically, the formula is $1 - \sum p_k^2$, where p is the proportion of employees in the kth category. This index ranges from 0 to 1. Values closer to 0 indicate lower level of functional diversity (i.e., most employees are from the same functional area) and values closer to 1 indicate higher levels of functional diversity.

Age-inclusive management. Age-inclusive management was measured with four items adapted from Boehm et al. (2014). Managers were asked to assess the extent to which their workplaces treat employees of all age groups fairly, equally, and inclusively by indicating their levels of agreement with each statement (1 = strongly disagree; 5= strongly agree). An example item was, "My workplace makes it easy for employees from diverse age groups to fit in and be accepted." The Cronbach's alpha was .86, the Omega total (Dunn, Baguley & Brunsden, 2014) was .86, and the Revelle's Omega total (Revelle & Zinbarg, 2009) was .88 (McNeish, 2018).

Human capital and social capital. Both human capital and social capital were measured with items developed by Subramaniam and Youndt (2005). Specifically, managers were asked to assess the human and social capital of their workplaces by indicating the extent to which they agreed with each statement (1 = strongly disagree; 5= strongly agree). For human capital, items

were "Our employees are highly skilled," "Our employees are widely considered the best in our industry," "Our employees are creative and bright," "Our employees are experts in their particular jobs and functions," and "Our employees develop new ideas and knowledge." The Cronbach's alpha was .85, the Omega total was .86, and the Revelle's Omega total was .88. For social capital, items included, "Our employees partner with customers, suppliers, alliance partners, etc., to develop solutions," "Our employees apply knowledge from one area of the organization to problems and opportunities that arise in another," "Our employees interact and exchange ideas with people from different areas of the organization," "Our employees are skilled at collaborating with each other to diagnose and solve problems," and "Our employees share information and learn from one another." The Cronbach's alpha was .84, the Omega total was .84, and the Revelle's Omega total was .91.

Organizational performance. Consistent with prior studies (Gardner, 2005; Gong, Zhou, & Chang, 2013; Simsek, Veiga, Lubatkin & Dino, 2005), organizational performance was measured by asking managers to rate their workplace performances in comparison with their competitors (1 = much worse than the competitors, 2 = worse than the competitors, 3 = similar as the competitors, 4 = better than the competitors, 5 = much better than the competitors) using six dimensions: overall performance, growth in sales revenue, net profit after taxes, return to shareholders, market share growth, and product/service quality. Although objective performance measures are desirable, they are more appropriate for firm-level studies and often not provided /reported at the workplace level (Gaba & Joseph, 2013). In addition, as demonstrated by Wall et al. (2004), subjective performance measures have good convergent validity (i.e., subjective performance was related to objective performance), discriminant validity (i.e., the relationships between corresponding subjective and objective measures were systematically stronger than the

relationships between different performance constructs measured using the same method), and construct validity (i.e., the relationships of subjective and objective performance measures with a range of independent variables were equivalent). The Cronbach's alpha was .90, the Omega total was .90, and the Revelle's Omega total was .95.

Control variables. During the analysis, we controlled for a number of workplace characteristics, including organizational age (i.e., the number of years since the organization was established; Beckman, 2006), workplace size (i.e., the total number of employees in the workplace; Collins & Smith, 2006), percentage of employees in different age categories (i.e., below 40, 40–50, and 50–60), percentage of full-time employees (Li, Wang, van Jaarsveld, Lee, & Ma, 2018), union density (Guthrie, 2001), workplace ownership (i.e., whether the workplace is family-owned; George, 2005), status of the workplace (i.e., principal unit, subsidiary with legal identity, head branch with headquarter at the same location, and branch; Inkson, Pugh, & Hickson, 1970), gender diversity (Nishii, 2013), turnover rate (i.e., the percentage of employees that left in the previous year; Hausknecht & Trevor, 2011), and industry sectors.[2]

First, we controlled for organizational age, because longer operating organizations tend to accumulate more human capital resources and present higher levels of management quality due to increased learning curve advantages (Guthrie, 2001; Li et al., 2018). In addition, older organizations may have a greater number of long-tenured employees, which suggests a larger proportion of mature workers. Second, we controlled for workplace size, because organizations with larger operating scales may possess more resources and higher managerial capabilities (Ployhart, Nyberg, Reilly, & Maltarich, 2014). Third, we controlled for percentage of employees in different age categories to reveal whether age diversity could predict the outcome variables above and beyond specific age groups. Fourth, we controlled for turnover rate to account for the

influence of organizational stability on organizational performance (Shaw, 2011). Fifth, although

studying other types of diversity attributes is beyond the scope of the current study, the

Workplace Survey data contains information on gender composition, which allows us to obtain

the measure of gender diversity. We included gender diversity as a control variable to examine

whether age diversity predicted the outcome variables above and beyond gender diversity.

Finally, we controlled for industry sectors to tease out establishment-level effects from potential

industry-level effects (e.g., Gong, Law, Chang, & Xin, 2009; Guthrie, 2001; Shaw, Park, & Kim,

2013; Takeuchi et al., 2009; Trevor & Nyberg, 2008; Zatzick & Iverson, 2006).

Analytical Strategy

Although the measurements of the independent variable (i.e., age diversity) and

moderators (i.e., functional diversity and age-inclusive management) were temporally separated

from those of the mediators (i.e., human and social capital) and dependent variable (i.e.,

organizational performance), the mediators and dependent variable were measured at the same

time, which posed a concern of common method bias (Podsakoff, MacKenzie, Lee, & Podsakoff,

2003). We attempted to use latent variable modeling to account for the common method biases,

but the model failed to converge due to the complexity of its specification (e.g., multiple latent

interactions). Therefore, we shifted to regression-based path analysis. Nevertheless, considering

that most scholars have agreed about and shown the positive relationship between intellectual

capital and organizational performance (Crook et al., 2011; Westlund & Adam, 2010), the goal

of this study is to theorize and test the relationships between age diversity and human and social

capital, as well as their associated boundary conditions. Separating the measurement timing of

age diversity and age-inclusive management from those of human and social capital is therefore

more important in probing how age diversity might predict organizational performance.

To obtain unbiased estimates and facilitate explanation of the interaction effects (Cohen, Cohen, West, & Aiken, 2003), the continuous control variables and independent variables (i.e., age diversity, functional diversity, and age-inclusive management) were centered at their grand means. The interaction term was the product of centered independent variables. When testing the mediation effects, we used the Monte Carlo method with 20,000 bootstrap replications to estimate the confidence intervals (CIs) for the indirect effects (Preacher, Zyphur, & Zhang, 2010). When testing the moderated mediation effects, we compared the 95% CIs for the indirect effects when the moderator was at one standard deviation below and above its mean using the Monte Carlo method with 20,000 bootstrap replications (Edwards & Lambert, 2007). The Monte Carlo method is useful because it simulates the sampling distribution based on the model estimates and their asymptotic variances and covariances instead of assuming a normal distribution (Bauer, Preacher, & Gil, 2006; Preacher & Selig, 2012). We conducted analyses with *Mplus* 7 (Muthén & Muthén, 1998-2017) and the open source *R* (https://www.r-project.org/).

Results

Preliminary Analyses

We conducted confirmatory factor analyses (CFA) to examine the construct validity of the studied variables (i.e., age-inclusive management, human capital, social capital, and organizational performance). The model fit indices are summarized in Table 1. We tested the hypothesized four-factor model by loading items on their respective latent variables. The results showed that the hypothesized model with distinct but correlated factors fitted the data well: χ^2 (164) = 1288.73, $p < .001$, comparative fit index (CFI) = .94, Tucker-Lewis Index (TLI) = .93, and root mean square error of approximation (RMSEA) = .05. In addition, the hypothesized

model was superior to all three-factor models with items of any two variables loaded onto one factor: $\Delta\chi^2$s (3) $\geq$ 1056.16, $p < .001$.

[Insert Table 1]

We present the means, standard deviations, and correlations of the studied variables in Table 2. For age diversity, the standard deviation was .13, the skewness was -1.77, and the excess kurtosis was 3.53. Age diversity was positively correlated with human capital ($r = .09$, $p < .001$) and social capital ($r = .06$, $p < .001$). In addition, human capital ($r = .29$, $p < .001$) and social capital ($r = .26$, $p < .001$) were positively correlated with organizational performance. It is worth noting that human and social capital were also significantly correlated ($r = .57$, $p < .001$), suggesting the possibility that high-performance workplaces tend to have high levels of both human and social capital.

[Insert Table 2]

Testing the Main Effects and Mediation Effects

The mediation model results are presented in Table 3. Age diversity was positively related to human capital ($\gamma = 1.00$, $se = .27$, $p < .001$) and social capital ($\gamma = 1.01$, $se = .29$, $p = .001$), supporting Hypotheses 1a and 1b. In addition, human capital ($\gamma = .26$, $se = .04$, $p < .001$) and social capital ($\gamma = .12$, $se = .04$, $p = .001$) were positively related to organizational performance. Therefore, we found support for Hypotheses 2a and 2b. Further, we tested the indirect effects of age diversity on organizational performance via human and social capital with the Monte Carlo method. The mediating effect of human capital for the relationship between age diversity and organizational performance was .26 with a 95% CI of [.11, .43]. The confidence interval excluded zero, thus supporting Hypothesis 3a. The estimated mediating effect of social

capital for the relationship between age diversity and organizational performance was .12 with a 95% CI of [.03, .24]. The confidence interval excluded zero, supporting Hypothesis 3b.

[Insert Table 3]

Testing the Moderation Effects

We present our moderated mediation model results in Table 4. The interaction term between age diversity and functional diversity on human capital was positive and significant (γ = 4.23, se = .85, p < .001). To examine this interaction effect, we plotted the interaction pattern in Figure 2. The relationship between age diversity and human capital was positive and significant when functional diversity was at 1 standard deviation above the mean, γ = 1.50, se = .35, p < .001; and this relation became non-significant when functional diversity was at 1 standard deviation below the mean, slope = -.11, se = .27, p = .67. Thus, Hypothesis 4a was supported.

[Insert Table 4 and Figure 2]

The interaction term between age diversity and functional diversity on social capital was also positive and significant (γ = 4.32, se = .93, p < .001). We plotted the interaction pattern in Figure 3. The relation between age diversity and social capital was positive and significant when functional diversity was at 1 standard deviation above the mean, γ = 1.46, se = .38, p < .001; and this relation became non-significant when functional diversity was at 1 standard deviation below the mean, γ = -.18, se = .29, p = .53. Thus, we found support for Hypothesis 4b.

[Insert Figure 3]

In addition, the interaction term between age diversity and age-inclusive management on human capital was positive and significant (γ = 1.70, se = .21, p < .001). We plotted the interaction pattern in Figure 4. The relationship between age diversity and human capital was positive and significant when age-inclusive management was at 1 standard deviation above the

mean, $\gamma = 1.90$, $se = .29$, $p < .001$; and this relation became non-significant when age-inclusive management was at 1 standard deviation below the mean, $\gamma = -.52$, $se = .32$, $p = .11$. Therefore, Hypothesis 6a was supported.

[Insert Figure 4]

Finally, the interaction term between age diversity and age-inclusive management on social capital was also positive and significant ($\gamma = 1.84$, $se = .22$, $p < .001$). We plotted the interaction pattern in Figure 5. The relationship between age diversity and social capital was positive and significant when age-inclusive management was at 1 standard deviation above the mean, $\gamma = 1.95$, $se = .31$, $p < .001$; and this relation became non-significant when age-inclusive management was at 1 standard deviation below the mean, $\gamma = -.67$, $se = .35$, $p = .05$. Thus, we found support for Hypothesis 6b.

[Insert Figure 5]

Testing the Moderated Mediation Effects

Next, we examined whether functional diversity and age-inclusive management moderated the indirect effects of age diversity on organizational performance via human capital and social capital. Based on the Monte Carlo bootstrapping results, when functional diversity was at one standard deviation below the mean, the indirect effect of age diversity on organizational performance via human capital was -.03 with a 95% CI of [-.20, .13]. The effect became .40 with a 95% CI of [.21, .62] when functional diversity was at one standard deviation above the mean. The difference between these two estimated effects was statistically significant, because zero was not included in the 95% CI of the difference (i.e., [.24, .66]). Therefore, Hypothesis 5a was supported. Similarly, when functional diversity was at one standard deviation below the mean, the indirect effect of age diversity on organizational performance via social

capital was -.02 with a 95% CI of [-.12, .06]. The effect became .19 with a 95% CI of [.07, .35] when functional diversity was at one standard deviation above the mean. The difference between these two estimated effects was statistically significant, because zero was not included in the 95% CI of the difference (i.e., [.08, .38]). Thus, we found support for Hypothesis 5b.

In addition, when age-inclusive management was at one standard deviation below the mean, the indirect effect of age diversity on organizational performance via human capital was -.14 with a 95% CI of [-.31, .02]. The effect became .51 with a 95% CI of [.31, .75] when age-inclusive management was at one standard deviation above the mean. The difference between these two estimated effects was statistically significant, because zero was not included in the 95% CI of the difference (i.e., [.42, .91]). Therefore, Hypothesis 7a was supported. Finally, when age-inclusive management was at one standard deviation below the mean, the indirect effect of age diversity on organizational performance via social capital was -.09 with a 95% CI of [-.20, -.001]. The effect became .26 with a 95% CI of [.10, .44] when age-inclusive management was at one standard deviation above the mean. The difference between these two estimated effects was statistically significant, because zero was not included in the 95% CI of the difference (i.e., [.14, .57]). Thus, we found support for Hypothesis 7b.

Discussion

This study adopted an intellectual capital perspective to investigate the mechanisms (i.e., human and social capital) and boundary conditions (i.e., functional diversity and age-inclusive management) for age diversity to impact organizational performance. Our hypotheses are supported. We discuss our theoretical and practical implications below.

Theoretical and Practical Implications

Our study offers several important theoretical implications. First, our study reveals human and social capital as potential value-creating mechanisms of age diversity. Previous findings on the relationship between age diversity and organizational performance have been mixed at best (Boehm & Kunze, 2015). While several studies have found this relationship to be positive (e.g., Ilmakunnas & Ilmakunnas, 2011; Li et al., 2011), other studies have found it to be non-significant (e.g., Backes-Gellner & Veen, 2013; Choi & Rainey, 2010), or negative (e.g., Kunze, Boehm, & Bruch, 2013; Østergaard et al., 2011). Such inconsistent findings are not surprising, because age diversity is associated with both costs and benefits (Williams & O'Reilly, 1998). It is important for researchers to shift the focus from the direct age diversity – performance relationship to the potential value-creating and value-reducing mechanisms driving this relationship. As one exception, Kunze and his colleagues (2011, 2013) found that age diversity reduced organizational performance via increased age discrimination. While their research informs us of the potential value-reducing mechanism, the potential value-creating mechanisms remain unclear. In this respect, our study is a first step toward understanding the value-creating mechanisms of age diversity.

Importantly, our findings suggest that organizations with higher levels of functional diversity and age-inclusive management might better capitalize on age-diverse workforces. In the past, researchers have identified a set of contingent factors influencing the effect of age diversity, including task type (creative vs. routine tasks; Backes-Gellner & Veen, 2013), job security (De Meulenaere et al., 2016), firm size (De Meulenaere et al., 2016), firm strategy (Li et al., 2011), performance-oriented culture (Choi & Rainey, 2010), cultural context (Western societies vs. East Asian societies; Li et al., 2011) and diversity climate (Moon, 2018). Nevertheless, the contingent roles of organizational structure and age-focused diversity management have been largely

overlooked. Moving beyond, our research showed that functional diversity and age-inclusive management might serve as two important contingencies for the effects of age diversity on human and social capital.

We note that the effect of age diversity on social capital became negative when age-inclusive management was low. This suggests that failing to implement age-inclusive management may impede the development of age diversity-based social capital. One explanation could be that unfair treatment of employees from different age groups creates age-based subgroup divisions and triggers age-related stigmatization and discrimination (Ng & Feldman, 2012; Posthuma & Campion, 2009; Tajfel, 1981). Age-based stigmatization and discrimination, in turn, could cause intergroup conflict, avoidant behavior, and communication problems that prevent knowledge transfer and are detrimental to interactions across age groups (Fiske, 2002; Ho & Yeung, 2017; Messick & Mackie, 1989; North & Shakeri, 2019).

It is worthwhile to compare age diversity research at the team level vs. the organizational level. Although meta-analytical results suggest that team age diversity is unrelated to team performance (Bell et al., 2011; Schneid, Isidor, Steinmetz, & Kabst, 2016), the literature on team-level age diversity shows a clear theoretical emphasis on negative effects, and relevant theoretical mechanisms include age discrimination, social identity, career timetables, and prototype matching (see Shore et al., 2009 for a review). We suspect that these theoretical mechanisms should be more salient in a team context rather than an organizational context. This is because team members often have similar status and interact frequently. Thus, they are more likely to engage in social comparisons (Festinger, 1954), which trigger age discrimination based on social categorization (Williams & O'Reilly, 1998). In addition, in the horizontal team context, it is more often for younger members to find that older members have fallen behind their career

timetables (i.e., age norms within organizations that indicate at which age a typical employee should have reached a given career stage; Lawrence, 1984) or older members' jobs are mismatched for their given ages (i.e., prototype mismatching; Lawrence, 1988; Perry & Finkelstein, 1999). In contrast, age discrimination can be less prominent when vertical work relationships are involved. In particular, older employees make up an increasing proportion of managers, supervisors, and executives (Cleveland & Maneotis, 2013), and these older employees are less likely to be viewed as falling behind career timetables or conducting inappropriate work tasks. Moreover, chronological age is one of the few universal human experiences (Lawrence, 1988). The permeability of age attribute makes it easy for employees to "stand in the shoes" of those in another age category, especially when social comparisons are not triggered (Pelled, Eisenhardt, & Xin, 1999). As a result, age diversity may lead to more positive consequences at the organizational level than the team level.

Our research provides important practical implications. First, the positive relationship between age diversity and organizational performance via human and social capital shows that age-diverse workforces could be an asset rather than a liability to achieve superior performance. Thus, organizations are advised to strive for age diversity in their recruitment and retention. This is especially true for functionally diverse organizations, as they may rely more heavily on age diversity to achieve superior performance. In particular, older employees are often disadvantaged in hiring processes (Fasbender & Wang, 2017), receive less support (Armstrong-Stassen & Ursel, 2009), and may choose to retire early (Feldman, 1994). Therefore, organizations may consider developing an age-conscious approach to selection and implement older worker-related accommodation practices to attract and retain older employees (Armstrong-Stassen & Ursel, 2009; Rudolph, Toomey, & Baltes, 2017; van Dalen, Henkens, & Wang, 2015; Wang & Shultz,

2010). When younger employees observe older employees being treated with dignity and respect, as well as the chance for ongoing career growth opportunities, they develop a positive feeling about their future treatment in the organization (Kim & Hall, 2013; Wang & Wanberg, 2017). Therefore, such practices may also help attract and retain younger employees.

Organizations are also advised to implement age-inclusive management and treat employees across all age groups in a fair, non-discriminatory, and inclusive way. Specifically, it is important to develop formal human resource policies, practices, and procedures that ensure employees are hired, developed, advanced, and retained without regard to age, and that age-diverse employees are provided with equal opportunities (Boehm et al., 2014; Rabl & Triana, 2014). Further, it is important to integrate employees from all age groups into organizational processes including decision-making in order to improve employees' perceptions of inclusion and facilitate bi-directional knowledge transfer (Nishii, 2013). To this end, it is useful to train managers to interact respectfully with subordinates of all age groups and engage in inclusive leadership in order to ensure justice, share decision-making, and encourage member contribution (Randel et al., 2018; Wöhrmann, Fasbender, & Deller, 2017). Such leadership behaviors can improve employees' identification and psychological empowerment, which benefit mutual knowledge transfer and collective learning (Randel et al., 2018).

Limitation and Future Research Directions

This research has several limitations, which point toward future research directions. First, the two-wave SHRM surveys were answered by the same manager at the workplace. The use of single-source data posed a concern of common method bias (Podsakoff et al., 2003). Relatedly, we were not able to obtain the demographic information of the surveyed respondents (e.g., age and position). While it is common to have a single informant to answer the workplace survey,

including respondents' demographic variables as controls could help alleviate concerns that their responses might be biased due to individual characteristics. For example, an older respondent might be more sensitive to age-related practices and perceive higher levels of age-inclusive management. It is also worth pointing out that the nature of the data prevents us from directly capturing the multilevel interactional dynamics of employees from different age groups. Therefore, we suggest future research investigating the multilevel process for age diversity to impact organizational performance.

Second, during hypotheses testing, our measures were constrained by the scope of available survey questions in SHRM surveys. In particular, we were not able to obtain very detailed age distribution for each workplace; rather, age was divided into four cohorts and age diversity was calculated based on such a division. Although this type of measurement is commonly used in organization-level age diversity studies (e.g., Choi & Rainey, 2010; Fritzsche et al., 2014; Li et al., 2011; Moon, 2018), a more detailed distribution of employee ages can be helpful in improving research rigor. Nevertheless, we consider the cutoff ages used in this study to be reasonable, which to some extent alleviates our concern about this measure. First, the age of 40 can be viewed as an important cutoff between younger and older workers, as this age presents a psychological milestone for many employees. In addition, legislation protecting U.S. employees from age discrimination uses age 40 as the standard (Avery, McKay, & Wilson, 2007; Hansson, DeKoekkoek, Neece, & Patterson, 1997). Second, the age of 50 is an important cutoff, because previous literature has documented that subject matter experts typically view this age to be the cutoff for mature or older workers (Armstrong-Stassen, 2008; Paullin, 2014). In addition, Ashbaugh and Fay (1987) reviewed more than 100 studies on older workers and found the mean age for older worker samples to be 53.4 years. Third, the age of 60 is an important cutoff,

because employees are approaching eligibility for social security benefits at this time and the prospect of workforce exit (i.e., retirement) looms large. It is also worth noting that individual differences across physical, personality, and cognitive domains become more prominent with age. As such, there will be considerable intra-cohort variability among older workers (Hansson et al., 1997; Light, Grigsby, & Bligh, 1996; Nelson & Dannefer, 1992), which provides a theoretical rationale to have more age-based groups in older ages (i.e., above 40). Nevertheless, to improve measurement validity, we suggest future research obtain more specific age distributions or more detailed cutoffs to capture age diversity in organizations. In addition, due to the limitations of the data set, we are not able to determine the distribution of employees across teams, departments, and hierarchies. As a promising avenue, future studies may investigate how age distribution across functional areas and hierarchies relates to intellectual capital and workplace performance.

Moreover, the SHRM data set lacks measures on industrial characteristics, which may serve as important contingencies shaping the effects of age diversity and intellectual capital on organizational performance. Based on our supplemental analysis (see online appendix for details), age diversity might lead to more human and social capital for workplaces from the secondary sector (i.e., manufacturing, processing, and construction) compared to those from other sectors. This may be because the complementarity of fluid intelligence (i.e., novel knowledge) and crystallized intelligence (e.g., experiential knowledge) plays a more important role in workplaces specializing in manufacturing, processing, and construction, whereas in other sectors, one may be more important than the other (e.g., crystalized intelligence in the primary sector and fluid intelligence in the quaternary sector). Accordingly, as a future research avenue,

researchers can investigate whether organizations with certain knowledge structures from particular industries can benefit more from age diversity.

Relatedly, it may be worthwhile to investigate how environmental dynamism qualifies the effects of age diversity. On the one hand, it is theoretically plausible that workplaces facing higher levels of environmental uncertainty (i.e., the extent to which the external environment is dynamic and unpredictable; Buchko, 1994; Milliken, 1987) rely more heavily on age-diverse workforces to achieve superior performance, because employees with diverse age groups may be able to more comprehensively identify and scrutinize important market opportunities and constraints to enhance flexibility (Beal, 2000; Elenkov, 1997). On the other hand, accumulated intellectual capital, as a type of firm-specific human asset (Coff, 1997), may direct organizational effort toward areas related to prior knowledge accumulation. This path dependence may prevent workplaces from implementing radical changes in order to adapt to the external environment (Helfat, 1994).

Third, in this study, we focus exclusively on intellectual capital-based processes to account for the effect of age diversity on organizational performance. It is important to examine other potential value creating- and value-reducing mechanisms that drive the relationship between age diversity and organizational performance. For example, future studies may examine how age diversity impacts organizations' exploitative and explorative activities, both of which are critical for sustaining superior organizational performance and achieving organizational adaptation (Gupta, Smith, & Shalley, 2006; Smith & Lewis, 2011). As another example, future research can investigate how age diversity influences organizations' cost structures. In particular, based on the seniority principle, Thurow (1975) suggested that during the earlier phases of workers' careers, their earnings are lower than productivity while during the later phases, their

earnings are higher than productivity. Yet, seniority-based wages can be an important incentive for older employees to remain in the current organization and transfer their skills and knowledge to younger colleagues (Thurow, 1975). This incentive may be especially relevant if related tasks require high levels of experience or verbal skills (Dropkin, Moline, Kim, & Gold, 2016). Thus, it is compelling to examine how age diversity is associated with an organization's cost structure.

Finally, the SHRM data set contained larger and older workplaces in the U.S., because these workplaces had greater need for human resource management and their managers were more likely to be SHRM members. Nevertheless, the absolute sample size is quite large, which to some extent mitigates potential concerns on sampling coverage. To improve research rigor, we suggest future studies use representative samples to replicate this study. In addition, we used a sample that includes a wide array of industries, which prevents us from conducting an in-depth, within-industry investigation for the relationship between age diversity and organizational performance. Future research may investigate the effect of age diversity within certain industries.

Conclusion

Taking an intellectual capital perspective, this study reveals human capital and social capital as two potential mechanisms for age diversity to benefit organizational performance, shedding light on how age diversity may create value by cultivating individual-based and connection-based organizational resources. We further identify functional diversity and age-inclusive management as two important facilitators for workplaces to better capitalize on age-diverse workforces. Our research highlights the importance of adopting a process-based approach to understand the mechanisms and contingencies through which age diversity creates valuable firm resources that render competitive advantage.

References

Acedo, F. J., Barroso, C., & Galan, J. L. (2006). The resource-based theory: Dissemination and main trends. *Strategic Management Journal, 27,* 621-636.

Acquaah, M. (2007). Managerial social capital, strategic orientation, and organizational performance in an emerging economy. *Strategic Management Journal, 28,* 1235-1255.

Ancona, D. G., & Caldwell, D. F. (1992). Bridging the boundary: External activity and performance in organizational teams. *Administrative Science Quarterly, 37,* 634-665.

Andrews, R. (2010). Organizational social capital, structure and performance. *Human Relations, 63,* 583-608.

Armstrong- Stassen, M. (2008). Organizational practices and the post- retirement employment experience of older workers. *Human Resource Management Journal, 18,* 36-53.

Armstrong-Stassen, M., & Ursel, N. D. (2009). Perceived organizational support, career satisfaction, and the retention of older workers. *Journal of Occupational and Organizational Psychology, 82,* 201-220.

Ashbaugh, D. L., & Fay, C. H. (1987). The threshold for aging in the workplace. *Research on Aging, 9,* 417-427.

Atchley, R. C. (1989). A continuity theory of normal aging. *The Gerontologist, 29,* 183-190.

Avery, D. R., McKay, P. F., & Wilson, D. C. (2007). Engaging the aging workforce: The relationship between perceived age similarity, satisfaction with coworkers, and employee engagement. *Journal of Applied Psychology*, *92*, 1542-1556.

Batt, R. (2002). Managing customer services: Human resource practices, quit rates, and sales growth. *Academy of Management Journal, 45,* 587-597.

Backes- Gellner, U., & Veen, S. (2013). Positive effects of ageing and age diversity in innovative companies–large- scale empirical evidence on company productivity. *Human Resource Management Journal*, *23*, 279-295.

Baltes, P. B., & Baltes, M. M. (1990). Psychological perspectives on successful aging: The model of selective optimization with compensation. In P. B. Baltes & M. M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences* (pp. 1-34). New York, NY: Cambridge University Press.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17,* 99-120.

Barney, J. B., & Wright, P. M. (1998). On becoming a strategic partner: The role of human resources in gaining competitive advantage. *Human Resource Management, 37,* 31-46.

Bauer, D. J., Preacher, K. J., & Gil, K. M. (2006). Conceptualizing and testing random indirect effects and moderated mediation in multilevel models: New procedures and recommendations. *Psychological Methods, 11,* 142-163.

Beal, R. M. (2000). Competing effectively: Environmental scanning, competitive strategy, and organizational performance in small manufacturing firms. *Journal of Small Business Management, 38,* 27-47.

Beckman, C. M. (2006). The influence of founding team company affiliations on firm behavior. *Academy of Management Journal, 49,* 741-758.

Beier, M. E., & Kanfer, R. (2013). Work performance and the older worker. In J. Field, R. J. Burke, & C. L. Cooper (Eds.), *The Sage handbook of aging, work and society* (pp. 97-117). London, UK: Sage Publications.

Beitler, L. A., Scherer, S., & Zapf, D. (2018). Interpersonal conflict at work: Age and emotional competence differences in conflict management. *Organizational Psychology Review, 8,* 195-227.

Bell, S. T., Villado, A. J., Lukasik, M. A., Belau, L., & Briggs, A. L. (2011). Getting specific about demographic diversity variable and team performance relationships: A meta-analysis. *Journal of Management, 37,* 709-743.

Blau, P. M. (1970). A formal theory of differentiation in organizations. *American Sociological Review, 35,* 201-218.

Blau, P. M. (1977). *Inequality and heterogeneity.* New York, NY: Free Press.

Boehm, S. A., Baumgaertner, M. K., Dwertmann, D. J. G., & Kunze, F. (2011). Age diversity and its performance implications – Analysing a major future workforce trend. In S. Kunisch, S. A. Boehm, & M. Boppel (Eds.), *From grey to silver* (pp. 121-141). Heidelberg, NY: Springer.

Boehm, S. A., & Dwertmann, D. J. G. (2015). Forging a single-edged sword: Facilitating positive age and disability diversity effects in the workplace through leadership, positive climates, and HR practices. *Work, Aging and Retirement, 1,* 41-63.

Boehm, S. A., & Kunze, F. (2015). Age diversity and age climate in the workplace. In P. M. Bal, D. T. A. M. Kooij, & D. M. Rousseau (Eds.), *Aging workers and the employee-employer relationship* (pp. 33-55). New York, NY: Springer.

Boehm, S. A., Kunze, F., & Bruch, H. (2014). Spotlight on age-diversity climate: The impact of age-inclusive HR practices on firm-level outcomes. *Personnel Psychology, 67,* 667-704.

Bowers, C. A., Pharmer, J. A., & Salas, E. (2000). When member homogeneity is needed in work teams: A meta-analysis. *Small Group Research, 31,* 305-327.

Buchko, A. A. (1994). Conceptualization and measurement of environmental uncertainty: An assessment of the Miles and Snow perceived environmental uncertainty scale. *Academy of Management Journal, 37,* 410-425.

Bugg, J. M., Zook, N. A., DeLosh, E. L., Davalos, D. B., & Davis, H. P. (2006). Age differences in fluid intelligence: Contributions of general slowing and frontal decline. *Brain and Cognition, 62,* 9-16.

Bunderson, J. S., & Sutcliffe, K. M. (2002). Comparing alternative conceptualizations of functional diversity in management teams: Process and performance effects. *Academy of Management Journal, 45,* 875-893.

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,* 87-104.

Burmeister, A., Wang, M., & Hirschi, A. (2019). Understanding the motivational benefits of knowledge transfer for older and younger workers in age-diverse coworker dyads: An actor-partner interdependence model. *Journal of Applied Psychology*. Advance online publication. https://doi.org/10.1037/apl0000466

Cannella, A. A. Jr., Park, J. H., & Lee, H. U. (2008). Top management team functional background diversity and firm performance: Examining the roles of team member colocation and environmental uncertainty. *Academy of Management Journal, 51,* 768-784.

Carpenter, M. A., & Fredrickson, J. W. (2001). Top management teams, global strategic posture, and the moderating role of uncertainty. *Academy of Management Journal, 44,* 533-545.

Carstensen, L. L. (1993). Motivation for social contact across the life span: A theory of socioemotional selectivity. *Nebraska Symposium on Motivation, 40,* 209-254.

Carstensen, L. L. (1998). A life-span approach to social motivation. In J. Heckhausen & C. Dweck (Eds.), *Motivation and self-regulation across the life span* (pp. 341-364). New York, NY: Cambridge University Press.

Carstensen, L. L., Isaacowitz, D. M., & Charles, S. T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54,* 165-181.

Carstensen, L. L., & Mikels, J. A. (2005). At the intersection of emotion and cognition: Aging and the positivity effect. *Current Directions in Psychological Science, 14,* 117-121.

Carter, A. B., & Phillips, K. W. (2017). The double- edged sword of diversity: Toward a dual pathway model. *Social and Personality Psychology Compass, 11,* e12313.

Cattell, R. B. (1963). Theory of fluid and crystallized intelligence: A critical experiment. *Journal of Educational Psychology, 54,* 1-22.

Cheung, S. Y., Gong, Y., Wang, M., Zhou, L., & Shi, J. (2016). When and how does functional diversity influence team innovation? The mediating role of knowledge sharing and the moderation role of affect-based trust in a team. *Human Relations, 69,* 1507-1531.

Chisholm, A. M., & Nielsen, K. (2009). Social capital and the resource-based view of the firm. *International Studies of Management & Organization, 39,* 7-32.

Choi, S., & Rainey, H. G. (2010). Managing diversity in US federal agencies: Effects of diversity and diversity management on employee perceptions of organizational performance. *Public Administration Review*, *70,* 109-121.

Chung, Y., Liao, H., Jackson, S. E., Subramony, M., Colakoglu, S., & Jiang, Y. (2015). Cracking but not breaking: Joint effects of faultline strength and diversity climate on loyal behavior. *Academy of Management Journal, 58,* 1495-1515.

Cleveland, J. N., & Maneotis, S. M. (2013). Recruitment and retention strategies for mature workers. In M. Wang (Ed.), *The Oxford handbook of retirement* (pp. 431-448). New York, NY: Oxford University Press.

Coff, R. W. (1997). Human assets and management dilemmas: Coping with hazards on the road to resource-based theory. *Academy of Management Review, 22,* 374-402.

Cohen, J., Cohen, P., West, S. G., & Aiken, L. S. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences* (3rd ed). Mahwah, NJ: Lawrence Erlbaum.

Collins, C. J., & Clark, K. D. (2003). Strategic human resource practices, top management team social networks, and firm performance: The role of human resource practices in creating organizational competitive advantage. *Academy of Management Journal, 46,* 740-751.

Collins, C. J., & Smith, K. G. (2006). Knowledge exchange and combination: The role of human resource practices in the performance of high-technology firms. *Academy of Management Journal, 49*, 544-560.

Crook, T. R., Todd, S. Y., Combs, J. G., Woehr, D. J., & Ketchen, D. J. Jr. (2011). Does human capital matter? A meta-analysis of the relationship between human capital and firm performance. *Journal of Applied Psychology, 96,* 443-456.

Damanpour, F. (1991). Organizational innovation: A meta-analysis of effects of determinants and moderators. *Academy of Management Journal, 34,* 555-590.

Damanpour, F. (1996). Organizational complexity and innovation: Developing and testing multiple contingency models. *Management Science, 42,* 693-716.

Danneels, E. (2008). Organizational antecedents of second-order competences. *Strategic Management Journal, 29,* 519-543.

Davis, M. H., Kraus, L. A., & Capobianco, S. (2009). Age differences in responses to conflict in the workplace. *International Journal of Aging and Human Development, 68,* 339-355.

De Meulenaere, K., Boone, C., & Buyl, T. (2016). Unraveling the impact of workforce age diversity on labor productivity: The moderating role of firm size and job security. *Journal of Organizational Behavior, 37,* 193-212.

Dropkin, J., Moline, J., Kim, H., & Gold, J. E. (2016). Blended work as a bridge between traditional workplace employment and retirement: A conceptual review. *Work, Aging and Retirement, 2,* 373-383.

Dunn, T. J., Baguley, T., & Brunsden, V. (2014). From alpha to omega: A practical solution to the pervasive problem of internal consistency estimation. *British Journal of Psychology, 105,* 399-412.

Dwertmann, D. J. G., Nishii, L. H., & Van Knippenberg, D. (2016). Disentangling the fairness & discrimination and synergy perspectives on diversity climate: Moving the field forward. *Journal of Management, 42,* 1136-1168.

Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods, 12,* 1-22.

Elenkov, D. S. (1997). Strategic uncertainty and environmental scanning: The case for institutional influences on scanning behavior. *Strategic Management Journal, 18,* 287-302.

Ennen, E., & Richter, A. (2010). The whole is more than the sum of its parts—or is it? A review of the empirical literature on complementarities in organizations. *Journal of Management*, *36,* 207-233.

Fasbender, U., & Wang, M. (2017). Intergenerational contact and hiring decisions about older workers. *Journal of Managerial Psychology, 32,* 210-224.

Feldman, D. C. (1994). The decision to retire early: A review and conceptualization. *Academy of Management Review, 19,* 285-311.

Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7,* 117-140.

Fiske, S. T. (2002). What we know now about bias and intergroup conflict, the problem of the century. *Current Directions in Psychological Science, 11,* 123-128.

Fritzsche, L., Wegge, J., Schmauder, M., Kliegel, M., & Schmidt, K. H. (2014). Good ergonomics and team diversity reduce absenteeism and errors in car manufacturing. *Ergonomics, 57,* 148-161.

Fung, H. H., Carstensen, L. L., & Lang, F. R. (2001). Age-related patterns in social networks among European Americans and African Americans: Implications for socioemotional selectivity across the life span. *International Journal of Aging and Human Development, 52,* 185-206.

Fung, H. H., Stoeber, F. S., Yeung, D. Y. L., & Lang, F. R. (2008). Cultural specificity of socioemotional selectivity: Age differences in social network composition among Germans and Hong Kong Chinese. *Journals of Gerontology: Series B, 63,* 156-164.

Gaba, V., & Joseph, J. (2013). Corporate structure and performance feedback: Aspirations and adaptation in M-form firms. *Organization Science, 24,* 1102-1119.

Gardner, T. M. (2005). Interfirm competition for human resources: Evidence from the software industry. *Academy of Management Journal, 48,* 237-256.

George, G. (2005). Slack resources and the performance of privately held firms. *Academy of Management Journal, 48,* 661-676.

Gerhart, B., Wright, P. M., & McMahan, G. C. (2000). Measurement error in research on the human resources and firm performance relationship: Further evidence and analysis. *Personnel Psychology, 53,* 855-872.

Gerpott, F. H., Lehmann-Willenbrock, N., & Voelpel, S. C. (2017). A phase model of intergenerational learning in organizations. *Academy of Management Learning & Education, 16,* 193-216.

Glick, W. H., Miller, C. C., & Huber, G. P. (1993). The impact of upper echelon diversity on organizational performance. In G. P. Huber & W. H. Glick (Eds), *Organizational change and redesign: Ideas and insights for improving performance* (pp. 176-214). New York, NY: Oxford University Press.

Gong, Y. (2003). Toward a dynamic process model of staffing composition and subsidiary outcomes in multinational enterprises. *Journal of Management, 29,* 259-280.

Gong, Y., Law, K. S., Chang, S., & Xin, K. R. (2009). Human resources management and firm performance: The differential role of managerial affective and continuance commitment. *Journal of Applied Psychology, 94,* 263-275.

Gong, Y., Zhou, J., & Chang, S. (2013). Core knowledge employee creativity and firm performance: The moderating role of riskiness orientation, firm size, and realized absorptive capacity. *Personnel Psychology, 66,* 443-482.

Gonzalez, J. A., & DeNisi, A. S. (2009). Cross-level effects of demography and diversity climate on organizational attachment and firm effectiveness. *Journal of Organizational Behavior, 30,* 21-40.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic Management Journal, 17,* 109-122.

Grund, C., & Westergård-Nielsen, N. (2008). Age structure of the workforce and firm performance. *International Journal of Manpower, 29,* 410-422.

Gupta, A. K., Smith, K. G., & Shalley, C. E. (2006). The interplay between exploration and exploitation. *Academy of Management Journal, 49,* 693-706.

Gupta, V. K., Huang, R., & Yayla, A. A. (2011). Social capital, collective transformational leadership, and performance: A resource-based view of self-managed teams. *Journal of Managerial Issues, 23,* 31-45.

Guthrie, J. P. (2001). High-involvement work practices, turnover, and productivity: Evidence from New Zealand. *Academy of Management Journal, 44,* 180-190.

Hambrick, D. C. (1982). Environmental scanning and organizational strategy. *Strategic Management Journal, 3,* 159-174.

Hansson, R. O., DeKoekkoek, P. D., Neece, W. M., & Patterson, D. W. (1997). Successful aging at work: Annual review, 1992-1996: The older worker and transitions to retirement. *Journal of Vocational Behavior, 51,* 202-233.

Harvey, J. F. (2012). Managing organizational memory with intergenerational knowledge transfer. *Journal of Knowledge Management, 16,* 400-417.

Harrison, D. A., & Klein, K. J. (2007). What's the difference? Diversity constructs as separation, variety, or disparity in organizations. *Academy of Management Review, 32,* 1199-1228.

Hatch, N. W., & Dyer, J. H. (2004). Human capital and learning as a source of sustainable competitive advantage. *Strategic Management Journal, 25,* 1155-1178.

Hausknecht, J. P., & Trevor, C. O. (2011). Collective turnover at the group, unit, and organizational levels: Evidence, issues, and implications. *Journal of Management, 37*, 352-388.

Helfat, C. E. (1994). Firm-specificity in corporate applied R&D. *Organization Science, 5,* 173-184.

Henkens, K., & van Dalen, H. P. (2013). The employer's perspective on retirement. In M. Wang (Ed.), *The Oxford handbook of retirement* (pp. 215-228). New York, NY: Oxford University Press.

Hitt, M. A., Bierman, L., Shimizu, K., & Kochhar, R. (2001). Direct and moderating effects of human capital on strategy and performance in professional service firms: A resource-based perspective. *Academy of Management Journal, 44,* 13-28.

Ho, H. C. Y., & Yeung, D. Y. L. (2017). Effects of social identity salience on motivational orientation and conflict strategies in intergenerational conflict. *International Journal of Psychology, 54,* 108-116.

Hsu, I. C. (2008). Knowledge sharing practices as a facilitating factor for improving organizational performance through human capital: A preliminary test. *Expert Systems with Applications, 35,* 1316-1326.

Ilmakunnas, P., & Ilmakunnas, S. (2011). Diversity at the workplace: Whom does it benefit? *De Economist*, *159,* 223-255.

Ilmakunnas, P., Maliranta, M., & Vainiomäki, J. (2004). The roles of employer and employee characteristics for plant productivity. *Journal of Productivity Analysis, 21,* 249-276.

Inkson, J. H., Pugh, D. S., & Hickson, D. J. (1970). Organization context and structure: An abbreviated replication. *Administrative Science Quarterly, 15,* 318-329.

Isaacowitz, D. M., & Blanchard-Fields, F. (2012). Linking process and outcome in the study of emotion and aging. *Perspectives on Psychological Science, 7,* 3-17.

Jiang, J. Y., & Liu, C.-W. (2015). High performance work systems and organizational effectiveness: The mediating role of social capital. *Human Resource Management Review, 25,* 126-137.

Joe, C., Yoong, P., & Patel, K. (2013). Knowledge loss when older experts leave knowledge-intensive organisations. *Journal of Knowledge Management, 17,* 913-927.

Kanfer, R., & Ackerman, P. L. (2004). Aging, adult development, and work motivation. *Academy of Management Review, 29,* 440-458.

Keck, S. L. (1997). Top management team structure: Differential effects by environmental context. *Organization Science, 8,* 143-156.

Kim, N., & Hall, D. T. (2013). Protean career model and retirement. In M. Wang (Ed.), *The Oxford handbook of retirement* (pp. 102-116). New York, NY: Oxford University Press.

Kimberly, J. R., & Evanisko, M. J. (1981). Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. *Academy of Management Journal, 24,* 689-713.

Knight, D., Pearce, C. L., Smith, K. G., Olian, J. D., Sims, H. P., Smith, K. A., & Flood, P. (1999). Top management team diversity, group process, and strategic consensus. *Strategic Management Journal, 20,* 445-465.

Kossek, E. E., Su, R., & Wu, L. (2017). "Opting out" or "pushed out"? Integrating perspectives on women's career equality for gender inclusion and interventions. *Journal of Management, 43,* 228-254.

Kunze, F., Boehm, S. A., & Bruch, H. (2011). Age diversity, age discrimination climate and performance consequences—A cross organizational study. *Journal of Organizational Behavior, 32,* 264-290.

Kunze, F., Boehm, S. A., & Bruch, H. (2013). Organizational performance consequences of age diversity: Inspecting the role of diversity‐ friendly HR policies and top managers' negative age stereotypes. *Journal of Management Studies, 50,* 413-442.

Lavie, D. (2006). The competitive advantage of interconnected firms: An extension of the resource-based view. *Academy of Management Review, 31,* 638-658.

Lawrence, B. S. (1984). Age grading: The implicit organizational timetable. *Journal of Organizational Behavior, 5,* 23-35.

Lawrence, B. S. (1988). New wrinkles in the theory of age: Demography, norms, and performance ratings. *Academy of Management Journal, 31,* 309-337.

Lepak, D. P., Liao, H., Chung, Y., & Harden, E. E. (2006). A conceptual review of human resource management systems in strategic human resource management research. In J. J. Martocchio (Ed.), *Research in personnel and human resources management* (pp. 217-271). Greenwich, CT: JAI Press.

Li, J., Chu, C. W. L., Lam, K. C. K., & Liao, S. (2011). Age diversity and firm performance in an emerging economy: Implications for cross‐ cultural human resource management. *Human Resource Management*, *50,* 247-270.

Li, Y., Wang, M., van Jaarsveld, D., Lee, G. K., & Ma, D. G. (2018). From employee-experienced high-involvement work system to innovation: An emergence-based human resource management framework. *Academy of Management Journal, 61,* 2000-2019.

Light, J. M., Grigsby, J. S., & Bligh, M. C. (1996). Aging and heterogeneity: Genetics, social structure, and personality. *The Gerontologist, 36,* 165-173.

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,* 1741-1763.

Maskell, P. (2000). Social capital, innovation, and competitiveness. In S. Baron, J. Field, & T. Schuller (Eds.), *Social capital: Critical perspectives* (pp. 111-123). Oxford: Oxford University Press.

Mather, M., & Carstensen, L. L. (2005). Aging and motivated cognition: The positivity effect in attention and memory. *Trends in Cognitive Sciences, 9,* 496-502.

Maurer, I., Bartsch, V., & Ebers, M. (2011). The value of intra-organizational social capital: How it fosters knowledge transfer, innovation performance, and growth. *Organization Studies, 32,* 157-185.

McDonald, S., & Mair, C. A. (2010). Social capital across the life course: Age and gendered patterns of network resources. *Sociological Forum, 25,* 335-359.

McEvoy, G. M., & Cascio, W. F. (1989). Cumulative evidence of the relationship between employee age and job performance. *Journal of Applied Psychology, 74,* 11-17.

McNeish, D. (2018). Thanks coefficient alpha, we'll take it from here. *Psychological Methods, 23,* 412-433.

Messick, D. M., & Mackie, D. M. (1989). Intergroup relations. *Annual Review of Psychology, 40,* 45-81.

Milliken, F. J. (1987). Three types of perceived uncertainty about the environment: State, effect, and response uncertainty. *Academy of Management Review, 12,* 133-143.

Moon, K.-K. (2018). How does a diversity climate shape the relationship between demographic diversity and organizational social capital in the U.S. federal government? *Public Management Review, 20,* 1246-1264.

Mor Barak, M. E. (2013). *Managing diversity: Toward a globally inclusive workplace.* Thousand Oaks, CA: Sage.

Muthén, L. K., & Muthén, B. O. (1998-2017). *Mplus user's guide*. Los Angeles, CA: Muthén & Muthén.

Nagarajan, N. R., Wada, M., Fang, M. L., & Sixsmith, A. (2019). Defining organizational contributions to sustaining an ageing workforce: A bibliometric review. *European Journal of Ageing, 16,* 337-361.

Nahapiet, J., & Goshal, S. (1998). Social capital, intellectual capital, and the organizational advantage. *Academy of Management Review, 23,* 242-266.

Nelson, E. A., & Dannefer, D. (1992). Aged heterogeneity: Fact or fiction? The fate of diversity in gerontological research. *The Gerontologist, 32,* 17-23.

Ng, T. W. H., & Feldman, D. C. (2008). The relationship of age to ten dimensions of job performance. *Journal of Applied Psychology*, *93,* 392-423.

Ng, T. W. H., & Feldman, D. C. (2012). Evaluating six common stereotypes about older workers with meta- analytical data. *Personnel Psychology*, *65,* 821-858.

Nishii, L. H. (2013). The benefits of climate for inclusion for gender-diverse groups. *Academy of Management Journal, 56,* 1754-1774.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science, 5,* 14-37.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company.* New York, NY: Oxford University Press.

North, M. S., & Shakeri, A. (2019). Workplace Subjective Age Multidimensionality: Generation, Age, Tenure, Experience (GATE). *Work, Aging and Retirement, 5,* 281-286.

Østergaard, C. R., Timmermans, B., & Kristinsson, K. (2011). Does a different view create something new? The effect of employee diversity on innovation. *Research Policy*, *40,* 500-509.

Osterman, P. (1994). How common is workplace transformation and who adopts it? *Industrial and Labor Relations Review, 47,* 173-188.

Parker, S. K., & Andrei, D. M. (2020). Include, individualize, and integrate: Organizational meta-strategies for mature workers. *Work, Aging and Retirement, 6,* 1-7.

Paullin, C. (2014). *The aging workforce: Leveraging the talents of mature employees.* Retrieved from https://www.shrm.org/hr-today/trends-and-forecasting/special-reports-and-expert-views/Documents/Aging-Workforce-Talents-Mature-Employees.pdf.

Pelled, L. H., Eisenhardt, K. M., & Xin, K. R. (1999). Exploring the black box: An analysis of work group diversity, conflict and performance. *Administrative Science Quarterly, 44,* 1-28.

Pennings, J. M., Lee, K., & van Witteloostuijn, A. (1998). Human capital, social capital, and firm dissolution. *Academy of Management Journal*, *41,* 425-440.

Perry, E. L., & Finkelstein, L. M. (1999). Toward a broader view of age discrimination in employment-related decisions: A joint consideration of organizational factors and cognitive processes. *Human Resource Management Review, 9,* 21-49.

Ployhart, R. E., Nyberg, A. J., Reilly, G., & Maltarich, M. A. (2014). Human capital is dead; long live human capital resources! *Journal of Management, 40,* 371-398.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88,* 879-903.

Posthuma, R. A., & Campion, M. A. (2009). Age stereotypes in the workplace: Common stereotypes, moderators, and future research directions. *Journal of Management, 35,* 158-188.

Preacher, K. J., & Selig, J. P. (2012). Advantages of Monte Carlo confidence intervals for indirect effects. *Communication Methods and Measures, 6,* 77-98.

Preacher, K. J., Zyphur, M. J., & Zhang, Z. (2010). A general multilevel SEM framework for assessing multilevel mediation. *Psychological Methods, 15,* 209-233.

Profili, S., Sammarra, A., & Innocenti, L. (2017). Age diversity in the workplace: An organizational perspective. Bingley, UK: Emerald Publishing Limited.

Pytlovany, A. C., & Truxillo, D. M. (2017). Age diversity at work. In N. A. Pachana (Ed.) *Encyclopedia of Geropsychology*. Singapore: Springer.

Rabl, T., & Triana, M. d. C. (2014). Organizational value for age diversity and potential applicants' organizational attraction: Individual attitudes matter. *Journal of Business Ethics, 121,* 403-417.

Randel, A. E., Galvin, B. M., Shore, L. M., Ehrhart, K. H., Chung, B. G., Dean, M. A., & Kedharnath, U. (2018). Inclusive leadership: Realizing positive outcomes through belongingness and being valued for uniqueness. *Human Resource Management Review, 28,* 190-203.

Revelle, W., & Zinbarg, R. E. (2009). Coefficients alpha, beta, omega, and the glb: Comments on Sijtsma. *Psychometrika, 74,* 145-154.

Rhodes, S. R. (1983). Age-related differences in work attitudes and behavior: A review and conceptual analysis. *Psychological Bulletin, 93,* 328-367.

Rietzschel, E. F., Zacher, H., & Stroebe, W. (2016). A lifespan perspective on creativity and innovation at work. *Work, Aging and Retirement*, *2*, 105-129.

Roberson, Q., Holmes IV, O., & Perry, J. L. (2017). Transforming research on diversity and firm performance: A dynamic capabilities perspective. *Academy of Management Annals*, *11,* 189-216.

Rudolph, C. W., Toomey, E. C., & Baltes, B. B. (2017). Considering age diversity in recruitment and selection: An expanded work lifespan view of age management. In E. Parry & J.

McCarthy (Eds.), *The Palgrave handbook of age diversity and work* (pp. 607-638). London, UK: Palgrave-Macmillan.

Salthouse, T. A. (1984). Effects of age and skill in typing. *Journal of Experimental Psychology: General, 113,* 345-371.

Salthouse, T. A. (2009). When does age-related cognitive decline begin? *Neurobiology of Aging, 30,* 507-514.

Salthouse, T. A. (2010). Selective review of cognitive aging. *Journal of the International Neuropsychological Society, 16,* 754-760.

Salthouse, T. A. (2012). Consequences of age-related cognitive declines. *Annual Review of Psychology, 63,* 201-226.

Salthouse, T. A. (2019). Trajectories of normal cognitive aging. *Psychology and Aging, 34,* 17-24.

Schneid, M., Isidor, R., Steinmetz, H., & Kabst, R. (2016). Age diversity and team outcomes: A quantitative review. *Journal of Managerial Psychology, 31*, 2-17

Schultz, T. W. (1961). Investment in human capital. *American Economic Review, 51,* 1-17.

Shaw, J. D. (2011). Turnover rates and organizational performance: Review, critique, and research agenda. *Organizational Psychology Review, 1,* 187-213.

Shaw, J. D., Duffy, M. K., Johnson, J. L., & Lockhart, D. E. (2005). Turnover, social capital losses, and performance. *Academy of Management Journal, 48,* 594-606.

Shaw, J. D., Park, T. Y., & Kim, E. (2013). A resource-based perspective on human capital losses, HRM investments, and organizational performance. *Strategic Management Journal, 34,* 572-589.

Shore, L. M., Chung-Herrera, B. G., Dean, M. A., Ehrhart, K. H., Jung, D. I., Randel, A. E., & Singh, G. (2009). Diversity in organizations: Where are we now and where are we going? *Human Resource Management Review*, *19,* 117-133.

Simons, T., Pelled, L. H., & Smith, K. A. (1999). Making use of difference: Diversity, debate, and decision comprehensiveness in top management teams. *Academy of Management Journal, 42,* 662-673.

Simsek, Z., Veiga, J. F., Lubatkin, M. H., & Dino, R. N. (2005). Modeling the multilevel determinants of top management team behavioral integration. *Academy of Management Journal, 48,* 69-84.

Smith, W. K., & Lewis, M. W. (2011). Toward a theory of paradox: A dynamic equilibrium model of organizing. *Academy of Management Review, 36,* 381-403.

Sturman, M. C. (2003). Searching for the inverted U-shaped relationship between time and performance: Meta-analyses of the experience/performance, tenure/performance, and age/performance relationships. *Journal of Management, 29,* 609-640.

Subramaniam, M., & Youndt, M. A. (2005). The influence of intellectual capital on the types of innovative capabilities. *Academy of Management Journal, 48,* 450-463.

Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strategic Management Journal, 17,* 27-43.

Tajfel, H. (1981). *Human groups and social categories: Studies in social psychology.* Cambridge, UK: Cambridge University Press.

Takeuchi, R., Chen, G., & Lepak, D. P. (2009). Through the looking glass of a social system: Cross-level effects of high-performance work systems on employees' attitudes. *Personnel Psychology, 62,* 1-29.

Takeuchi, R., Lepak, D. P., Wang, H., & Takeuchi, K. (2007). An empirical examination of the mechanisms mediating between high-performance work systems and the performance of Japanese organizations. *Journal of Applied Psychology, 92,* 1069-1083.

Thurow, L. C. (1975). *Generational inequality: Mechanisms of distribution in the U.S. economy.* New York, NY: Basic Books.

Trevor, C. O., & Nyberg, A. J. (2008). Keeping your headcount when all about you are losing theirs: Downsizing, voluntary turnover rates, and the moderating role of HR practices. *Academy of Management Journal, 51,* 259-276.

Truxillo, D. M., Cadiz, D. M., & Hammer, L. B. (2015). Supporting the aging workforce: A review and recommendations for workplace intervention research. *Annual Review of Organizational Psychology and Organizational Behavior, 2,* 351-381.

Tsai, W. (2002). Social structure of "coopetition" within a multiunit organization: Coordination, competition, and intraorganizational knowledge sharing. *Organization Science, 13,* 179-190.

Tsai, W., & Ghoshal, S. (1998). Social capital and value creation: The role of intrafirm networks. *Academy of Management Journal, 41,* 464-476.

United Nations, Department of Economic and Social Affairs, Population Division. (2015). *World Population Ageing 2015* (ST/ESA/SER.A/390).

U.S. Bureau of Labor Statistics (2019). *Household data annual averages.* Retrieved from https://www.bls.gov/cps/cpsaat11b.pdf.

U.S. General Accounting Office (2001). *Older workers: Demographic trends pose challenges for employers and workers* (GAO-02–85). Retrieved from https://www.gao.gov/products/gao-02-85.

van Dalen, H. P., Henkens, K., & Wang, M. (2015). Recharging or retiring older workers? Uncovering the age-based strategies of European employers. *The Gerontologist, 55,* 814-824.

von Bonsdorff, M. E., & Ilmarinen, J. (2013). Continuity theory and retirement. In M. Wang (Ed.), *The Oxford handbook of retirement* (pp. 73-87). New York, NY: Oxford University Press.

Van Knippenberg, D., De Dreu, C. K. W., & Homan, A. C. (2004). Work group diversity and group performance: An integrative model and research agenda. *Journal of Applied Psychology, 89,* 1008-1022.

Waldman, D. A., & Avolio, B. J. (1986). A meta-analysis of age differences in job performance. *Journal of Applied Psychology, 71,* 33-38.

Wall, T. D., Michie, J., Patterson, M., Wood, S. J., Sheehan, M., Clegg, C. W., & West, M. (2004). On the validity of subjective measures of company performance. *Personnel Psychology, 57,* 95-118.

Wang, M., Burlacu, G., Truxillo, D., James, K., & Yao, X. (2015). Age differences in feedback reactions: The roles of employee feedback orientation on social awareness and utility. *Journal of Applied Psychology, 100,* 1296-1308.

Wang, M., Olson, D., & Shultz, K. (2013). *Mid and late career issues: An integrative perspective.* New York, NY: Psychology Press.

Wang, M., & Shultz, K. S. (2010). Employee retirement: A review and recommendations for future investigation. *Journal of Management*, *36,* 172-206.

Wang, M., & Wanberg, C. R. (2017). 100 years of applied psychology research on individual careers: From career management to retirement. *Journal of Applied Psychology*, *102,* 546-563.

Wang, T., & Zatzick, C. D. (2019). Human capital acquisition and organizational innovation: A temporal perspective. *Academy of Management Journal, 62,* 99-116.

Warr, P. (1994). Age and job performance. In J. Snel & R. Cremer (Eds.), *Work and ageing: A European perspective* (pp. 309-325). London, UK: Taylor and Francis.

Warr, P. (2001). Age and work behaviour: Physical attributes, cognitive abilities, knowledge, personality traits, and motives. *International Review of Industrial and Organizational Psychology, 16*, 1-36.

Wegge, J., Jungmann, F., Liebermann, S., Shemla, M., Ries, B. C., Diestel, S., & Schmidt, K. H. (2012). What makes age diverse teams effective? Results from a six-year research program. *Work, 41*, 5145-5151.

Wegge, J., & Meyer, B. (2020). Age diversity and age-based faultlines in teams: Understanding a brezel phenomenon requires a brezel theory. *Work, Aging and Retirement*, *6*, 8-14.

Wegge, J., Roth, C., Neubach, B., Schmidt, K. H., & Kanfer, R. (2008). Age and gender diversity as determinants of performance and health in a public organization: The role of task complexity and group size. *Journal of Applied Psychology, 93,* 1301-1313.

Westlund, H., & Adam, F. (2010). Social capital and economic performance: A meta-analysis of 65 studies. *European Planning Studies, 18,* 893-919.

Wheaton, F., & Crimmins, E. M. (2013). The demography of aging and retirement. In M. Wang (Ed.), *The Oxford handbook of retirement* (pp. 22-41). New York, NY: Oxford University Press.

Williams, K. Y., & O'Reilly, C. A. III. (1998). Demography and diversity in organizations: A review of 40 years of research. *Research in Organizational Behavior, 20,* 77-140.

Wöhrmann, A. M., Fasbender, U., & Deller, J. (2017). Does more respect from leaders postpone the desire to retire? Understanding the mechanisms of retirement decision-making. *Frontiers in Psychology, 8,* 1400.

Wright, P. M., McMahan, G. C., & McWilliams, A. (1994). Human resources and sustained competitive advantage: A resource-based perspective. *International Journal of Human Resource Management, 5,* 301-326.

Youndt, M., & Snell, S. (2004). Human resource configurations, intellectual capital, and organizational performance. *Journal of Managerial Issues, 16,* 337-360.

Yuan, Y. C., Fulk, J., Monge, P. R., & Contractor, N. (2009). Expertise directory development, shared task interdependence, and strength of communication network ties as multilevel predictors of expertise exchange in transactive memory work groups. *Communication Research, 37,* 20-47.

Yuan, Y. C, Monge, P. R., & Fulk, J. (2005). Social capital and transactive memory systems in work groups: A multilevel approach. In K. M. Weaver (Ed.), *Best Paper Proceedings 65th Academy of Management Conference*. Honolulu, HI: Academy of Management.

Zatzick, C. D., & Iverson, R. D. (2006). High-involvement management and workforce reduction: Competitive advantage or disadvantage? *Academy of Management Journal, 49,* 999-1015.

Footnotes

1. The terms "younger employees" and "older employees" are for descriptive purposes only. There is no clear cut-off between younger and older employees.

2. There are 17 dichotomous industry sectors: agriculture, forestry, fishing and hunting; mining, quarrying, and oil and gas extraction; utilities; construction; manufacturing; wholesale trade; retail trade; transportation and warehousing; information; finance and insurance; real estate and rental and leasing; professional, scientific, and technical services; educational services; health care and social assistance; arts, entertainment, and recreation; accommodation and food services; and other services.

Table 1

Fit indices for the three-factor and four-factor models

Models	χ^2	df	$\triangle\chi^2$	CFI	TLI	RMSEA
Four-factor model (i.e., age diversity management, human capital, social capital, and organizational performance)	1288.73	164		.94	.93	.05
Three-factor model combining age diversity management and human capital	3496.52	167	2207.79**	.83	.80	.07
Three-factor model combining age diversity management and social capital	3048.57	167	1759.84**	.85	.83	.07
Three-factor model combining age diversity management and organizational performance	3729.60	167	2440.87**	.81	.79	.07
Three-factor model combining human capital and social capital	2344.89	167	1056.16**	.89	.87	.06
Three-factor model combining human capital and organizational performance	4582.68	167	3293.95**	.77	.74	.08
Three-factor model combining social capital and organizational performance	4336.79	167	3048.06**	.78	.75	.08

Note. * $p < .05$, ** $p < .01$, two-tailed. CFI = Comparative Fit Index; TLI = Tucker Lewis Index; RMSEA = Root Mean Square Error of Approximation.

Table 2

Means, standard deviations, and correlations

Variable	M	SD	1	2	3	4	5	6	7	8	9	10
1. Organizational age	51.23	39.40										
2. Workplace size[1]	4.78	1.36	.28									
3. Percentage of employees under 40	.43	.20	-.21	.02								
4. Percentage of employees between 40 and 50	.29	.14	.07	.02	-.57							
5. Percentage of employees between 50 and 60	.20	.13	.17	-.02	-.68	-.07						
6. Percentage of full-time employees	.83	.24	-.03	-.01	-.08	.07	.09					
7. Union density	.06	.18	.14	.21	-.12	.07	.07	.02				
8. Family business	.28	.45	-.07	-.10	.06	-.02	-.08	.06	-.08			
9. Principal unit	.56	.50	-.04	-.08	.02	-.04	.01	-.06	-.06	.04		
10. Subsidiary with legal identity	.09	.28	-.02	.06	-.05	-.01	.07	.04	.03	-.05	-.35	
11. Head branch	.24	.43	.00	.02	.00	.03	-.02	.03	.01	.02	-.64	-.17
12. Gender diversity	.36	.14	.07	.20	-.02	-.01	.03	.00	.02	-.05	.01	.00
13. Turnover rate	.21	.33	-.12	-.08	.13	-.01	-.14	-.07	-.04	.04	-.04	-.01
14. Age diversity	.61	.13	.24	.20	-.64	.19	.52	.07	.08	-.08	.02	.03
15. Functional diversity	.58	.19	.04	.02	-.15	.04	.12	-.03	.04	-.01	.14	-.11
16. Age-inclusive management	3.90	.71	-.03	-.05	-.08	.07	.02	-.03	-.01	-.04	.03	.00
17. Human capital	3.87	.62	-.01	.00	-.04	-.03	.08	.07	-.03	-.09	.07	-.07
18. Social capital	3.78	.65	.01	-.03	-.03	.03	.01	.03	-.07	-.09	.05	-.02
19. Organizational performance	3.88	.70	-.04	.01	.08	-.01	-.11	.01	-.11	.00	.09	-.05

Note. $N = 3,888$. Correlations with an absolute value greater than .03 are significant at the .05 level, two-tailed. Dichotomous industry sectors are not listed in the table for the purpose of brevity.

[1] A logarithm function was specified for workplace size, because its distribution departed from normality.

Table 2

Means, standard deviations, and correlations (Continued)

Variable	11	12	13	14	15	16	17	18
12. Gender diversity	.01							
13. Turnover rate	.05	-.03						
14. Age diversity	.02	.13	-.13					
15. Functional diversity	.10	.15	-.09	.22				
16. Age-inclusive management	-.03	.02	-.03	.11	.01			
17. Human capital	.01	.07	-.16	.09	.09	.23		
18. Social capital	-.03	.13	-.07	.06	-.04	.28	.57	
19. Organizational performance	-.06	.02	-.13	-.02	.08	.15	.29	.26

Table 3

Mediation model results

Variable	Human Capital		Social Capital		Organizational Performance	
	B	*S.E.*	*B*	*S.E.*	*B*	*S.E.*
Control variables						
Organizational age	.00	.00	.00	.00	.00	.00
Workplace size	-.03	.02	-.04*	.02	.01	.02
Percentage of employees under 40	.54	.35	.59	.38	.05	.41
Percentage of employees between 40 and 50	.19	.34	.38	.37	.02	.39
Percentage of employees between 50 and 60	.41	.42	.29	.45	-.83	.48
Percentage of full-time employees	.27**	.10	.20	.11	-.03	.12
Union density	-.27*	.12	-.37**	.13	-.36*	.16
Family business	-.12*	.05	-.15**	.05	-.04	.06
Principal unit	.15*	.07	.17*	.07	.05	.09
Subsidiary with legal identity	-.06	.09	-.01	.09	-.06	.12
Head branch	.16*	.07	.15*	.08	-.07	.10
Gender diversity	.66**	.17	.96**	.17	-.07	.22
Turnover rate	-.36**	.07	-.28**	.07	-.19*	.09
Agriculture, forestry, fishing and hunting	-.31	.17	-.33	.18	.17	.23
Mining, quarrying, and oil and gas extraction	.14	.13	.13	.14	-.08	.18
Utilities	.44**	.13	.33*	.14	.06	.18
Construction	.48**	.12	.36**	.13	-.12	.16
Manufacturing	.00	.07	.11	.08	.23*	.09
Wholesale trade	-.23	.16	-.12	.17	-.07	.21
Retail trade	-.09	.14	-.16	.15	.18	.18
Transportation and warehousing	.23	.14	.29	.15	.15	.19
Information	-.16	.18	-.29	.19	-.07	.25
Finance and insurance	-.08	.08	-.04	.08	.13	.10
Real estate and rental and leasing	-.13	.22	-.10	.24	-.13	.30
Professional, scientific, and technical services	.38**	.08	.21*	.09	-.11	.11
Educational services	.26**	.09	.21*	.09	-.22	.12
Health care and social assistance	.15*	.07	.11	.08	.05	.09
Arts, entertainment, and recreation	.03	.15	-.12	.16	-.12	.20
Accommodation and food services	.28*	.13	.31*	.14	.42*	.17
Independent variables						
Age diversity	1.00**	.27	1.01**	.29	.02	.33
Functional diversity	-.54**	.17	-.72**	.18	.36*	.18
Age-inclusive management	.22**	.03	.27**	.03	.08*	.04
Mediators						
Human capital					.26**	.04
Social capital					.12**	.04
Intercept	3.69**	.07	3.60**	.08	2.38**	.19
R^2	31.2%		30.0%		17.5%	

Note. $N = 3,888$. * $p < .05$, ** $p < .01$, two-tailed.

Table 4

Moderated mediation model results

Variable	Human Capital		Social Capital		Organizational Performance	
	B	*S.E.*	*B*	*S.E.*	*B*	*S.E.*
Control variables						
Organizational age	.00	.00	.00	.00	.00	.00
Workplace size	-.02	.02	-.03	.02	.02	.02
Percentage of employees under 40	.57	.31	.59	.33	-.13	.42
Percentage of employees between 40 and 50	.08	.29	.23	.32	-.08	.39
Percentage of employees between 50 and 60	.49	.36	.35	.38	-.93	.48
Percentage of full-time employees	.28**	.09	.22*	.10	-.06	.12
Union density	-.19	.11	-.30*	.12	-.39*	.16
Family business	-.08	.05	-.11*	.05	-.05	.06
Principal unit	.13*	.06	.15*	.07	.05	.09
Subsidiary with legal identity	-.04	.08	.02	.09	-.06	.12
Head branch	.12	.07	.11	.07	-.07	.10
Gender diversity	.38*	.16	.67**	.17	-.09	.22
Turnover rate	-.35**	.07	-.27**	.07	-.20*	.09
Agriculture, forestry, fishing and hunting	-.31	.16	-.33	.17	.19	.23
Mining, quarrying, and oil and gas extraction	.06	.13	.06	.14	-.06	.18
Utilities	.22	.13	.10	.13	.10	.18
Construction	.30*	.12	.16	.13	-.11	.16
Manufacturing	-.03	.07	.08	.07	.25**	.09
Wholesale trade	-.26	.15	-.15	.16	-.05	.21
Retail trade	-.12	.13	-.19	.14	.19	.18
Transportation and warehousing	.14	.13	.19	.14	.16	.19
Information	-.16	.18	-.29	.19	-.05	.25
Finance and insurance	-.07	.07	-.03	.08	.14	.10
Real estate and rental and leasing	-.10	.22	-.06	.23	-.13	.29
Professional, scientific, and technical services	.36**	.08	.18*	.08	-.11	.11
Educational services	.23**	.08	.18*	.09	-.22	.12
Health care and social assistance	.09	.07	.05	.08	.06	.10
Arts, entertainment, and recreation	.06	.14	-.10	.15	-.13	.20
Accommodation and food services	.14	.13	.16	.14	.43*	.17
Independent variables						
Age diversity	.69**	.27	.64*	.29	-.32	.35
Functional diversity	-.11	.17	-.29	.18	.31	.19
Age-inclusive management	.25**	.03	.30**	.03	.08*	.04
Interaction term						
Age diversity × Functional diversity	4.23**	.85	4.32**	.93	-2.05	1.08
Age diversity × Age-inclusive management	1.70**	.21	1.84**	.22	.07	.32
Mediators						
Human capital					.27**	.04
Social capital					.13**	.04
Intercept	3.70**	.07	3.62**	.08	2.30**	.20
R^2	35.9%		34.0%		18.7%	

Note. $N = 3,888$. * $p < .05$, ** $p < .01$, two-tailed.

Figure Captions

Figure 1. Hypothesized research model. H abbreviates hypothesis. H3a and H3b are mediation

hypotheses. H5a, H5b, H7a, and H7b are moderated mediation hypotheses.
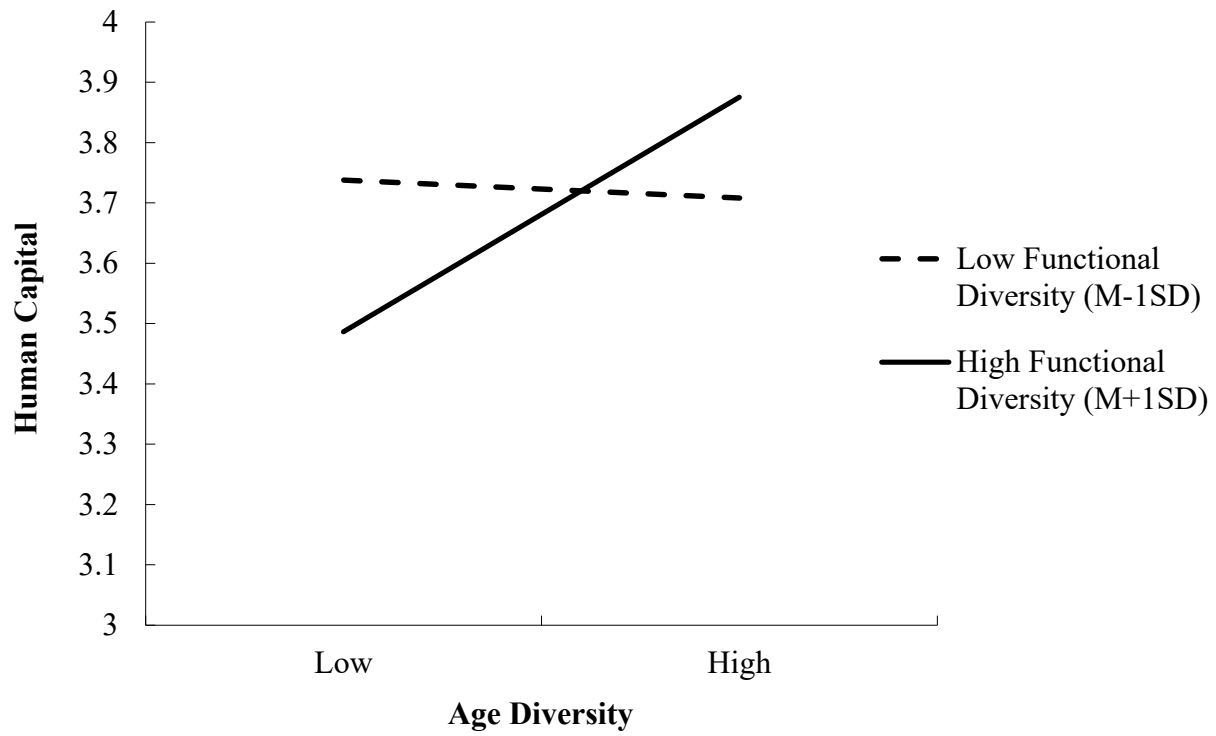
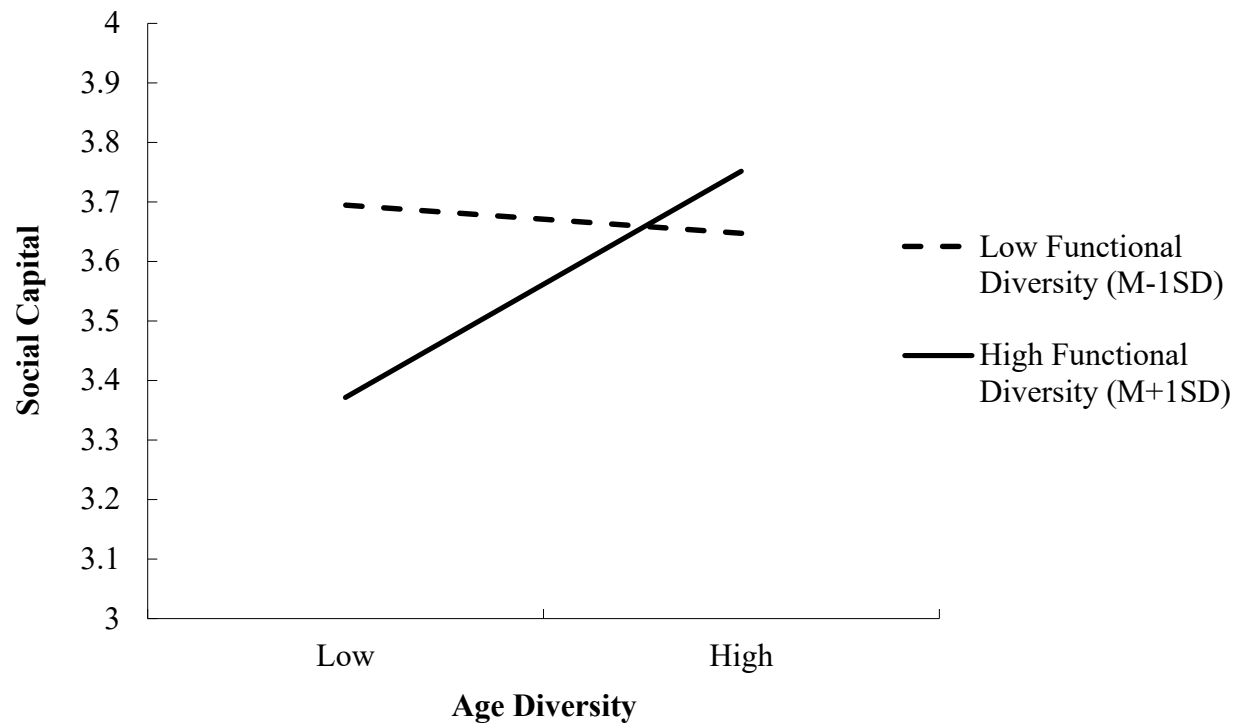*Figure 2*. Interaction of age diversity and functional diversity on human capital.

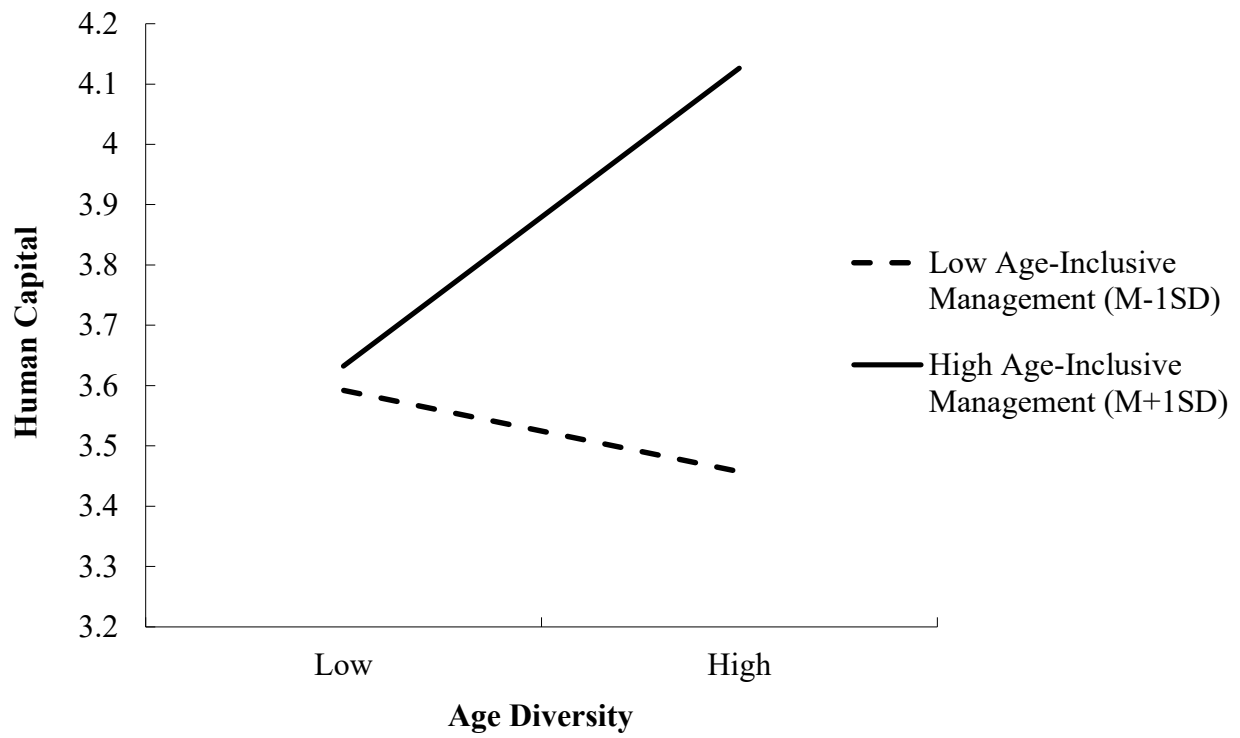*Figure 3*. Interaction of age diversity and functional diversity on social capital.

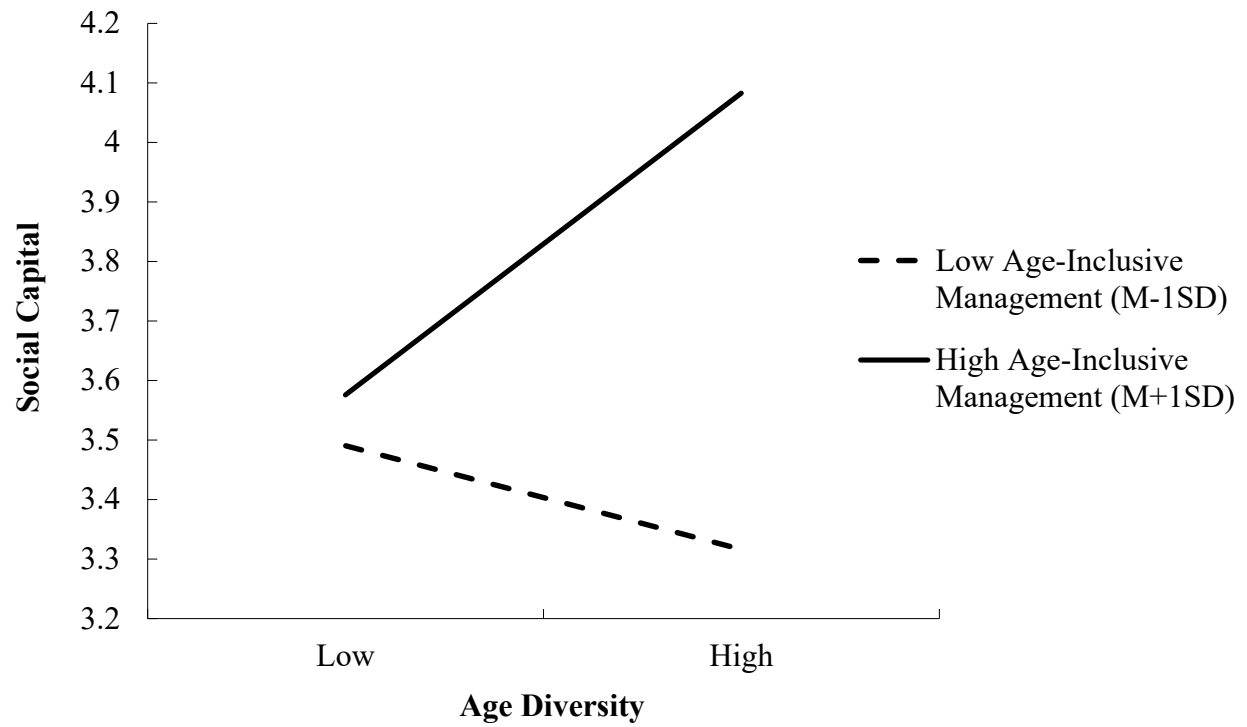*Figure 4*. Interaction of age diversity and age-inclusive management on human capital.

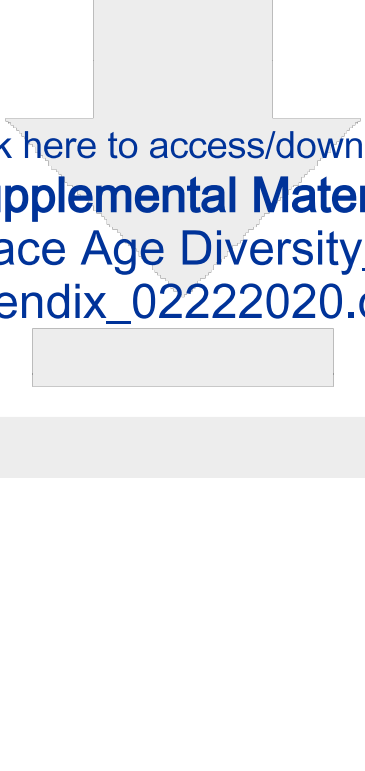*Figure 5*. Interaction of age diversity and age-inclusive management on social capital.
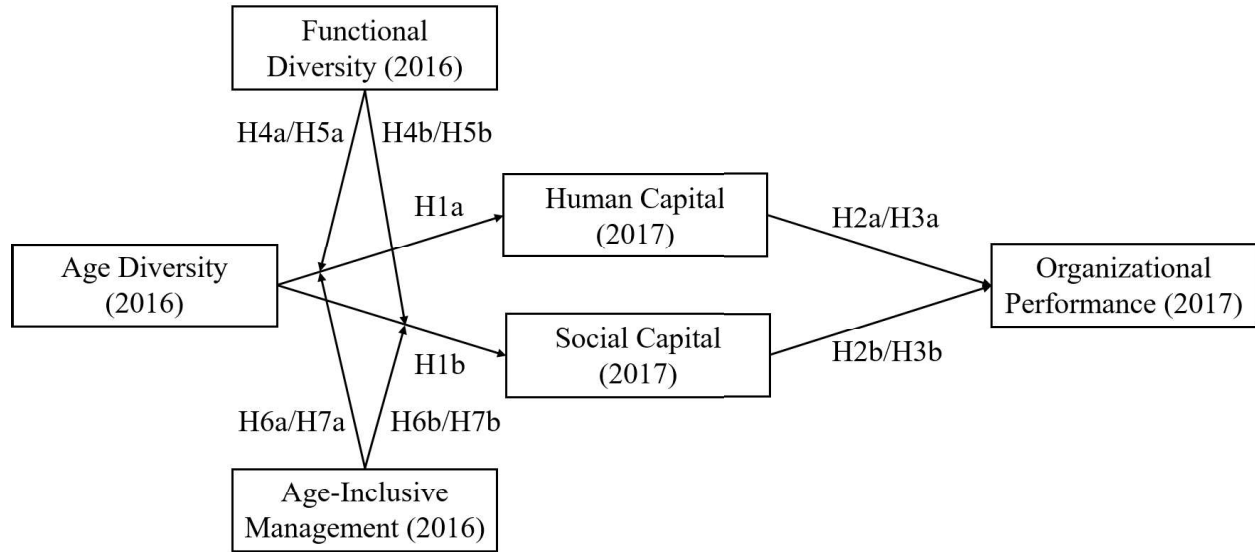
Click here to access/download
Supplemental Material
Workplace Age Diversity_Online
Appendix_02222020.docx