University of Groningen

Different Shades of Discriminatory Effects of Age Stereotypes in the Workplace

Turek, Konrad; Oude Mulders, Jaap; Stypińska, Justyna

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Link to publication in University of Groningen/UMCG research database

OXFORD

Commentary

Different Shades of Discriminatory Effects of Age Stereotypes in the Workplace: A Multilevel and Dynamic Perspective on Organizational Behaviors

Konrad Turek[1,] , JaapOude Mulders [1], and Justyna Stypińska[2]

[1]Netherlands Interdisciplinary Demographic Institute (NIDI-KNAW)/University of Groningen, Lange Houtstraat 19, NL-2511 CV, The Hague, The Netherlands
[2]Freie Universität Berlin, Kaiserswerther Str. 16-18, 14195 Berlin, Germany

Correspondence concerning this article should be addressed to Netherlands Interdisciplinary Demographic Institute (NIDI-KNAW)/University of Groningen, Lange Houtstraat 19, NL-2511 CV The Hague, The Netherlands. Email: k.l.turek@rug.nl

Decision Editor: Donald Truxillo

Age-related stereotypes in the workplace are assumed to hamper the employment of older workers (Bytheway, 2005; Oude Mulders, 2020; Perry & Finkelstein, 1999), yet Murphy and DeNisi (2021) challenged this view mainly due to scarce and inconsistent findings. In this commentary, we argue that a lack of evidence for the relationship between age stereotypes and personnel decisions does not imply a nondiscriminatory work environment. When limiting the interest to the narrow category of "personnel decisions," we ignore other areas where age discrimination occurs and restrict our ability to understand the underlying mechanisms.

This commentary makes three points. First, we argue that detecting and conceptualizing mechanisms of age discrimination can benefit from taking a multilevel organizational perspective. Accounting for the organizational structure and hierarchy helps to understand how discrimination develops in connection to age-related stereotypes and how it affects older employees in direct and indirect ways.

Second, age discrimination should not only be conceived as direct or "hard discrimination" in personnel decisions. Age-related stereotypes can also trigger more subtle practices, such as hearing an ageist comment or being treated with no respect because of age (Harris et al., 2018; Solem, 2016; Stypińska & Turek, 2017). Although less evident, they are common and detrimental for older workers (Rahn et al, 2021; Vickerstaff & Van der Horst, 2021). We discuss how hard, soft, and self-discrimination can be linked to age-related stereotypes through different multilevel mechanisms.

Third, a multilevel organizational perspective opens ways for future research on the dynamics of age discrimination from a complex-system perspective. We argue that computer simulations can provide insights into the complex, multilevel, and mutual interactions at work in which stereotypes and discrimination emerge and change over time.

The Multilevel Organizational Context

Age discrimination is embedded in the organizational context and driven by organizational processes. The multilevel theory of organizational behavior assumes that individuals' attitudes, motivations, and behaviors result from an interplay of personal and organizational factors (Kozlowski & Klein, 2000; Morgeson & Hofmann, 1999). This approach is increasingly emphasized in aging literature, especially for considering how the organizational context constraints and stimulates individual agency in successful aging at work (Henkens, 2022; Rauvola & Rudolph, 2020; Wang & Shultz, 2010; Zacher et al., 2018). However, it received little attention in age discrimination studies (as exceptions see, e.g., Kunze et al., 2011, 2013, 2021).

To understand the variety of discriminatory effects of age-related stereotypes in the workplace, we must first recognize the relevant elements of the organizational environment and their hierarchy (Yaldiz et al., 2017). Stereotypes shared by employers and employees may differently affect personnel decisions, organizational policies, practices, climate, organizational social norms, and team-level interactions. For instance, Kunze et al. (2011, 2013) studied perceived age discrimination as an organization-level variable (age discrimination climate), linking it to organizational policies and managers' age stereotypes. The within-organization hierarchy can be complex, with such levels as the general organizational context, departments, branches, teams, and dyadic relationships (Boehm & Kunze, 2015; Tse & Ashkanasy, 2015). Team-level appears particularly interesting for studying age discrimination because this is where the HR systems designed at the organizational level are implemented and perceived by employees (van Dijk et al., 2017).

In the next step, we should consider how these organizational elements are included in causal mechanisms and distinguish

individual, organizational and cross-level influences, as well as direct, mediated, and moderated effects (Jiang et al., 2012; Johns, 2006). For instance, stereotypes about older workers' low productivity can directly influence early-exit policies or restrict employment opportunities (Posthuma & Campion, 2009; Van Dalen et al., 2010). Organizational climate, on the other hand, can be expected to moderate between individual potentials and behaviors, establishing a cross-level interaction (Kanfer et al., 2013; Shalley et al., 2009). An ageist work climate may constrain the positive effect of older workers' skills on motivation to perform and discourage workers from fulfilling their ambitions (Ostroff et al., 2013; Schneider et al., 2013).

The multilevel framework allows applying a diverse theoretical toolbox of organizational psychology and sociology. Among the more popular approaches are the abilities, motivation, and opportunities (AMO) framework applied to explain how HR systems influence individual and organizational performance (Jiang et al., 2012; Lepak et al., 2006), and social exchange theory that served to explain attitudes to organizations using the reciprocity norm (Takeuchi et al., 2007). The multilevel perspective can also be extended beyond organizations to anchor age discrimination in the workplace in societal culture (Marcus & Fitzsche, 2016), industry and macro-economic context (Stypińska & Nikander, 2018), and institutional contexts (Henkens, 2022; Szinovacz, 2012).

Different Shades of Age Discrimination

The multilevel perspective helps conceptualize three main types of age discrimination and their relation to age-related stereotypes (Figure 1). *Hard discrimination* refers to the top-down and direct effect of policies, personnel decisions, and implemented measures that produce unfair, age-based differentiation and *constrain older workers' careers, access to opportunities, and rewards. This definition is close (but not limited to) to the legal understanding of discrimination as a prohibited practice* (Stypińska & Turek, 2017). Age stereotypes and prejudices may drive hard discrimination by affecting employers' decisions. Yet employers may also uncritically apply perceived group characteristics (older workers) to all group members (i.e., *statistical discrimination*, Phelps, 1972). Although often legally prohibited, hard discrimination may be difficult to prove in personnel decisions where employers have much autonomy and justify discrimination with ostensibly rational arguments (Roscigno et al., 2007). Hard discrimination is especially likely when information is limited, e.g., during résumé screening (Oude Mulders et al., 2018). Even if employers do not recruit based on age, they may discriminate older workers through job requirements that expect skills subject to age stereotypes, such as computer skills (Turek & Henkens, 2020).

Soft discrimination occurs predominantly in the interpersonal sphere of everyday relations and practices. It is a direct contextual effect of culture and climate, which may stimulate ageist attitudes and behaviors of organizational actors. Soft discrimination manifests in ageist language, remarks, jokes, interpersonal mistreatment, or disrespect and is rarely inscribed in the antidiscrimination legislation (Stypinska & Turek, 2017; Truxillo et al., 2015). Often, it operates unconsciously and without wrong intentions (e.g., implicit ageism, Levy & Banaji, 2002). Nevertheless, it can negatively affect older workers' engagement, satisfaction, and security (Harris et al., 2018; Solem, 2016, Vickerstaff & Van der Horst, 2021). Since employers and managers are often aware of legal restrictions to hard discrimination, soft discrimination may be more common and socially acceptable (Rothermund et al., 2021; Stypinska & Turek, 2017). Age stereotypes can drive soft discrimination mainly by affecting social norms and values regarding older workers, which constitute the reference framework for interactions, expectations, and evaluation of behaviors within organizations (Hitlin & Piliavin 2004). This
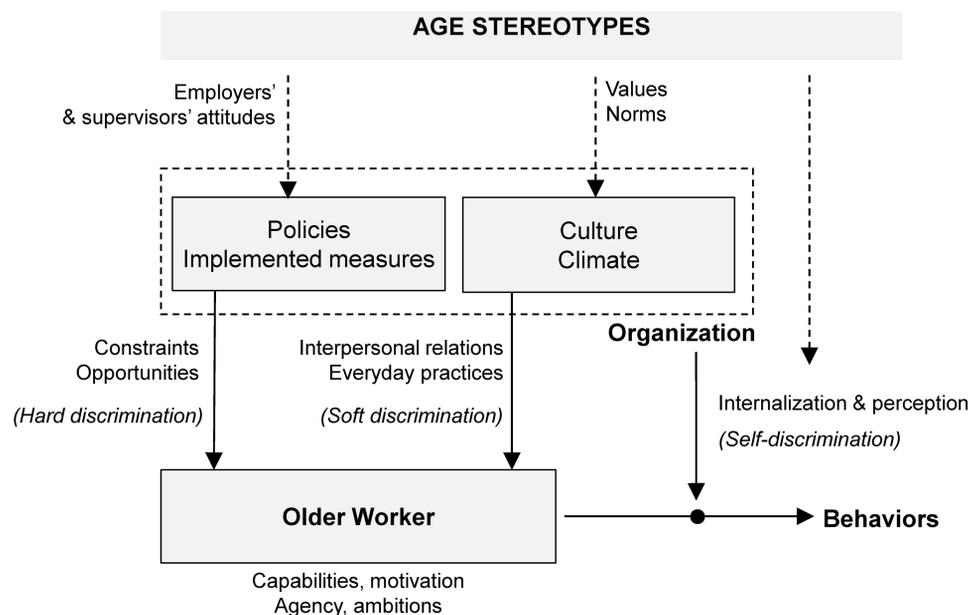
Figure 1. The relationship between age stereotypes and hard, soft, and self-discrimination in the workplace from the multilevel organizational perspective. Age stereotypes can affect (1) policies (via employers' attitudes) that constrain older workers' careers (hard discrimination); (2) culture and climate (via values and norms), which shape everyday relations (soft discrimination); and (3) the way how the organizational context is internalized and perceived by older workers, which can moderate between workers' attitudes and behaviors (self-discrimination).

collectively shared symbolic system, often referred to as organizational culture or climate (Schneider et al., 2013), enforces behaviors and regulates relations between individuals, and as such, contributes to age discrimination (Kunze et al., 2011, 2013).

Finally, *self-discrimination* refers to contextual influences that moderate the relationship between older workers' attitudes and behaviors in a way that constrains individual agency, potentials, and ambitions. Here, age-related stereotypes may affect older people in two ways. First, they can affect the perception of organizational context as (un)supportive for realizing individual intentions and plans. For example, older workers with the potential to continue working beyond retirement age may consider whether the work environment provides them with satisfaction and support (Kanfer et al., 2013). While hard discrimination would directly limit their potential and opportunities in this situation (e.g., no access to training), self-discrimination will constrain workers' agency in proactive and adaptive behaviors (e.g., disengagement from development despite capacities). Second, the salience of age-related stereotypes in society and organizations may lead to their internalization, resulting in compliance with stereotypes and self-sanctioning (Horne & Mollborn, 2020; Vickerstaff & Van der Horst, 2021). For example, strong shared beliefs that older workers do not fit a particular job can be accepted by older workers and discourage them from continuing work (Rahn et al., 2021). Marcus and Fitzsche (2016) explored this area beyond the organizational context and analyzed how societal culture influences age discrimination. The more frequent such beliefs are, the stronger is their internalization and incorporation into personal expectations and self-evaluations (Kornadt & Rothermund, 2012). Such meta-stereotyping (what older people think that others think of older people) has been shown to undermine self-efficacy and confidence, leading to work disengagement and self-discrimination (Finkelstein et al., 2015; Rothermund et al., 2021; Truxillo et al., 2015). Although difficult to detect, self-discrimination may profoundly affect successful aging at work and retirement decisions (Gaillard & Desmette, 2010; Rauvola & Rudolph, 2020; Vickerstaff & Van der Horst, 2021).

The Dynamic Perspective on Age Discrimination in Organizations

Recent literature shows rising interest in going beyond the top-down theoretical approaches and standard analytical models that mostly fail to capture emergent and reciprocal processes (Bak-Coleman et al., 2021; Crossley, 2021; Galesic et al., 2021; Goldenfeld & Kadenaff, 1999). We argue that the multilevel organizational perspective facilitates research into the dynamics and complexity of age discrimination at work. Complex-system theory (Elder-Vass, 2010; Hedstrom, 2005) and computational simulations (Gómez-Cruz et al., 2017; Macy & Willer, 2002) provide frameworks and tools to consider the processes through which ageist organizational context emerges from multilevel and mutual interactions. The complex-system approach to organizations assumes that networks of interdependencies between individuals constitute the context for individuals' actions, and these actions can, in turn, modify the organizational context (Fioretti, 2013). For example, discriminatory social norms that affect retirement decisions in a top-down direction may evolve because people can decide whether to comply (Horne & Mollborn, 2020). Consequently, the form and strength of age stereotypes may change as members of the organization react to the external and organizational contexts.

Computational simulations, such as agent-based modeling (ABM), allow for studying such complex social processes. ABM aims to seek causal mechanisms in social dynamics based on micro-level interactions among adaptive agents who influence each other and react to the environment (Macy & Willer, 2002). ABM can be "calibrated" by empirical data (i.e., specifying key model input parameters, such as agents' and contextual characteristics) so that simulations better mirror the real-life mechanisms. Such experimenting with the hypothesized mechanisms allows for bridging the gap between measurement and theory building and more clarity in theorizing (Crossley, 2021; Galesic et al., 2021). ABM has been used for a variety of topics (Macy & Willer, 2002), including organizational relations (Gómez-Cruz et al., 2017; Wang et al., 2021) and age discrimination in the labor market (Lewkovicz et al., 2009). However, age stereotypes and age discrimination in the workplace are still uncharted territory. Applying computer simulations in the multilevel organizational framework can facilitate the development of theories related to ageist work environments.

Conclusions

Older workers may experience various shades of age discrimination in the workplace, ranging from mild to harmful practices. To distinguish between different forms of age discrimination and understand whether and how they relate to age stereotypes, we should consider the complexity of the organizational environment. The multilevel organizational perspective allows us to study the underlying mechanisms of how stereotypes affect hard, soft, and self-discrimination in direct and indirect ways. Another benefit is that it provides a framework to investigate the complexity and dynamics of these processes from a bottom-up perspective.

References

Bak-Coleman, J. B., Alfano, M., Barfuss, W., Bergstrom, C. T., Centeno, M. A., Couzin, I. D., & Weber, E. U. (2021). Stewardship of global collective behavior. *PNAS*, 118(27), 1–10. doi:10.1073/pnas.202576411

Boehm, S., & Kunze, F. (2015). Age diversity and age climate in the workplace. In P.M. Bal, D. Kooij, & D.M. Rousseau (Eds.), *Aging workers and the employee-employer relationship* (pp. 33–55). Springer. doi:10.1007/978-3-319-08007-9_3

Bytheway, B. (2005). Ageism and age categorization. *Journal of Social Issues*, 61(2), 361–374. doi:10.1111/j.1540-4560.2005.00410.x

Crossley, N. (2021). A dependent structure of interdependence: Structure and agency in relational perspective. *Sociology*, 56(1), 166–182. doi:10.1177/00380385211020231

van Dijk, H., Meyer, B., van Engen, M., & Loyd, D. L. (2017). Microdynamics in diverse teams: A review and integration of the diversity and stereotyping literatures. *Academy of Management Annals*, 11, 517–557. doi:10.5465/annals.2014.0046

Elder-Vass, D. (2010). *The causal power of social structures emergence, structure and agency*. Cambridge University Press. doi:10.1017/CBO9780511761720

Finkelstein, L., King, E., & Voyles, E. (2015). Age metastereotyping and cross-age workplace interactions: A meta view of age stereotypes at work. *Work, Aging and Retirement*, 1(1), 26–40. doi:10.1093/workar/wau002

Fioretti, G. (2013). Agent-based simulation models in organization science. *Organizational Research Methods*, 16(2), 227–242. doi:10.1177/1094428112470006

Gaillard, M., & Desmette, D. (2010). (In)validating stereotypes about older workers influences their intentions to retire early and to learn and develop. *Basic and Applied Social Psychology*, 32(1), 86–98. doi:10.1080/01973530903435763

Galesic, M., Bruine de Bruin, W., Dalege, J., Feld, S., Kreuter, F., Olsson, H., & van der Does, T. (2021). Human social sensing is an untapped resource for computational social science. *Nature*, 595(7866), 214–222. doi:10.1038/s41586-021-03649-2

Goldenfeld, N., & Kadenaff, L. (1999). Simple lessons from complexity. *Science*, 284(5411), 87–89. doi:10.1126/science.284.5411.87

Gómez-Cruz, N. A., Saa, I. L., & Hurtado, F. F. (2017). Agent-based simulation in management and organizational studies: A survey. *European Journal of Management and Business Economics*, 26(3), 313–328. doi:10.1108/EJMBE-10-2017-018

Harris, K., Krygsman, S., Waschenko, J., & Rudman, D. L. (2018). Ageism and the older worker: A scoping review. *The Gerontologist*, 58(2), e1–e14. doi:10.1093/geront/gnw194

Hedstrom, P. (2005). *Dissecting the social: On the principles of analytical sociology*. Cambridge University Press. doi:10.1017/CBO9780511488801

Henkens, K. (2022). Forge healthy pathways to retirement with employer practices: A multilevel perspective. *Work, Aging and Retirement*, 8(1), 1–6. doi:10.1093/workar/waab016

Hitlin, S., & Piliavin, J. A. (2004). Values: reviving a dormant concept. *Annual Review of Sociology*, 30, 359–393. doi:10.1146/annurev.soc.30.012703.110640

Horne, C., & Mollborn, S. (2020). Norms: an integrated framework. *Annual Review of Sociology*, 46, 467–487. doi:10.1146/annurev-soc-121919-054658

Jiang, K., Lepak, D. P., Hu, J., & Baer, J. C. (2012). How does human resource management influence organizational outcomes? A meta-analytic investigation of mediating mechanisms. *Academy of Management Journal*, 55(6), 1264–1294. doi:10.5465/amj.2011.0088

Johns, G. (2006). The essential impact of context on organizational behavior. *Academy of Management Review*, 31(2), 386–408. doi:10.5465/amr.2006.20208687

Kanfer, R., Beier, M. E., & Ackerman, P. L. (2013). Goals and motivation related to work in later adulthood: an organizing framework. *European Journal of Work and Organizational Psychology*, 22(3), 253–264. doi:10.1080/1359432X.2012.734298

Kornadt, A. E., & Rothermund, K. (2012). Internalization of age stereotypes into the self-concept via future self-views: a general model and domain-specific differences. *Psychology and Aging*, 27(1), 164–172. doi:10.1037/a0025110

Kozlowski, S. W. J., & Klein, K. J. (2000). A multilevel approach to theory and research in organizations: Contextual, temporal, and emergent processes. In K. J. Klein, & S. W. J. Kozlowski (Eds.), *Multilevel theory, research, and methods in organizations: Foundations, extensions, and new directions* (pp. 3–90). Jossey-Bass.

Kunze, F., Boehm, S., & Bruch, H. (2011). Age diversity, age discrimination, and performance consequences—A cross organizational study. *Journal of Organizational Behavior*, 32, 264–290. doi:10.1002/job.698

Kunze, F., Boehm, S., & 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. doi:10.1111/joms.12016

Kunze, F., Boehm, S., & Bruch, H. (2021). It matters how old we feel in organizations: testing a multilevel model of organizational subjective-age diversity on employee outcomes. *Journal of Organizational Behavior*, 42(4), 448–463. doi:10.1002/job.2505

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* (Vol. 25, pp. 217–271). Elsevier Science/JAI Press. doi:10.1016/S0742-7301(06)25006-0

Levy, B.R., and Banaji, M.R. (2002). Implicit ageism. In T. D. Nelson (Ed.), *Ageism: Stereotyping and prejudice against older persons*. The MIT Press. doi:10.7551/mitpress/10679.001.0001

Lewkovicz, Z., Domingue, D., & Kant, J.D. (2009). *An agent-based simulation of the French labour market: Studying age discrimination*. European Social Simulation Association Conference 2009, Guilford, UK.

Macy, M., & Willer, R. (2002). From factors to actors: computational sociology and agent-based modeling. *Annual Review of Sociology*, 28(1), 143–166. doi:10.1146/annurev.soc.28.110601.141117

Marcus, J., & Fitzsche, B. (2016). The cultural anchors of age discrimination in the workplace: A multilevel framework. *Work, Aging and Retirement*, 2(2), 217–229.

Morgeson, F. P., & Hofmann, D. A. (1999). The structure and function of collective constructs: Implications for multilevel research and theory development. *Academy of Management Review*, 24(2), 249–265. doi:10.2307/259081

Murphy, K. R., & DeNisi, A. S. (2021). Do age stereotypes predict personnel decisions? The state of the evidence. *Work, Aging and Retirement*, 8(4), 323–330. doi:10.1093/workar/waab019

Ostroff, C., Kinicki, A. J., & Muhammad, R. S. (2013). Organizational culture and climate. In N. Schmitt, S. Highhouse, & I. Weiner (Eds.), *Handbook of psychology: Industrial and organizational psychology* (pp. 643–676). John Wiley & Sons. doi:10.1002/9781118133880.hop212024

Oude Mulders, J. (2020). Employers' age-related norms, stereotypes and ageist preferences in employment. *International Journal of Manpower*, 41(5), 523–534. doi:10.1108/IJM-10-2018-0358

Oude Mulders, J., Henkens, K., Liu, Y., Schippers, J., & Wang, M. (2018). Managers' interview invitation decisions about older job applicants: Human capital, economic conditions and job demands. *Ageing & Society*, 38, 839–864. doi:10.1017/S0144686X16001343

Perry, E. L., & Finkelstein, L. M. (1999). Toward a broader view of age discrimination in the workplace: A consideration of contextual factors and cognitive processes. *Human Resource Management Review*, 9, 21–49. doi:10.1016/S1053-4822(99)00010-8

Phelps, E. S. (1972). The statistical theory of racism and sexism. *American Economic Review*, 62(4), 659–661. http://www.jstor.org/stable/1806107

Posthuma, R., & Campion, M. (2009). Age stereotypes in the workplace: Common stereotypes, moderators, and future research directions. *Journal of Management*, 35(158), 158–188. doi:10.1177/0149206308318617

Rahn, G., Martiny, S. E., & Nikitin, J. (2021). Feeling out of place: internalized age stereotypes are associated with older employees' sense of belonging and social motivation. *Work, Aging and Retirement*, 7(1), 61–77. doi:10.1093/workar/waaa005

Rauvola, R. S., & Rudolph, C. W. (2020). On the limits of agency for successful aging at work. *Industrial and Organizational Psychology*, 13(3), 383–387. doi:10.1017/iop.2020.61

Roscigno, V. J., Mong, S., Byron, R., & Tester, G. (2007). Age discrimination, social closure and employment. *Social Forces*, 86(313), 313–334. doi:10.1353/sof.2007.0109

Rothermund, K., Klusmann, V., & Zacher, H. (2021). Age discrimination in the context of motivation and healthy aging. *Journals of Gerontology B: Psychological Sciences*, 76(Suppl 2), 167–180. doi:10.1093/geronb/gbab081

Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational climate and culture. *Annual Review of Psychology*, 64(1), 361–388. doi:10.1146/annurev-psych-113011-143809

Shalley, C. E., Gilson, L. L., & Blum, T. C. (2009). Interactive effects of growth need strength, work context, and job complexity on self-reported creative performance. *Academy of Management Journal*, 52(3), 489–505. doi:10.5465/amj.2009.41330806

Solem, P. E. (2016). Ageism and age discrimination in working life. *Nordic Psychology*, 68(3), 160–175. doi:10.1080/19012276.2015.1095650

Stypińska, J., & Nikander, P. (2018). Ageism and age discrimination in the labour market: A macrostructural perspective. In L. Ayalon & C. Tesch-Römer (Eds.), *Contemporary perspectives on ageism* (pp. 91–108). Springer. doi:10.1007/978-3-319-73820-8_6

Stypińska, J., & Turek, K. (2017). Hard and soft age discrimination: The dual nature of workplace discrimination. *European Journal of Ageing*, 14, 49–61. doi:10.1007/s10433-016-0407-y

Szinovacz, M.E. (2012). A multilevel perspective for retirement research. In M. Wang (Ed.), *The oxford handbook of retirement* (pp. 152–173). Oxford University Press. doi:10.1093/oxfordhb/9780199746521.013.0070

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(4), 1069–1083. doi:10.1037/0021-9010.92.4.1069

Truxillo, D. M., Finkelstein, L. M., Pytlovany, A. C., & Jenkins, J. S. (2015) Age discrimination at work: A review of the research and recommendations for the future. In A. J. Colella & E. B. King (Eds.), *The oxford handbook of workplace discrimination* (pp. 1–24). Oxford University Press. doi:10.1093/oxfordhb/9780199363643.013.10

Tse, H., & Ashkanasy, N. (2015). The dyadic level of conceptualization and analysis: A missing link in multilevel OB research? *Journal of Organizational Behavior*, 36(8), 1176–1180. doi:10.1002/job.2010

Turek, K., & Henkens, K. (2020). How skill requirements affect the likelihood of recruitment of older workers in Poland: The indirect role of age stereotypes. *Work, Employment and Society*, 34(4), 550–570. doi:10.1177/0950017019847943

Van Dalen, H., Henkens, K., & Schippers, J. (2010). Productivity of older workers: Perceptions of employers and employees. *Population and Development Review*, 36(2), 309–330. doi:10.1111/j.1728-4457.2010.00331.x

Vickerstaff, S., & Van der Horst, M. (2021). The impact of age stereotypes and age norms on employees' retirement choices: A neglected aspect of research on extended working lives. *Frontiers in Sociology*, 6, 686645. doi:10.3389/fsoc.2021.686645

Wang, M., & Shultz, K. S. (2010). Employee retirement: A review and recommendations for future investigation. *Journal of Management*, 36(1), 172–206. doi:10.1177/0149206309347957

Wang, S., Zoethout, K., Jager, W., & Dang, Y. (2021). The dynamical relation between individual needs and group performance: A simulation of the self-organising task allocation process. *Journal of Artificial Societies and Social Simulation*, 24(4), 91–39. doi:10.18564/jasss.4715

Yaldiz, L. M., Fraccaroli, F., & Truxillo, D. M. (2017). Aging workforce issues from a multilevel approach. In: Braddick, O. (Ed.), *Oxford research encyclopedia of psychology* (pp. 1–24). Oxford University Press. doi:10.1093/acrefore/9780190236557.013.22

Zacher, H., Kooij, D., & Beier, M. (2018). Successful aging at work: Empirical and methodological advancements. *Work, Aging and Retirement*, 4(2), 123–128. doi:10.1093/workar/way002