

RESEARCH ARTICLE

It matters how old we feel in organizations: Testing a multilevel model of organizational subjective-age diversity on employee outcomes

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Summary

This study contributes to the emerging literature on age diversity effects at the organizational level of analysis by comparing the role of chronological-age diversity versus subjective-age diversity. We hypothesize a multilevel model in which organizational-level subjective-age diversity is negatively related to bonding social capital within organizations, which, in turn, contributes to heightened employee engagement and lowered turnover intentions. The assumed relationships are tested in a multilevel sample of 96 German small- and medium-sized companies with 16,274 employees participating. We gathered data from four different sources to circumvent common source problems and received support for most of the proposed relationships. Given the potentially detrimental effects of high subjective-age diversity in the workplace, the paper concludes with practical recommendations on how to manage subjective-age diversity in companies proactively.

KEYWORDS

age, diversity, engagement, social capital, subjective age

1 | INTRODUCTION

In almost all developed countries, the demographic change is a reality today and is expected to pick up pace in the years and decades to come (Kulik et al., 2014). The aging and shrinking of populations have an impact not only on health and retirement systems (Peeters & Groot, 2012) but also on economies and organizations (Toossi, 2012). Companies, in particular, are confronted with an overall aging and more age-diverse workforce. In Germany, for example, the workforce participation of employees aged 50 and above more than doubled between 1997 and 2014, while the workforce participation of younger employee age groups remained almost constant (BMBF, 2016). These developments result in a workplace that is more age diverse than ever before. Consequently, companies urgently need knowledge and advice of what these changing workforce age structures imply for

their internal processes and employees as well as organizational-level outcomes.

The literature in the field of management and organizational behavior research has responded to these demographic challenges and produced an increasing number of empirical studies that investigated the consequences of an age-diverse workforce on the organizational level of analysis. Kunze et al. (2011, 2013), for example, reported that an age-diverse workforce is related to increased levels of perceived age discrimination in companies that ultimately lead to lower firm performance. Other research has investigated the direct link between age diversity and performance outcomes (De Meulenaere et al., 2016) or considered the effect of age diversity on organizational innovation (Backes-Gellner & Veen, 2013). All those existing studies have, however, exclusively examined the effect of *chronological-age* diversity (i.e., the distribution of employees'

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chronological age in a given entity) and thereby neglected a potential multidimensional perspective on age diversity in organizations.

This is surprising, as initially inspired from the fields of sociology (Settersten & Mayer, 1997) and gerontology (Montepare, 2009), recent research on the organizational level of analysis has shown that employees' average *subjective* perceptions of age, that is, how old employees perceive to be independent of their chronological age, matter for employees' behavior and that, in the end, subjectively younger organizations show higher performance levels (Kunze et al., 2015). Also, individual-level research has constantly shown that subjective-age perceptions are crucial for important outcomes such as cognitive function (e.g., Stephan et al., 2016), vitality (e.g., Kotter-Grühn et al., 2009), and productivity (Stephan et al., 2013; for a review of this literature, see Kotter-Grühn et al., 2016 and Weiss & Weiss, 2019).

This exclusive focus on chronological age instead of subjective age could also explain the largely inconsistent results regarding the performance implications of age diversity in the workplace (Boehm & Dwertmann, 2015; Boehm & Kunze, 2015). In fact, differences in subjective age might matter more for a firm's level of social cohesion and employees' engagement than differences in their staff's chronological age. Consequently, the main goal of our study is to integrate and extend the currently unconnected literature on organizational age diversity (e.g., De Meulenaere et al., 2016; Kunze et al., 2013) and subjective age in the workplace (e.g., Barnes-Farrell & Piotrowski, 1989; Kunze et al., 2015; Shane et al., 2019; Rudolph et al., 2019) and propose and test a model on the multilevel consequences of subjective-age diversity in organizations. We define subjective-age diversity as the aggregated differences (i.e., standard deviation) of the personal *subjective* age that individual employees within a given entity report.

As our main conceptual framework, we will use social identity (Tajfel & Turner, 1986) and social categorization (Turner, 1985) theory to propose that organization-wide age-based subgrouping processes impair the bonding social capital of organizations, which, in turn, has negative implications for individual employees' engagement and turnover intention. In contrast with the existing literature (Kunze et al., 2011, 2013), we will argue that this lack of bonding social capital is not primarily created by the chronological-age diversity workforce structure but by the much more salient subjective-age perceptions of employees. As a further innovation and contribution to the field and in contrast with the previous literature (De Meulenaere et al., 2016; Kunze et al., 2011, 2013), we will focus in the second part of our model, not on organizational performance as the outcome measure, but on how low levels of bonding social capital trickle down to two relevant individual outcomes. More specifically, we apply job demands–resource (JD-R) theory (Demerouti et al., 2001) to specify an effect of bonding social capital on a positive individual outcome—employee engagement, and job embeddedness theory (Mitchell et al., 2001) to conceptualize an effect on a negative individual outcome—employee turnover intentions. Furthermore, both outcomes have high practical relevance, as engagement often translates directly into higher employee performance (e.g., Salanova et al., 2005),

and turnover intentions lead to actual turnover (Hom & Griffeth, 1995), with often drastically negative business implications (Sagie et al., 2002). By developing and testing a multilevel model of subjective-age diversity, we derive a more fine-grained picture of how differences in age perceptions have an impact on firm and individual-level outcomes within and across firms.

With this research, we provide at least three core contributions to the literature. First, we add not only to the literature on age diversity but also to research on diversity in general by spurring the wider debate (Allen et al., 2007; Hentschel et al., 2013) that diversity perceptions (i.e., subjective-age diversity) are more relevant for organizational processes and outcomes than demographic diversity facets (i.e., chronological-age diversity) that have dominated the empirical diversity research agenda in the previous years (Bell et al., 2010; van Dijk et al., 2012). Based on our predictions and findings, one might speculate that the small and inconsistent effect sizes in the diversity literature (Bell et al., 2010; van Dijk et al., 2012; van Dijk et al., 2017) can at least be partly explained by the negligence of perceived diversity measures.

Second, we also extend the emergent literature on subjective age in the workplace (Armenta et al., 2018; Goecke & Kunze, 2018; Kunze et al., 2015; Rudolph et al., 2019) by showing that not only average subjective-age perceptions matter for organizational outcomes but that the subjective-age diversity is also a pertinent driver of important firm- and employee-level outcomes in organizations. This further indicates that executives and human resource (HR) managers need to be aware of the subjective-age perceptions of their employees when staffing teams, departments, or whole organizations.

Third, we shed more light on the outcomes of age diversity in the workplace. Prior research has mainly concentrated on structural, HR-related consequences of age diversity by showing that chronological-age diversity makes it more likely that employees perceive higher levels of age discrimination through HR and leadership practices (i.e., age-discriminatory behavior regarding job assignments, performance evaluations, or promotion practices) (Kunze et al., 2011, 2013). In contrast, we build upon Putnam's (2000) differentiation between bridging and bonding social capital with the goal to further integrate the diversity literature with work on social capital (Davis, 2014; Kramer, 2006). Specifically, we examine how rising levels of diversity in both chronological and subjective age impair the level of social integration within firms (i.e., their bonding social capital; Carmeli et al., 2009), which, in turn, should negatively affect outcomes at the individual level of analysis (i.e., individuals' engagement and turnover intention). (See Figure 1 for a graphical illustration of our model.)

2 | THEORETICAL BACKGROUND

It is well known in diversity research that diversity can act as a “double-edged sword” (Milliken & Martins, 1996) with the potential to cause positive and negative effects within organizations. Whereas positive effects are mostly attributed to improved processes of information/decision making (van Knippenberg & Schippers, 2007),

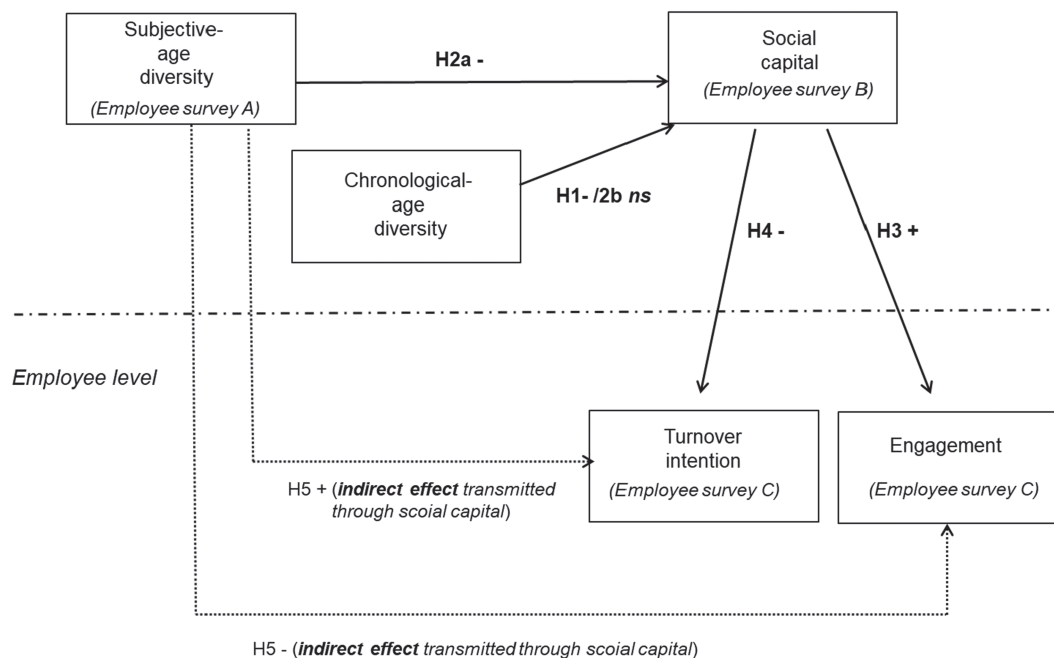


FIGURE 1 Theoretical model for the multilevel relationship between subjective-age diversity and employee outcomes. Data sources in parentheses and italic

negative effects are typically explained by processes of similarity attraction (Byrne, 1971) and social identity/categorization (Tajfel & Turner, 1986; Turner, 1985). Similar effects have been proposed in the social capital literature, which has linked homogeneous groups with bonding social capital, whereas heterogeneous groups were conceptually linked with bridging social capital (Davis, 2014; Kramer, 2006; Putnam, 2000). For the specific case of age diversity, positive results of age-diverse teams or companies might result from heightened bridging social capital, which is expressed through better decision making due to complementary knowledge and competencies of older and younger employees (Boehm & Dwertmann, 2015). On the other hand, age-diverse entities might also be affected by lower bonding social capital, as employees often favor contact with similar-aged colleagues compared with dissimilar-aged colleagues because they have more overlap in terms of interest, career, and life-stages as well as attitudes with coworkers in the same age cohort (Lawrence, 1980, 1988). Further, age might become a salient category for in-group/out-group formation (Tajfel & Turner, 1986), causing age-diverse units to virtually break apart in subgroups of young and old employees who communicate and cooperate less and who might even discriminate against each other with detrimental effects for job attitudes and firm performance (Kunze et al., 2011, 2013).

From an empirical point of view, Boehm and Kunze (2015) conducted a structured review of the literature. They identified 37 published studies that investigated potential effects of age diversity at the workgroup level, at the top management team level, at the branches/decision-making unit level, and at the organizational level as well as within meta-analytical samples. For the organizational level of analysis, the authors identified nine individual studies that investigated

performance, innovation, and age discrimination as outcomes. In line with the “double-edged sword” hypothesis, two studies identified positive relationships of age diversity with performance or innovation (Ilmakunnas & Ilmakunnas, 2011; Li et al., 2011), two found null effects (Göbel & Zwick, 2009; Ilmakunnas et al., 2004), one study identified an inversely U-shaped relationship (Grund & Westergaard-Nielsen, 2008), and four studies reported negative relationships (Backes-Gellner & Veen, 2009; Kunze et al., 2011, 2013; Ostergaard et al., 2011). Further, the most recent work on age diversity, which has not been considered in this review, supports the rather inconsistent nature of the age diversity-outcome relationship (De Meulenaere et al., 2016).

2.1 | Chronological-age diversity and bonding social capital

In order to better understand these conflicting results, some of the studies mentioned above tried to open the “black box of organizational demography” (Lawrence, 1997) and investigated mediators in the age diversity-performance relationship. Building mainly on social identity (Tajfel & Turner, 1986) and social categorization (Turner, 1985) arguments, Kunze et al. (2011, 2013) proposed that chronologically age-diverse organizations are environments prone to perceptions of a *negative age-discrimination climate*. While the authors found empirical support for this HR-focused view, we propose that chronological-age diversity also takes effect through more immediate, interpersonal processes harming the internal social capital (Adler & Kwon, 2002) of organizations. To argue for such a relationship, we

primarily build on Putnam's (2000) differentiation between bridging and bonding types of social capital, which either profit from or are harmed by diversity and related in-group/out-group formation (Davis, 2014; Kramer, 2006). Specifically, we propose that age diversity is related to drops in bonding social capital, defined as "the extent of high-quality relationships among the members of a group that enhances collaboration, cooperation, and trust" (Carmeli et al., 2009, p. 1554).

One of the basic tenets of the social identity approach (Reicher et al., 2010) is that diversity can trigger processes of in-group/out-group formation, which harm the social integration of the collective. Specified for the context of age, we argue that, within age-diverse organizations, there is a higher likelihood that employees form in- and out-groups based on a similar chronological age. For instance, similar-aged colleagues might spend more time together both professionally (e.g., working on joint projects) and privately (e.g., joint sport and leisure activities) as they share more relevant experiences, interests, and motives compared with age-diverse colleagues (Lawrence, 1988; Zenger & Lawrence, 1989). The resulting formation and consequent separation between "young" and "old" employees should almost automatically lead to drops in the social integration of the staff as a whole and perceptions of reduced belonging, understanding, and support between age-based subgroups (Tajfel & Turner, 1986; Turner, 1985). As outlined above, this view is consistent with prior work on bonding social capital, which is fueled by individuals' similarities and weakened by their differences, ultimately leading to "inward looking [networks that] tend to reinforce exclusive identities and homogeneous groups" (Putnam, 2000, p. 23).

In line with prior organizational-level research on age diversity, we assume that these social categorization processes will extend to the organization as a whole through collective processes of socialization (Schneider, 1987) and contagion (Salanova et al., 2005). Therefore, we propose the following hypothesis:

Hypothesis 1. Chronological-age diversity is negatively related to shared perceptions of bonding social capital in companies.

2.2 | Subjective-age diversity and bonding social capital

Subjective age, a crucial construct in gerontology (Stephan et al., 2015), refers to a perception of feeling an age and also adjusting a person's look, behavior, and interests to this perceived age, which is often different from one's chronological age (Barak & Stern, 1986). Subjective age was originally studied among older adults (e.g., Barak & Stern, 1986; Montepare, 2009; Stephan et al., 2013) and relates to health, vitality, and productivity (Montepare, 2009; Stephan et al., 2013). In fact, subjective age often has greater explanatory power than chronological age in illuminating physical, psychological, and social states as well as behaviors (Montepare, 1996). Kunze et al. (2015) studied the role of subjective age in work organizations and demonstrated the impact of average employee subjective age on

firm performance beyond the effects of chronological age. We build upon this work and extend it significantly by investigating the role of *subjective-age diversity*.

As outlined in Hypothesis 1, we propose that, within age-diverse organizations, age-based subgroups might emerge, which are based on mutual experiences, interests, and motives caused by membership in chronologically similar age groups. While this hypothesis gained empirical support in prior large-scale studies (De Meulenaere et al., 2016; Kunze et al., 2011, 2013), we propose that chronological age homogeneity might be a relevant, however imprecise, proxy for a potential similarity in age-based experiences, values, and motives. Jehn et al. (1999) pointed to the need to develop a clearer idea of what demographic diversity (or in this case age diversity) really means: Is it value diversity, informational diversity, both, or neither? In previous studies, researchers might have mistakenly used chronological age as a proxy for shared attitudes, values, and experiences within an age group (Lawrence, 1997). In reality, similar chronological-aged employees can be far more diverse than those proposed in most previous age diversity research (Boehm & Dwertmann, 2015). Supporting this idea, the theory of increased age heterogeneity suggests that, when people become older, they become more heterogeneous from each other. Hence, with growing age, interindividual changes in personality, preferences, inclinations, and work-related motives become more extensive and more relevant for organizations (Bal & Boehm, 2019; Bal et al., 2012; van Lieshout, 2006).

Consequently, although age-based subgroups might emerge within age-diverse organizations, it might be less employees' shared *chronological age* but rather their *similar subjective age* that causes feelings of similarity in terms of interests, values, and motives. For instance, employees who are chronologically close to retirement age might still hold ambitious career goals, including international assignments or further promotions, whereas other employees in this chronological age group might value more free time for social activities or hobbies. Consequently, ambitious 60-year-olds might be more similar in their thoughts and behaviors to colleagues in their 30s or 40s than to colleagues with a similar chronological age. Supporting this argument, studies in the field of gerontology report that subjective-age perceptions relate to personality perceptions and that individuals feeling younger report higher extraversion (Hubley & Hulstsch, 1994) and that increasing subjective age was associated with a steeper decline in extraversion, openness, agreeableness, and conscientiousness (Stephan et al., 2015). It is likely that these differentiated personality changes also translate into differentiated social behaviors of individuals in different subjective age groups. Therefore, a similar subjective age might be a much more nuanced and precise measurement for subconscious values, motives, and attitudes as well as for observable working styles and behaviors compared with a similar chronological age.

Taking this idea one step further, it seems likely that a similar subjective age also forms the basis for more cohesive in-groups, which, in turn, also differentiate and separate themselves more strongly from perceived out-groups (i.e., employees with a different subjective age than the one that their own in-group shares). Getting

back to the example above, career-focused employees in their 50s or 60s with a significantly lower subjective age might, on the one hand, feel particularly attracted to spend time with colleagues who share their orientation toward work, future opportunities, and goal accomplishment (Gielnik et al., 2012; Kunze et al., 2015; Zacher & Frese, 2009). On the other hand, they might think rather disparagingly about chronologically similar employees who feel and demonstrate a higher subjective age (e.g., expressed through less ambitious job goals and related behaviors such as less time spent in the office and for the job). The same feelings and behaviors should apply to individuals who feel older than their chronological age. For instance, as proposed by socioemotional selectivity theory (Carstensen, 2006; Carstensen et al., 1999), they might question the role of work for their life and invest greater resources in more meaningful goals and activities. Also, these individuals seem likely to prefer similar thinking and behaving colleagues with whom they share a base for discussion and emotional support; in consequence, they will develop mental reservation and distance against colleagues feeling and behaving significantly younger. Taken together, in both work-related activities (e.g., when working on assignments) as well as in more private activities (e.g., going for lunch together), employees will favor colleagues of a similar subjective age and perceive less affection, trust, and support toward and from perceived out-group members. Translated to an extreme example, we would expect the strongest lack of bonding social capital in firms where one group of employees feels like 20 and some feel like 70, no matter how chronologically old they are.

In line with prior work on chronological-age diversity (Kunze et al., 2011, 2013), we argue that such subgroup formation and consequent drops in social integration will spread throughout and take place in the whole organization by processes of contagion (Salanova et al., 2005) and socialization (Schneider, 1987). Taken together, we propose that, within organizations, subgroups based on a similar subjective age will emerge. The higher the subjective-age diversity in a given organization is, the higher the likelihood for these subgroup formations and sequential drops in bonding social capital. In contrast, if the diversity in subjective-age perception is low within organizations, such age-based separation's potential should be significantly lower as employees share important work motives and behaviors.

Further, we propose that the relationship between age diversity and bonding social capital will be stronger for subjective age than for chronological-age diversity; thus, chronological-age diversity will lose its predictive power as soon as subjective-age diversity is considered. Stated as hypotheses, we predict the following:

Hypothesis 2a. Subjective-age diversity is negatively related to shared perceptions of bonding social capital in companies.

Hypothesis 2b. When considering subjective-age diversity as an antecedent, chronological-age diversity is no longer significantly related to shared perceptions of bonding social capital in companies.

2.3 | Bonding social capital and employees' engagement

As described above, bonding social capital is an organizational climate variable that reflects the extent of high-quality relationships between members of the organization. We propose that bonding social capital is a central mediating mechanism, explaining how subjective-age diversity affects both employees' levels of engagement and turnover intention. We define engagement following Schaufeli and colleagues who understood it as the "antipode of burnout" and defined it as "a positive, fulfilling work-related state of mind that is characterized by vigor, dedication, and absorption" (Schaufeli et al., 2006, p. 702; Schaufeli et al., 2002).

We primarily build on the JD-R model (Demerouti et al., 2001) to explain how bonding social capital can positively affect engagement. Core to the JD-R model is the notion that employees are confronted with two broad sets of working conditions that cause exhaustion via a straining process (in the case of demands) or contribute to engagement via a motivation process (in the case of resources) (Schaufeli et al., 2009). In this respect, the JD-R model highlights the key role of social resources for employees' engagement (Bakker et al., 2004; Demerouti et al., 2001). The underlying motivational process seems effective in both challenging work situations and those full of opportunities.

For instance, relational resources at work can trigger positive spirals between employees (Fredrickson, 1998), with colleagues cheering each other on, celebrating joint successes, and contributing to a mutual sense of thriving (Spreitzer et al., 2005). On the other hand, organizations with high levels of bonding social capital are also likely to be in places where coworkers are providing emotional and task-related support to each other in case of difficulties or failure. Supporting this view, Oh et al. (2004) proposed that bonding social capital and particularly emotional support between colleagues helps to keep up a group's morale in case of severe problems and setbacks.

Further, from an empirical point of view, there is support for a positive relationship between social resources and work engagement using longitudinal and meta-analytical study designs (e.g., Crawford et al., 2010; Schaufeli et al., 2009; Xanthopoulou et al., 2009). Further, for the specific construct of bonding social capital, Carmeli et al. (2009) showed a positive relationship with vigor, a central component of employees' engagement. In sum, we propose the following hypothesis:

Hypothesis 3. Shared perceptions of bonding social capital are positively related to individual employee engagement.

2.4 | Bonding social capital and employees' turnover intention

Organizations should have a key interest in lowering employees' voluntary turnover, as this negatively affects their performance level and related profits (Dess & Shaw, 2001; Kacmar et al., 2006; Shaw

et al., 2005). We propose that bonding social capital plays a major role in this regard, as it functions like a glue, strengthening the relationship between employees and the firm. To argue for such a negative relationship between social capital and turnover intentions, we mainly build on job embeddedness theory (Mitchell et al., 2001).

The job embeddedness construct refers to three main factors explaining retention, that is, fit, links, and sacrifice. Most important for our research are links, referring to the “formal and informal connections that exist between an employee, other people, or groups within the organization” (Holtom et al., 2006, p. 320). Bonding social capital is an excellent indicator of the number and quality of such links within an organization. Employees perceiving high social capital levels are embedded in a dense net of social relationships within their firm. They have developed close ties with their colleagues and profit from formal and informal support, trust, and exchange of knowledge and information (Carmeli et al., 2009). In addition, they will have developed close personal ties with many coworkers, including friendships. All of these positive resources would be lost, when deciding to voluntarily leave the organization (Holtom et al., 2006; Mitchell et al., 2001).

In contrast, if bonding social capital is low, employees will have much less to lose when looking for a new employer. Their integration within the firm will be lower, and their willingness to leave will be more pronounced, resulting in higher individual turnover (Felps et al., 2009). These considerations are backed up by broad empirical support, demonstrating the negative relationship of job embeddedness and voluntary turnover (e.g., Crossley et al., 2007; Lee et al., 2004; Mitchell et al., 2001). Taken together, we propose the following hypothesis:

Hypothesis 4. Shared perceptions of bonding social capital are negatively related to individual turnover intentions.

2.5 | Mediation hypotheses

Hypothesis 2a predicts a positive relationship of subjective-age diversity with shared perceptions of companies' bonding social capital. Hypothesis 3 predicts a positive relationship between bonding social capital and individuals' engagement. Finally, Hypothesis 4 predicts a negative influence of bonding social capital on employees' turnover intentions within organizations. Together, these hypotheses specify a multilevel model in which subjective-age diversity at the firm level indirectly influences employee-level engagement and turnover intentions by contributing to shared perceptions of a bonding social capital within the firm.

This view aligns with previous findings in the age diversity literature that has introduced drops in social integration as a mediating mechanism between organizational-level age diversity and firm performance (Kunze et al., 2011, 2013). We extend this work by introducing subjective-age diversity as a novel and potentially more precise antecedent, over and above the effects of chronological-age diversity. Also, instead of focusing on structural, HR-induced age-discrimination climate within companies, we investigate the mediating

role of bonding social capital as a more precise measurement of social integration within firms. Finally, by linking firms' collective social capital to employees' engagement and turnover intentions as individual-level outcomes of subjective-age diversity, we develop a real multilevel model on age diversity effects in the workplace. Consequently, we propose the following mediation hypotheses:

Hypothesis 5. Shared perceptions of bonding social capital mediate the indirect relationship between subjective-age diversity and individual employee engagement.

Hypothesis 6. Shared perceptions of bonding social capital mediate the indirect relationship between subjective-age diversity and individual turnover intentions.

3 | METHOD SECTION

3.1 | Sample

Data for this study were collected as part of a larger research and benchmarking study for German companies. Overall, 96 companies voluntarily participated in this study. To be eligible for participation, companies had to be smaller than 5000 employees and located in Germany. As a benefit of their participation, the companies received a detailed benchmarking report about their respective HR practices. Overall, 16,274 employees were surveyed in the present study, resulting in a within-organization response rate of 60%. The average number of respondents per organization was 169.52 ($SD = 209$). The companies originated from four different industry sectors: manufacturing (40%), service (39%), trade (17%), and finance (8%).

To avoid a common method bias (Podsakoff et al., 2012), we collected data from four sources. In each company, an algorithm implemented in the survey software randomly selected 50% of the employees to ask them for assessment of their individual subjective-age perceptions (employee survey A; $n = 8128$; range of respondents per company: 9–639), which were then aggregated as the standard deviation to the organizational level. Second, the remaining 50% of the employees were again randomly split through the survey software algorithm in two halves; in consequence, 25% of all employees in each company answered questions on bonding social capital (employee survey B, $n = 4118$, range of respondents per company: 5–311), and another 25% responded to the questions on the outcome variables—engagement and turnover intentions (employee survey C, $n = 4028$, range of respondents per company: 4–320). Based on this split-sample design, we had different data sources for all our core study variables. We also surveyed the top HR representatives to assess several of the study's control variables (i.e., company size and industry sector).

On average, the participating employees were 40 years old ($SD = 12$) and mostly male (56%). Their perceived subjective age was, on average 5 years lower (35 years) than their chronological age.

3.2 | Measures

3.2.1 | Subjective-age diversity

To measure subjective-age diversity in this study, we created a four-item organizational-level measure. Other studies (e.g., Caudroit et al., 2012; Kunze et al., 2015) have relied on a single item (*how old do you feel independent of your real age*) to measure subjective age. For our study, we extended this measurement and followed the conceptualizing of the “ages of me” (Kastenbaum et al., 1972) and considered subjective age as a multidimensional construct consisting of *feel age* (I feel as though I am ... years old), *look age* (I look as though I am ... years old), *do age* (I do most things at work as though I were ... years old), and *interest age* (my interests at work are mostly those of a ... years old person), in a similar proceeding as Goecke and Kunze (2020). To build a composite measure, we aggregated all four items with their standard deviation on the organizational level of analysis. We then used this measure as the main predictor in the multilevel analyses.

To inspect if this proceeding was appropriate, we undertook several scale validation efforts. First, an exploratory factor analysis with the same data set revealed that the four subjective age items constitute one latent dimension with an eigenvalue of 3.57 and 89% of variance explained. Also, a varimax-rotated solution revealed that all items loaded with an average value of 0.95 on the latent factor of subjective-age diversity. We received similar encouraging values from a separate confirmatory factor analysis (CFA) with a subjective age as a latent factor for the four items in AMOS, which disclosed excellent overall fit indices ($\chi^2 = 11$, $df = 6$; CFI = 0.99; IFI = 0.99; SRMR = 0.01) and also the average loadings (0.93) were sufficient, which is in line with the acceptable CFA measures reported by Goecke and Kunze in a separate sample. Finally, internal consistency values ($\alpha = 0.97$) further confirmed the unidimensionality of the new measure.

To assess each company's diversity, we aggregated the average across the four individual subjective-age items on the organizational level using the standard deviation. For this proceeding, we followed Harrison and Klein (2007) recommendations that theoretical considerations should guide the application of diversity operationalizations. In their seminal paper, Harrison and Klein (2007) recommended the standard deviation as the measure of choice if separation or dispersion should be measured based on social categorization arguments. This seems to fit well with our subjective-age diversity measure and bonding social capital as our central mediating mechanism.

3.2.2 | Chronological-age diversity

In line with other studies on age diversity effects on the organizational level (Kunze et al., 2011, 2013), we measured age diversity by taking the standard deviation of the chronological age of all employees in each company.

3.2.3 | Bonding social capital ($\alpha = 0.94$)

We measured bonding social capital with the four-item scale of Carmeli et al. (2009). A sample item was “I feel close to my colleagues at work.” Individual answers from the randomly selected 25% of the employees were aggregated on the organizational level of analysis. To justify this proceeding, we consulted aggregation measures, such as the $rWG_{(j)M(j)}$ (Cohen et al., 2001), to evaluate the inter-rater agreement and intraclass correlation coefficients (ICC_1 and ICC_2 ; Bliese, 2000) to assess inter-rater agreement and inter-rater reliability. In line with the general recommendation in the literature, we followed the >0.70 rule for the $rWG_{(j)}$ (Lance et al., 2006) to justify aggregation to the organizational level. Furthermore, the ICC_1 should be based on a significant analysis of variance, and the ICC_2 should be higher than 0.50 (Klein & Kozlowski, 2000) to support aggregation. For the bonding social capital measure, all those values were sufficient ($ICC_1 = 0.07$, $ICC_2 = 0.76$; $p < 0.001$, median $rWG_{(j)} = 0.89$).

3.2.4 | Employee engagement ($\alpha = 0.91$)

We measured employee engagement with the nine-item scale by Schaufeli et al. (2006). A sample item was “When I am working, I forget everything else around me.”

3.2.5 | Turnover intention

Employee turnover intentions were measured with a one-item measure in line with prior research (e.g., Côté & Morgan, 2002; Harris et al., 2005). Employees had to answer on a 5-point scale (1 = *never*; 5 = *extremely often/always*) how often they have seriously considered quitting their job in the last 6 months.

3.2.6 | Controls

We controlled for 11 factors on the individual and organizational levels that might also affect our mediation or outcome variables. On the individual level, we controlled for the demographic factors of age and gender that have been linked to turnover intention and engagement (e.g., Ng & Feldman, 2009). Furthermore, we considered perceived physical health (e.g., *overall, how would you rate your health conditions*) of the employees as one main predictor for both turnover intentions and engagement (e.g., Deery et al., 2002).

On the organizational level, we first controlled for company size in terms of numbers of employees as reported by the top HR representative, as other research has shown that company size might relate to various processes and outcomes in companies (Pierce & Gardner, 2004). Second, we inserted the mean values both for subjective age and chronological age in our model, because both have been shown or argued to be associated with company outcomes (e.g., Finkelstein et al., 1995; Kunze et al., 2015). Chronological age

was taken from the demographic information provided by each employee. Subjective age was measured with the same four items used for the subjective-age diversity measure (Kastenbaum et al., 1972). Third, we controlled for two external factors—the environmental dynamism of the company's external environment and the company's ability to attract new employees (labor supply)—as they might also affect internal processes and outcomes in an organization. We gathered the information for both factors from the top HR representative in each company on a 7-point Likert scale. Fourth, we also controlled for gender diversity, assessed through a Blau index, to rule out the alternative explanation that other diversity factors beyond age diversity affect our outcomes. Ultimately, we also controlled for the two main classes of industry (manufacturing and service), as done in other studies conducted at the organizational level (e.g., Dickson et al., 2006).

3.3 | Analytical techniques

Our study hypotheses were tested with the statistical package MPLUS (Muthén & Muthén, 2016). Following the proceeding of Preacher et al. (2010) and applying the MPLUS syntax from their article, we investigated all our hypotheses simultaneously in a 2-2-1 multilevel mediation framework, rather than providing only piecemeal stepwise testing. Furthermore, this approach also allows deriving coefficients for the indirect effects necessary to assess Hypotheses 5 and 6.

4 | RESULTS

Table 1 shows the intercorrelations as well as mean and standard deviation values for the study's constructs on the individual and organizational levels of analysis. As expected, subjective-age diversity is negatively related to social capital ($r = -0.37$; $p < 0.001$). Contrary to our expectations, chronological-age diversity is not related to bonding social capital ($r = -0.07$; ns).

4.1 | Hypotheses testing

Before testing our hypotheses, we calculated ICC_1 values to inspect if our individual dependent measures (engagement and turnover intentions) differ between the different organizations. We found that this was the case for both measures (engagement: $ICC_1 = 0.04$, $p < 0.001$; turnover intentions: $ICC_1 = 0.05$, $p < 0.001$), indicated by a significant ANOVA for both models. Furthermore, we could show that 4% (engagement), respectively, 5% (turnover intentions) of the total variance resides between organizations justifying our multilevel proceeding.

Table 2 illustrates the results of the multilevel analyses. First, Model 1 shows that chronological-age diversity is not significantly related to bonding social capital not supporting Hypothesis 1

($B = 0.00$, ns).¹ In Model 2, we added subjective-age diversity, which turned out to be significantly related to bonding social capital beyond chronological age, supporting Hypothesis 2 ($B = -0.05$, $p < 0.001$, two sided). Models 3 and 4 illustrate the relation of bonding social capital with the individual outcome measures of engagement and turnover intentions. In line with Hypotheses 3 and 4, both the association between bonding social capital and engagement ($B = 0.59$, $p < 0.001$) as well as between bonding social capital and turnover intention ($B = -0.71$, $p < 0.001$) were found to be in the expected direction and significant.

As we found support for the linkage between subjective-age diversity and bonding social capital as well as for the relationship of bonding social capital with both outcome measures, we also inspected for the significance of the indirect effects as proposed by Hypotheses 5 and 6. Supporting both hypotheses, we found a significant indirect relationship of subjective-age diversity mediated through bonding social capital for both the model with engagement as an outcome (indirect effect $B = -0.02$; $SE = 0.01$; $p < 0.01$) and turnover intention as an outcome (indirect effect $B = 0.04$; $SE = 0.01$; $p < 0.0015$).

4.2 | Alternative model test

To further inspect the robustness of our results, we tested several alternative model solutions. First, a no-controls model, in which we replicated our relationships excluding all control variables, produced similar results, indicating that we did not have an issue with control variables biasing our results (Becker, 2005). Furthermore, we tested a model that included the control variables that showed bivariate relationships with any outcome measure in the correlation table. In this model, all proposed relationships remained significant and in the predicted direction. Finally, we also specified a model in which subjective-age diversity was measured by only one item (*how old do you feel independently of your real age*) instead of the multi-item operationalization. Also, in this alternative model, the relationship between subjective-age diversity and bonding social capital remained significant ($B = -0.06$; $p < 0.001$), indicating that the operationalization of our independent measure is not the main driver of the observed relationships.

5 | DISCUSSION

This study investigated the organizational-level consequences of subjective-age diversity. More specifically, we hypothesized that, in

¹In Model 2, when tested in combination with subjective-age diversity, chronological-age diversity turns into a significant effect ($B = .04$, $p < .01$). As subjective-age diversity shows neither a positive correlation with bonding social capital, nor is it significant, when tested separately in a regression analysis, a suppression effect is very likely (Tzelgov & Henik, 1991). In consequence, we are cautious about the validity of this multivariate regression effect of chronological-age diversity.

TABLE 1 Intercorrelations, means, and standard deviations of study variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11
Employee-level variables													
1 Turnover intention	1.92	1.17											
2 Engagement	5.31	1.27	-0.47***										
3 Chronological age	39.75	11.56	-0.09***	0.06									
4 Subjective age	35.07	9.45	0.00	-0.06***	0.88***								
5 Gender	1.45	0.50	-0.04*	-0.07***	-0.08***	-0.12***							
6 Perceived health	4.03	0.81	-0.28***	0.32***	-0.17***	-0.25**	.03**						
Organizational-level variables													
1 Subjective-age diversity	9.44	2.61											
2 Chronological-age diversity	10.67	1.97	0.53***										
3 Social capital	3.89	0.27	-0.37***	-0.07									
4 Company size	300.71	398.51	0.09	0.07	-0.01								
5 Mean chronological age	38.97	3.99	0.31**	0.31**	-0.24*	0.09							
6 Mean subjective age	34.57	3.31	0.47***	0.21*	-0.21*	0.06	0.84***						
7 Environmental dynamism	5.10	1.36	-0.01	-0.16	-0.12	0.04	-0.05	0.01					
8 Labor supply	4.18	1.53	-0.19	-0.11	0.04	0.15	-0.17	-0.14	-0.02				
9 Gender diversity	0.52	0.10	-0.05	-0.06	-0.19	0.03	-0.09	-0.12	0.09	-0.14			
10 Industry manufacturing	0.39	0.49	0.27**	0.17	-0.39***	-0.07	0.24*	0.15	-0.01	-0.42***	0.09		
11 Industry service	0.39	0.49	-0.24*	-0.31**	0.31***	0.09	-0.30**	-0.16	-0.03	0.32**	-0.12	-0.58***	

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$ (two sided).

TABLE 2 Multilevel regression results

Variable	Model 1		Model 2		Model 3		Model 4		
	Social capital as outcome (organizational level)		Social capital as outcome (organizational level)		Engagement as outcome (employee level)		Turnover intention as outcome (employee level)		
	B	SE	B	SE	B	SE	B	SE	
Level 1 (employee level)									
Intercept	γ	4.97	0.45	4.73	0.44	3.73	0.81	4.71	0.99
Controls	Chronological age					0.03***	0.00	-0.01	0.00
	Subjective age					-0.01**	0.01	0.01**	0.00
	Gender					0.14***	0.04	0.08	0.04
	Perceived health					0.51***	0.03	0.02	0.03
Level 2 (organizational level)									
Controls	Company size	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Mean chronological age	-0.01	0.01	-0.03	0.01	0.02	0.02	-0.02	0.02
	Mean subjective age	-0.01	0.02	-0.05***	0.01	-0.05	0.02	0.02	0.02
	Environmental dynamism	-0.02	0.02	-0.02	0.02	-0.05*	0.02	0.01	0.02
	Labor supply	-0.03	0.02	-0.04**	0.02	0.00	0.02	0.01	0.03
	Industry manufacturing	-0.21	0.05	-0.16***	0.05	-0.15	0.07	0.02	0.08
	Industry service	0.05	0.05	0.04	0.05	-0.01*	0.07	0.06	0.08
	Gender diversity	-0.48	0.27	-0.49	0.26	0.23	0.35	0.01	0.35
Chronological-age diversity	0.00	0.01	0.04**	0.01	0.02	0.02	-0.02	0.02	
Main effects	Subjective-age diversity			-0.05***	0.01	0.03	0.02	0.02	0.03
	Social capital					0.62***	0.15	-0.73***	0.14

N (organizational level) = 96; N (employee level) = 16,274.

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

organizations with high subjective-age diversity, employees are likely to perceive a lower bonding social capital due to subgroup formation processes and consequent in-group/out-group disintegration (Kunze et al., 2011, 2013; Tajfel & Turner, 1986). Further, we proposed that potential effects based on subjective-age diversity should be stronger than those triggered by chronological-age diversity. Finally, building on the JD-R framework (Demerouti et al., 2001) and job embeddedness theory (Mitchell et al., 2001), bonding social capital was expected to trigger individual perceptions of engagement as well as turnover intention. Although chronological-age diversity was no significant predictor of social capital, all other hypotheses were supported. We think that these findings contribute to the literature by expanding prior knowledge in at least three ways.

5.1 | Theoretical implications

Our first theoretical contribution concerns the diversity literature in general and the age diversity literature in particular. While prior research has almost exclusively focused on chronological-age diversity (Boehm & Kunze, 2015; De Meulenaere et al., 2016), our study significantly extends the diversity literature by investigating the role of

subjective-age diversity, that is, a perceptual measure of diversity. To our knowledge, our study is the first to research and compare the role of demographic and perceptual measures of age diversity at the firm level of analysis. To date, diversity researchers have mainly relied on objective, demographic measures of diversity (see, e.g., van Knippenberg & Schippers, 2007; van Knippenberg & Mell, 2016), often following the conceptualization by Harrison and Klein (2007).

In this study, we proposed that subjective-age diversity might be a more direct and more precise trigger of many of the processes that are often assumed for (age) heterogeneous entities, that is, processes of similarity attraction (Byrne, 1971) and social identity/self-categorization (Tajfel & Turner, 1986). Our results support this view, as chronological-age diversity was no significant predictor of the proposed lack of social integration in the firm, whereas subjective-age diversity was significantly related to bonding social capital. Consequently, in line with prior findings on the predictive value of perceived diversity (e.g., Allen et al., 2007; Cunningham, 2007; Hentschel et al., 2013), we urge scholars to make more use of such perceptual measures of diversity as a supplement to more traditional approaches. Eventually, such procedures might help to clarify the small and inconsistent effect sizes often obtained in the diversity literature (Bell et al., 2010; van Dijk et al., 2012).

Our second theoretical contribution concerns the emergent literature on subjective age in the workplace. Although subjective age is a flourishing research topic in gerontology (Kotter-Gröhn et al., 2009; Montepare, 2009; Rudolph et al., 2019), the construct has not yet received the attention it deserves in organizational behavior. In times of an intensifying and global demographic change in age (Kulik et al., 2014), research could profit significantly from work going beyond chronological age in studying the effects of aging workforces for organizations (Kooij et al., 2013; Kotter-Gröhn et al., 2016). Our study follows these calls by building upon and extending Kunze et al.'s (2015) work on the role of subjective age for companies in at least two ways. On the one hand, we have refined their measure of subjective age by switching from a less precise one-item measure to a potentially more reliable and valid four-item measure of subjective age. On the other hand, while Kunze et al. (2015) have shown that organizations with a younger mean subjective age demonstrate higher firm performance, our study reveals that a firm's subjective age is also a crucial construct for operationalizing age diversity.

Our third contribution relates to our model's mediator and dependent variables, that is, bonding social capital at the firm level as well as individual employees' engagement and turnover intention. Our focus on bonding social capital helps to shed more light on how subjective-age diversity takes effect, that is, through drops in social integration between employees. Although prior research focused more on structural, HR-related effects of age diversity (e.g., age-discrimination climate), we took a closer look at processes taking place between employees. By doing so, we also strived better to integrate the literature on diversity and social capital. Both kinds of literature argue that heterogeneity can act as a double-edged sword (Milliken & Martins, 1996), explaining positive effects either through increased information-elaboration (van Knippenberg et al., 2004) or bridging social capital (Putnam, 2000), whereas negative effects are mostly attributed to heightened social categorization, that is, lowered bonding social capital. With testing bonding social capital as a mediator at the firm level of analysis, we provided empirical support for the complementarity of these views. In future studies at the firm or network level, it might be worthwhile to also investigate the potentially positive side of heterogeneity by testing bridging social capital as a mediator or outcome of (subjective) age diversity.

Finally, by focusing on engagement and turnover intention, we shed light on two individual-level outcomes, which seem to be affected by high subjective-age diversity and a lack of bonding social capital in the workplace. These findings extend prior firm-level studies, mostly focused on organizational performance as an outcome (e.g., Backes-Gellner & Veen, 2013; Göbel & Zwick, 2009; Ilmakunnas et al., 2004), potentially due to a lack of employee-level data. Consequently, our multilevel study helps broaden the view on firm-level age diversity relationships with important employee-focused outcomes. In addition, our findings support Leana and van Buren's (1999, p. 548) argumentation that the existence of social capital makes employees perceive an agreement between individual and organizational goals,

allowing them to act as "good agents" with pronounced levels of engagement and low turnover intention. Taken together, we hope that our work helps to better integrate the comparably separated literature streams on age diversity, social capital, and work stress as well as withdrawal.

5.2 | Practical implications

Many corporate leaders and HR specialists have understood that active management of the demographic change with its rising retirement ages, shortage of skilled labor, and increasing age diversity of the workforce is a crucial necessity to secure the competitiveness of their firms (Dychtwald et al., 2004; Truxillo & Fraccaroli, 2013). Our study's results may support them in these endeavors. First and foremost, corporate leaders should be aware of the fact that subjective-age diversity bears certain risks for their firms. In this regard, we share the view of Kulik (2014, p. 130), who noted that she is "always a little embarrassed" to confess to HRM professionals that the business case for diversity is only one side of the coin and that diversity can come at some costs, including lower bonding social capital, lower employee engagement, and higher turnover intention. However, our study also points to a powerful and feasible solution to deal with this dilemma. As our results indicate, subjective-age diversity might be more relevant for performance outcomes than chronological-age diversity. Consequently, companies should regularly assess the subjective-age perceptions of their workforce and identify departments with comparatively large spreads among the workforce's age perceptions. Compared with chronological-age diversity, which can only be altered by recruitment or dismissal of certain employee groups (e.g., by introducing early retirement schemes), subjective-age perceptions and the resulting subjective-age diversity might be modifiable through much lighter corporate interventions. As we know from gerontological research, subjective-age perceptions often widely deviate from chronological age numbers in almost all countries across the globe (Barak, 2009). Also, gerontological research has theorized (Montepare, 2009) and even manipulated individuals' subjective-age perceptions (Stephan et al., 2013). For the workplace, only preliminary evidence exists through which factors subjective-age perceptions of employees might be altered. For instance, as Kunze et al. (2015) have shown, organizations could try to improve employees' perceptions of the value of their individual work goals in relation to their own ideals or standards (Spreitzer, 1995), as this work-related meaningfulness is a trigger of an altered subjective age in the workplace. Such work-meaningfulness could be promoted via special workshops, communication tools, or leadership behavior. Additionally, Goecke and Kunze (2020) and Armenta et al. (2018) recently reported that negative work events, such as negative emotions and perceived stress, increase subjective-age perceptions. Companies might also be able to implement health and stress management systems that reduce such negative events and enable more uniform distribution of subjective age among their workforce.

5.3 | Limitations and future research directions

Although this study profits from numerous methodological strengths (e.g., four independent data sources for all study variables and a large multilevel data set), several limitations should be considered when interpreting the study's findings. First, our study is based on a cross-sectional design, which prevents us from drawing final conclusions about causality. Although we tried to provide convincing theoretical arguments for the order of causality, future research should strive to use longitudinal research designs. Further, quasi-experimental research designs (Shadish et al., 2002) in which participating organizations are randomly or post hoc assigned to treatments (e.g., interventions trying to reduce subjective-age diversity within firms) might allow a causal linkage to be established for the relationships observed in our study.

A second limitation of our work concerns the generalizability of its findings concerning the cultural environment in which the study was conducted. Although our sample is based on surveys in 96 organizations, they were all small- and medium-sized German companies. As we know from existing research on the aging workforce (e.g., Chiu et al., 2001), the cultural background in which an organization is operating may influence the findings. Future studies might, therefore, want to replicate our findings in other cultural settings, such as Asia or North America. Moreover, readers should keep in mind that our study only included small- to medium-sized firms with no firm having more than 5000 employees. To include companies above that size might further improve the generalizability of the present findings.

Despite these limitations, our study opens multiple interesting avenues for upcoming research. First, future studies might, for example, try to put more focus on the antecedents of subjective-age diversity at the organizational level of analysis. Although increased work-meaningfulness might be a good start in this regard, there should be further relevant antecedents. For instance, van Woerkom et al. (2016) have pointed to the potential of perceived organizational strength used to reduce employees' absenteeism, even under high workload conditions. Such perceived strength use, that is, employees' joint feeling that their organization values and uses their talents in the best possible way, might also be a promising enabler of lowered subjective-age perceptions. In addition, leadership behavior might be a trigger of lower subjective age as well as lower subjective-age diversity. More specifically, inclusive leadership (e.g., operationalized by a low leader-member exchange differentiation; Nishii & Mayer, 2009) might help to show all employees, independent of their chronological age, how they can contribute to organizational functioning and how important they are for the firm. This appreciation of their talents and contribution might help reduce their subjective age and conflicts triggered by subjective-age diversity within the firm.

Additionally, although we provided theoretical reasons based on JD-R and job embeddedness theory for their selection in this study, engagement and turnover intentions are not the only possible outcome measures affected by bonding social capital. One exciting aspect might be, for example, to consider if employees show voice or silence behavior (i.e., withholding vs. expressing ideas, information, and

opinions; Dyne et al., 2003), in firms characterized by high versus low (subjective) age diversity. Such employee behavior should also be relevant for firm-level innovation, another factor that has not been considered in organizational age diversity studies. It should get more attention to learn more about the potential benefits of age diversity structures for organizations.

6 | CONCLUSION

This study is a first attempt, to the best of our knowledge, to enrich and complement the literature on age diversity in the workplace by analyzing the role of subjective age. In line with our hypotheses, we found support for the assumption that differences in employees' subjective age are a better predictor of drops in social integration and related social capital than differences in chronological age. Building on a large multilevel data set, we could further investigate the individual-level consequences of lowered social capital, that is, decreased engagement and higher turnover intentions. Taken together, our findings imply that organizations are well advised to assess the subjective-age composition of their personnel critically and to intervene in cases of high disparity and separation actively. By doing so, they can foster employees' engagement and attachment to the firm and enhance organizational effectiveness, independent of their firms' chronological age structure.

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