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Age diversity, age discrimination climate and performance consequences—a cross organizational study

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Summary

This paper deals with the emergence of perceived age discrimination climate on the company level and its performance consequences. In this new approach to the field of diversity research, we investigated (a) the effect of organizational level age diversity on collective perceptions of age discrimination climate that (b) in turn should influence the collective affective commit ment of employees, which is (c) an important trigger for overall company performance. In a large scale study that included 128 companies, a total of 8,651 employees provided data on their perceptions of age discrimination and affective commitment on the company level. Information on firm level performance was collected from key informants. We tested the proposed model using structural equation modeling (SEM) procedures and, overall, found support for all hypothesized relationships. The findings demonstrated that age diversity seems to be related to the emergence of an age discrimination climate in companies, which negatively impacts overall firm performance through the mediation of affective commitment. These results make valuable contributions to the diversity and discrimination literature by establish ing perceived age discrimination on the company level as a decisive mediator in the age diversity/performance link. The results also suggest important practical implications for the effective management of an increasingly age diverse workforce. Copyright © 2010 John Wiley & Sons, Ltd.

Introduction

Vivid terms like the ''demographic time bomb'' (Tempest, Barnatt, & Coupland, 2002, p. 487) or the impending ''age quake'' (Tempest et al., p. 489) describe one of the key challenges for most developed countries today: Simultaneously shrinking and aging populations resulting from low birth rates and increased longevity. These factors also impact a country's workforce as a lack of skilled junior employees, combined with the potential rise of the legal retirement age, forces companies to retain older, more experienced personnel, (e.g., Dychtwald, Erickson, & Morison, 2004; Tempest et al.). Already today, just over half of the United States' 147 million-member workforce is 40 years old or older and, until 2016, the number of workers age 25 54 will rise only slightly (2.4 per cent), while the

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workers age 55 64 are expected to climb by 36.5 per cent (U.S. Bureau of Labor Statistics, 2008). The same is true for Germany where, from 2020 on, the employees aged 55 64 will become the largest age demographic in the workforce (Destatis, 2006).

As a consequence of these demographics, a growing age diversity has become part of many organizations. As we know from research on other demographic diversity categories, such as gender or ethnicity, diversity rarely has an unambiguous effect but is a ''double-edged sword'' (Horwitz & Horwitz, 2007, p. 988; for an overview, see Jackson, Joshi, Erhardt, 2003; Van Knippenberg & Schippers, 2007). In this regard, age diversity is not different: Some studies have reported positive effects on performance (e.g., Kilduff, Angelmar, & Mehra, 2000), while others have found either no significant effects (e.g., Bunderson & Sutcliffe, 2002; Simons, Pelled, & Smith, 1999) or negative effects (e.g., Ely, 2004; Leonard, Levine, & Joshi, 2004; Timmerman, 2000; West, Patterson, Dawson, & Nickel, 1999; Zenger & Lawrence, 1989).

The reason for these mixed results may be traced back to researchers' neglect of possible mediators and moderators in the relationship between age diversity and outcomes in the studies on organizational demography (e.g., Lawrence, 1997).

The construct of perceived age discrimination climate

The construct of perceived age discrimination climate may play a decisive role in this regard. Butler (1969) was among the first to define ageism as ''a process of systematic stereotyping and discrimination against people because they are old'' (p. 22). Today, the concept of ageism (or age bias) tends to be conceptualized more broadly, referring to potential prejudices and subsequent discrimination against any age group, including bias and unfairness toward employees on the grounds of being too young, as well as too old (Palmore, 1999; Duncan, Loretto, & White, 2000; Snape & Redman, 2003).

Perceived and actual age discrimination are major issues in the corporate world: In fiscal year 2009, the U.S. Equal Employment Opportunity Commission (2010) received over 22,700 charges of age discrimination, and many major lawsuits related to age discrimination have been filed and won with verdicts up to US$11 million (James & Wooten, 2006). Germany, where our sample originates, has had legislation prohibiting discrimination in the workplace since 2006. This new law costs companies in Germany Euro 1.75 billion through more costly recruiting procedures, changed structures and processes, and lawsuits in the first year after it came into effect (Hoffjan & Bramann, 2007).

In order to analyze and structure the different forms of age bias, we employed the meta-framework of Fiske (2004). Finkelstein and Farrell (2007) built upon Fiske's ''tripartite view of bias,'' adapting it for the special case of age bias. They differentiated among three dimensions of age bias by classifying ''stereotyping'' as the cognitive component, ''prejudice'' as the affective component, and ''discrimination'' as the behavioral component. With our focus on discrimination, we target the behavioral component of age bias. However, our conceptualization of age discrimination differs from that in prior work (e.g., Finkelstein and Farrell; Finkelstein, Burke, & Raju, 1995) with regard to two aspects of the issue: First, we understand age discrimination as unfair, age-related treatment against *any age group*, not only against older members of the group. Second, we conceptualize age discrimination as an organizational-level variable that refers to the aggregate member perceptions about the organization' age related treatment of different age groups.

In a first step, such employee perceptions may develop on basis of certain interpersonal processes and events between employees and their colleagues or supervisors. For example, an employee might feel treated unfairly by his or her supervisor on the basis of his or her age. Likewise it seems possible that employees feel certain forms of discrimination with regard to organization wide systems or processes, e.g., with regard to the firm's human resource (HR) system. Employees who experience such

age-related forms of discrimination by their colleagues, their supervisors, or by organizational systems might form perceptions that age discriminatory behavior is present in their firm. In a second step, such individual perceptions of age-discriminatory behavior may be amplified through interaction and exchange with others to form an organizational level phenomenon. As such, age discrimination climate is an emergent construct that reflects group members' shared perceptions (Kozlowski & Klein, 2000) of the fairness or unfairness of organizational actions, procedures, and behavior towards different age groups (e.g., regarding job assignments, promotions, performance evaluations, or leadership behavior).

We are particularly interested in members' *perceptions* of the age discrimination climate because perceived discriminatory practices are as much a problem for organizations as actual discrimination since ''employees' beliefs, whether or not they are consistent with reality, affect their behaviors'' (Ensher, Grant-Vallone, & Donaldson, 2001, p. 53; see also Mor Barak, Cherin, & Berkman, 1998), as well as their decisions to file equal-opportunity lawsuits and related litigation (Sanchez & Brock, 1996).

The role of perceived age discrimination climate in the diversity/performance link

Antecedents and outcomes of perceived discrimination climate in companies have received only little attention in the extant literature so far. One exception is the discussion of the relational and organizational demography framework (e.g., Riordan, Schaffer, & Stewart, 2005; Tsui & Gutek, 1999), which predicts that higher demographic similarity in the workplace leads to greater perceptions of support and fairness, while heightened levels of dissimilarity or diversity may lead to perceptions of discriminatory treatment (e.g., Avery, McKay, & Wilson, 2008), building on theoretical reasoning from social identity theory (Tajfel & Turner, 1986), self-categorization theory (Turner, 1987), and the similarity-attraction-paradigm (Byrne, 1971). Going beyond those theories, we integrate other literature streams from the diversity and ageism literature, such as career timetables violations (Lawrence, 1984) and prototype matching (Perry, 1994), to explain how organizational-level age-group composition might impact perceived age discrimination climate. To our knowledge, our study is among the first to explore such a compositional age-diversity model at the organizational level of analysis.

We also focus on potential outcomes of a climate of perceived age discrimination. While there is strong evidence suggesting that gender- and sexuality-based discrimination negatively affects individuals, groups, and whole organizations (Corning & Krengal, 2002; Gutek, Cohen, & Tsui, 1996; Mays & Cochran, 2001), the research on the effects of age discrimination is less well developed (Redman & Snape, 2006). We strive to contribute to this direction of research by building upon work from scholars (e.g., Hassell & Perrewe, 1993; Redman & Snape, 2006; Snape & Redman, 2003) who have described the impact of age discrimination on employees' affective states, including self-esteem, job satisfaction, job involvement, and organizational citizenship behavior. We analyze how an increasing age discrimination climate leads to decreased levels of collective affective commitment which, in turn, negatively affects company performance.

In sum, the present study is an attempt to test an integrative model of the age diversity/performance link, with a focus on the mediating role of age discrimination climate. In doing so, we make valuable contributions to two streams of literature. First, our research brings diversity research to a new level by investigating age diversity as an organizational-level antecedent. In addition, we also introduce perceived age discrimination climate as a new mediator in the age diversity/performance relationship to shed more light on the ''black box of organizational demography'' (Lawrence, 1997). Second, with regard to the field of ageism, we want to establish perceived age discrimination as an organizational-level construct and demonstrate the counterintuitive positive link between age diversity and perceived age discrimination climate.

Theory and Hypotheses Development

Age diversity and perceived age discrimination climate

While an increase in age diversity has become an organizational reality in most corporations, its potential effects on age discrimination, commitment, and performance are not yet fully understood. Several scholars have proposed that an increase in age diversity at the workplace may lead to lower levels of discrimination, arguing with a familiarization to older workers in an increasingly aging workforce (Chiu, Chan, Snape, & Redman, 2001; Finkelstein et al., 1995; Hassell & Perrewe, 1995). Furthermore, for other diversity categories (e.g., gender, ethnicity) some scholars have tended to reason that increasing diversity should lead to a more positive diversity climate as employees notice a growing workplace heterogeneity and infer that the organization values diversity (e.g., Kossek & Zonia, 1993; Kossek, Markel, & McHugh, 2003).

While these arguments may be accurate, we propose a different (i.e., positive) relationship between increasing levels of age diversity and increasing levels of perceived age discrimination climate. First, increasing age diversity in companies tends to differ from increasing gender diversity because, in most cases, age diversity is not actively fostered or managed by the firms (e.g., through affirmative action programs) but is a direct result of the demographic change in western economies (e.g., Dychtwald et al., 2004; Tempest et al., 2002), and thus less accompanied by active diversity-management programs. Second, different theoretical arguments imply a positive relationship between increasing age diversity and increasing levels of perceived age discrimination climate in the workplace. All of these arguments assume a negative effect of growing age diversity on members' social integration, i.e., a weakened psychological linkage toward striving for common goals (Harrison, Price, & Bell, 1998). In the following section, we analyze those rationales in more detail, drawing on arguments from four theoretical perspectives: The similarity-attraction paradigm, the social identity and self-categorization theory, research on career timetables, and prototype matching.

As a first theoretical argument the *similarity-attraction paradigm* (Byrne, 1971; Riordan & Shore, 1997) proposes that individuals prefer to affiliate with persons whom they perceive to be similar to themselves based on demographic characteristics, including age. (Avery et al., 2008; McPherson, Smith-Lovin, & Cook, 2001; Tsui, Egan, & O'Reilly, 1992). Several authors have argued that such personal ties and attraction foster cooperation in teams and workgroups (e.g., Chattopadhyay, 1999, Hobman, Bordia, & Gallois, 2004, Pelled, Xin, & Weiss, 2001). Lawrence (1988, p. 313) referred to such effects when she explained that employees of similar age ''share comparable experiences and therefore develop like attitudes and beliefs'' that, in turn, foster communication and cooperation. These comparable experiences stem from both historically generated similarities (e.g., graduating and starting a job during the boom of the ''New Economy'') and from similar stages in private and family lives that same-aged colleagues tend to reach simultaneously (e.g., being newly married, having young children, being near to retirement, etc.) (Lawrence, 1980). We believe that such processes of homophily are not limited to teams and workgroups but can also take place at the organizational level. For example, similar aged peers in different teams or departments might prefer to go to lunch together or pursue common social activities inside and outside the workplace, rather than with younger or older colleagues from their own units. In sum, the dissociation between younger and older employees might be stronger than that between employees of different units or departments. Employees that are either younger or older than such a cohesive age group might infer that the reason for such behavior (i.e., less intensive contact with colleagues of different ages, not being invited to joint activities, etc.) is their age, and generate perceptions of age discriminatory behavior at the workplace.

As a second theoretical argument, the idea of the development of age-based subgroups within an organization is also supported by *social identity* (Tajfel & Turner, 1986) and *self-categorization theory* (Turner, 1987) which suggest that individuals tend to classify themselves and others into certain groups on the basis of dimensions that are personally relevant for them, such as the demographic categories of gender, race, or age. As a consequence, individuals tend to favor members of their own group (in-group) at the expense of other groups (out-groups) (Turner, 1987; Tajfel & Turner, 1986), against which they tend to discriminate. In the organizational context, a large number of such group memberships may exist simultaneously.

While age has the potential to become a relevant category for classification and formation of subgroups (e.g., young employees, middle-aged employees, and older employees) (Avery et al., 2008; Ensher et al., 2001; Finkelstein et al., 1995, Kearney & Gebert, 2009), whether the subgroups actually develop seems to depend on the organizational context. Growing heterogeneity could play a key role in this process since an increase in age diversity can heighten the salience (or importance) of age as a category for classification and identification. As in a group of men, gender is unlikely to be a salient category, age can only become a relevant criterion for distinction when there is some age diversity in the organization. In other words, when an organization that had been largely homogenous in terms of age distribution (e.g., consisting mainly mid-aged and older employees) gradually becomes more age-heterogeneous (e.g., by hiring more younger graduates for management positions), the importance attached to membership in one age group of employees or another should increase.

The third theoretical argument related to an increase in age discrimination climate in companies due to raising levels of age diversity is derived from the concept of *career timetables* (Lawrence, 1984, 1988) which assumes that clear age norms develop within an organization concerning which hierarchical level an employee should reach by a given age. While those employees who are ''on schedule'' (who are promoted as quickly as their same-aged peers) and those ahead of schedule (who are promoted more quickly than their peers) face few problems in the way of discrimination, employees behind schedule often struggle with lower work satisfaction (Lawrence, 1984) and tend to receive lower performance ratings and development opportunities (Cleveland & Shore, 1992; Lawrence, 1988; Tsui, Porter, & Egan, 2002).

Demographic changes and growing age diversity within organizations is likely to produce situations in which such age norms are violated more often and more employees fall behind schedule. For example, a rising number of older employees who stay in the organization until the legal retirement age will have to deal with significantly younger supervisors and might perceive that as a violation of the classic career timetable as more experienced employees have to report to organizational newcomers (Shore & Goldberg, 2005). Older employees might also feel behind schedule compared to their young supervisors and perceive certain forms of age discrimination such as lower performance and promotability ratings (Shore, Cleveland, & Goldberg, 2003; Tsui et al., 2002).

Also for younger employees, age norms might be violated more often, if for instance a lack of middle-aged managers within an organization suddenly improves promotion expectations for young managers (Lawrence, 1988). After the best of these young managers are promoted to fill the gaps, promotion chances for younger managers drop again to normal levels. Until employee perceptions re-adjust, younger workers who were not promoted might feel a certain disillusion and a violation of age norms because they cannot develop their careers as quickly as their peers, and a negative attitude toward middle-aged and older managers who are ''in the way'' might develop.

Finally, a similar, yet distinct, line of argumentation can be derived from the concept of *prototype matching* (Perry, 1994; Perry & Finkelstein, 1999), which suggests that an employee's age is often compared to the age of a ''prototypical'' job holder, where certain kinds of jobs are considered jobs for younger workers (with traits and skills like being energetic and being able to adapt to change quickly), while other jobs are more suitable for older employees or are age-neutral because of their reliance on

steadiness and corporate knowledge (Cleveland & Landy, 1987; Perry, 1994; Perry & Bourhis, 1998). As in the case of career timetables, we suggest that an organization-wide increase in age diversity will lead to an increase in perceived misfits between job holders and job-age prototypes, where older employees work in ''young-type jobs'' with apparently high demands regarding pro-activity and stress-handling such as distribution and customer service, where they might be exposed to different forms of perceived age discrimination from both younger colleagues and supervisors (''Is he/she really able to keep up with us in this kind of job?''). On the other hand, younger employees might have to work in more ''old-type jobs'' that call for a lot of experience, such as higher management functions. Just like older employees in young-type jobs, younger employees in old-type jobs might also face certain forms of perceived age discrimination from peers, supervisors, and their employees (''Isn't he/she a bit young for this kind of job?'').

In sum, we presented theoretical and empirical evidence stemming from different streams of literature such as the *similarity-attraction paradigm, social identity, and self-categorization theory,* as well as theories on *career timetables* and *prototype matching*. Taken together, we assert that it is theoretically plausible to build a model in which higher levels of age diversity on an organizational level trigger perceptions of organization-wide age discrimination climate.

Thus, we propose:

H1: Higher levels of age diversity will be positively related to respondents' perceptions of age discrimination climate within companies.

Perceived age discrimination climate and collective affective commitment

One key attitudinal state of employees is their affective commitment toward the organization, which was defined by Meyer and Allen (1991) as the ''the employee's emotional attachment to, identification with, and involvement in the organization'' (p. 67). Affective commitment has been shown to be of high importance for organizations because it increases employees' acceptance of organizational goals, their willingness to exert effort on behalf of the organization, and their desire to remain with the organization (Meyer & Allen, 1997; Mowday, Porter, & Steers, 1982).

Several authors have shown that, in addition to individual commitment, collective forms of commitment may evolve within an organization (Kirkman & Rosen, 1999; van der Vegt & Bunderson, 2005). Following prior research by González-Romá, Peiró, and Tordera (2002), we also argue with collective perceptions of affective commitment and aggregate employees' commitment scores at the organizational level of analysis.

While a potentially negative impact of perceived age discrimination climate on members' collective commitment makes intuitive sense, various theoretical approaches also support such a relationship. First, social exchange theory suggests that members' perceptions of a supportive and fair exchange relationship between the organization and themselves is a necessary precondition for the development and preservation of high levels of affective commitment (Meyer & Allen, 1997; Shore & Wayne, 1993). Consequently, ''commitment develops as the result of the experiences that satisfy employees' needs'' (Meyer & Allen, 1991, p. 70). A perception of age discrimination climate is a clear violation of such an equitable give-and-take relationship, which is why it should negatively affect employees' emotional attachment to the organization, as well as their willingness to contribute. Hassell and Perrewe (1993) showed such a decline in attachment to the organization for members who perceived age discrimination in the workplace.

Second, employees' attitudes toward their employers are dependent on their perceptions of whether their own opportunities and treatment by the organization are equal to those of other groups of employees (Gutek et al., 1996). Snape and Redman (2003) argued in this regard that individuals who feel that they have suffered from unfair, age-related treatment are likely to develop a ''sense of being under-valued by the organization and its members'' (p. 80). In turn, such members can be expected to

show decreasing levels of motivation to act on behalf of the organization. Tougas and Veilleux (1989) referred to such processes as feelings of ''collective relative deprivation'' where ''individuals feel upset about the position of their group'' within the larger organization (p. 122). This may lead to an emotional withdraw from an organization when employees feel that members of their own group are treated in an unfair and discriminative manner, as shown for gender subgroups (Gutek et al.). It is likely that such feelings of collective deprivation are also transferable to the context of perceived age discrimination, where the group of younger or older employees perceive age discrimination against their own age group and, consequently, exhibit a collective drop in their level of affective commitment. On the basis of this evidence, we suggest:

H2a: Higher levels of perceived age discrimination climate will be negatively related to respondents' collective affective commitment towards companies.

H2b: The relationship between age diversity and respondents' collective affective commitment is mediated through perceived age discrimination climate.

Collective affective commitment and company performance

Decreasing levels of collective commitment might become a serious problem for companies since research has proposed a direct link between organizational commitment and organizational performance (Meyer, Paunonen, Gellatly, Goffin, & Jackson, 1989; Meyer, Becker, & Vandenberghe, 2004; Meyer, Becker, & Van Dick, 2006). The theoretical rationale behind this relationship is the understanding of commitment as being ''a force that binds an individual to a course of action that is of relevance to a particular target'' (Meyer & Herscovitch, 2001, p. 301). Especially for employees showing high levels of affective commitment, a distinct willingness to contribute to organizational goals and, hence, to organizational performance has been assumed (Meyer, Paunonen et al.; Meyer, Becker, & Vandenberghe; Meyer, Becker, & Van Dick). Compared to individuals showing continuance or normative commitment (Meyer & Allen, 1991), such employees stay within an organization because they want to (Meyer, Becker & Van Dick). Giving their services wholeheartedly to the organization and performing well above the minimum required for retention, employees with high levels of affective commitment should become a driver of organizational productivity and performance (Ostroff, 1992).

The relationship between affective commitment and performance has also been investigated empirically. However, most research has focused on the effect of affective commitment on job performance, rather than on its effect on organizational performance (e.g., Meyer, Stanley, Herscovitch, & Topolnytsky, 2002).

On the organizational level of analysis, research on the affective commitment/performance link is scarce. An exception is the study of Ostroff (1992), which found a significant positive correlation between collective attitudinal commitment and organizational performance in 298 schools in terms of performance criteria such as academic achievement, student behavior, and administrative performance. We believe that such an effect is transferable to our research question. Thus, we propose:

H3a: Higher levels of collective affective commitment will be positively related to organizational performance.

H3b: The relationship between perceived age discrimination and organizational performance is mediated through collective affective commitment.

Figure 1 gives an overview of all hypothesized relationships.

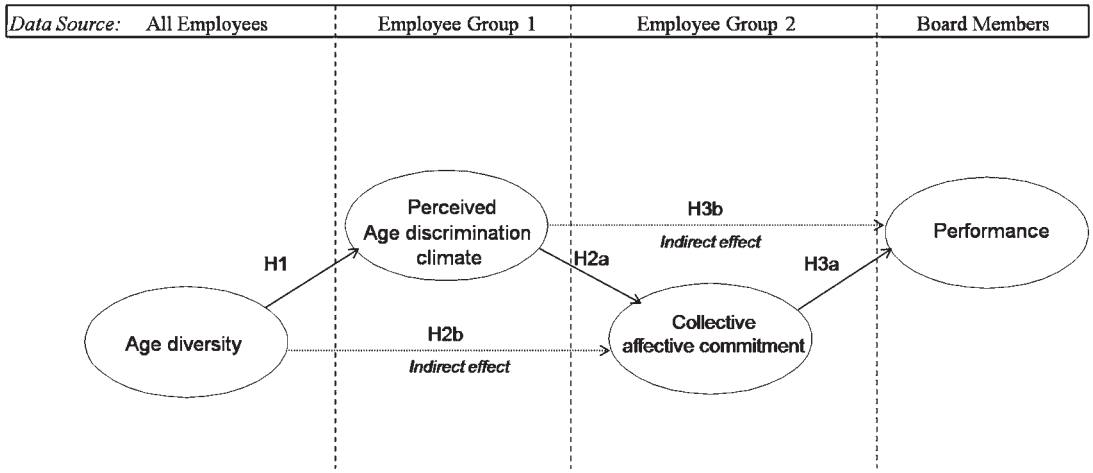

Figure 1. Conceptual model

Method Section

Sample

Data for the present investigation were collected between March and June 2008 as part of a larger study in cooperation with an agency in Germany that specializes in benchmarking small to medium-sized enterprises. Initially, the agency solicited participation from 164 organizations based on the criteria that the organizations (a) were located in Germany and (b) did not exceed 5000 employees. Each organization was promised a detailed technical benchmarking report in return for their participation. Of the 164 organizations initially contacted, 36 did not participate or failed to provide sufficient data, resulting in an organizational level response rate of 81 per cent ($n = 128$). Participating organizations represented companies from a variety of industries, including services (53 per cent), manufacturing (28 per cent), trade (13 per cent), and finance and insurance (6 per cent), and ranged in size from 10 to 3333 employees (*median* = 156). Eliminating organizations with 1000 or more employees ($n = 9$) and those with 20 or fewer employees ($n = 2$) did not change the pattern of results, so all sample organizations were used in hypotheses testing.

In order to improve equivalence of data collection, standardized procedures were employed across all organizations. Data were collected in three steps. First, general information on the participating organizations (organization size, industry affiliation, and so on) was gauged through a key informant survey completed by the organizations' HR executives or other members of their top management teams. Answers to this key informant survey were required in order to confirm organizations' participation in the study.

Second, employee survey data were collected to obtain information on the focal study variables. Participating organizations sent a standardized email invitation to all employees through their HR departments (if applicable) or through a top management team member's email address. The email described the study's purpose and provided a link to a web-based survey hosted by an independent third

party. A paper version of the questionnaire was provided to employees who had no web access. Based on an algorithm programmed in the survey website, respondents were randomly directed to one of four versions of the survey, thereby implementing a split-sample design (Rousseau, 1985; for similar approaches, see Dickson, Resick, & Hanges, 2006; Erdogan, Liden, & Kraimer, 2006). To alleviate concerns about common-source bias (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003), age discrimination and affective commitment were measured in two different versions of the employee surveys. All survey versions were translated to German by professional translators following a double-blind back-translation procedure to ensure semantic equivalence with the original English items (Schaffer & Riordan, 2003). Respondents were assured full anonymity.

In total, 18 269 employees chose to participate in the survey. The average within-organization response rate was 65 per cent (*standard deviation* = 23 per cent). Our study used only the responses from those employees who completed the first and second version of the survey ($n = 8651$), because these parts included our study variables. The other two versions included items that were used for other research projects. The algorithm effectively distributed participating employees among the four versions of the survey, yielding 4,574 respondents for the survey including affective commitment and 4,077 responses for the survey including age discrimination. Individual respondents were more heavily represented by males (54 per cent) than females (39 per cent), although 8 per cent chose not to indicate their gender. Respondents belonged to different age groups with a majority in the middle age group of 31 51 (60 per cent), followed by 27 per cent in the 16 30 age group and 13 per cent in the over-50 group. Average tenure rate at the companies was eight years. Participants came from all major divisions and hierarchical levels of their organizations, with 2 per cent in top management, 11 per cent in middle management, 10 per cent first-line supervisors, and 70 per cent employees without leadership responsibility. Seven per cent provided no answer about their employment level.

To account for a potential non-response bias we compared the age and gender demographics of our sample with data from the working population we sampled, as provided by the HR representatives. We discovered no substantial difference in the composition. Nevertheless, we additionally reran our analysis excluding all companies with response rates <30 per cent ($n = 9$). This did not change our pattern of results, which indicates a very low probability of a nonresponse bias in our study.

In a third step, members of the companies' executive boards were provided with a separate questionnaire that mainly targeted company performance information. This procedure was applied following the idea that executive board members should be the best information source regarding company performance issues. Within the participating companies, 1 11 members of the companies' executive boards participated, with an average response rate of 69 per cent from board members.

Box 1 Research context

The companies

Most of the participating companies belonged to the category of small and medium-sized companies in Germany. In Germany, 99.7 per cent of all companies belong to this class, and they employ 70.6 per cent of all employees; therefore, they are often described as the ''backbone'' of the German economy. Many of these companies, despite being comparatively small, are among the world market leaders in their fields because of their tight specializations, especially in the field of engineering. Participating companies came from all parts of Germany, although many were from the southern regions, where many of the most successful small and medium-sized businesses are located. All companies had participated in a contest designed to find Germany's best employers within the sector of small and medium-sized businesses.

The environment

During the time of the survey (March through June 2008) and in the preceding five years, the economy in Germany experienced constant growth rates of around 3 per cent. The implications of the current international financial and economic crises were not relevant to most of the companies at that time. Along with the high growth rates, the employment rate in Germany was showing strong growth, resulting in some shortage of labor for the small and medium-sized companies and a good deal of competition for the most talented people. The age structure was supposed to change drastically due to the demographic change. Current projections expected the average age to rise by two years until 2020 and the age group 50 65 to become the largest subpopulation till that date (Destatis, 2006). Age discrimination was also an increasing issue for the German and European companies. For example, a recent representative survey by the European Commission (2009) found 58 per cent of the respondents indicating that age discrimination be widespread in the working world.

Measures

Unless otherwise noted, a seven-point response format (1 = *strongly disagree*; 7 = *strongly agree*) was used for all measures.

Age diversity

Our age diversity measure was calculated out of the individual employee responses. In our operationalization of age diversity, we followed Harrison and Klein (2007) in that the conceptualization of a specific diversity dimension should determine its operationalization. Following our prior theoretical argumentation, diversity in our study constitutes separation rather than disparity or variety (Harrison & Klein, 2007). Thus, we applied the standard deviation to gauge age diversity in companies. This measure is most often applied if theoretical arguments are proposed concerning social identity, similarity-attraction, or attraction-selection-attrition theory, as it is the case in our study (Harrison & Klein).

Perceived age discrimination climate

Perceived age discrimination climate was measured using four items from a scale developed by Abraham (1993) and recently applied by Robson and Hanson (2007). These items delineated several occasions that could be source of potential age discrimination in the workplace (e.g., performance assessment, career opportunities, allocations of tasks, professional and personal development). As a fifth item, we added perceived leadership behavior as a source of possible age discrimination, since we have suggested that leadership behavior is a frequent source of discrimination. A referent-shift composition approach (Chan, 1998) was used to assess the age discrimination climate on the company level. The exact wording of the questions, together with their descriptive statistics, is provided in Table 1.

A confirmatory factor analysis (CFA) showed that all items loaded on a single factor and exhibited sufficient model fit properties ($x^2 = 11.638$, df = 5; CFI = 0.99, TLI = 0.99, RMSEA = 0.10). We focused on the Comparative Fit Index (CFI) and the Tucker Lewis Index (TLI) to assess the overall model fit because of simulation studies that found these indices to perform best, especially in cases of sample sizes smaller than 200 (e.g., Sharma, Mukherjee, Kumar, & Dillon, 2005). Commonly used cutoff values for a reasonable fit are >0.95 (e.g., Hu & Bentler, 1998). Additionally we also report the Root Mean Square Error of Approximation (RMSEA) as common practice in many SEM papers. However, this index should be interpreted with caution, since it tends to over reject models with sample

Table 1. Means and standard deviation for the perceived age discrimination climate and affective commitment measures

	Item		Item *M*	Item *SD*
Perceived Age Discrimination Climate				
1	Age discriminatory behavior regarding job assignments exists in our company		2.09	0.62
2	Age discriminatory behavior regarding opportunities for individual promotion exists in our company		2.24	0.76
3	Age discriminatory behavior regarding performance evaluation exists in our company		2.17	0.72
4	Age discriminatory behavior regarding opportunities for personal and professional development of employees exists in our company		2.24	0.72
5	Age discriminatory behavior in the daily leadership of the seniors exists in our company		2.02	0.63
	Cronbachs α	0.98		
Affective Commitment				
1	Working at this company has a great deal of personal meaning to me		5.66	0.45
2	I feel a strong sense of belonging to this company		5.41	0.57
3	I would be happy to work at this company until I retire		4.88	0.59
4	I think that I could easily become as attached to another organization as I am to this one (R)		4.01	0.59
	Cronbachs α	0.94		

Note: *N* 128.

size below 200 (Chen, Curra, Bollen, Kirby, & Paxton, 2008; Sharma et al., 2005; Hu & Bentler, 1999) and also depends on the number of variables in the model (Kenny & McCoach, 2003). Thus, we decided to set the cutoff value for a still acceptable model at <0.10 (e.g., Browne & Cudeck, 1993).

To empirically justify the aggregation and to support the assumptions of the referent shift composition model (Chan, 1998), we calculated intra-class correlation coefficients (ICC_1 and ICC_2; Bliese, 2000) and the average deviation index as an inter-rater agreement ratio ($AD_{M(J)}$; Burke, Finkelstein, & Dusig, 1999). For the ICC_1, values that are based on a significant one-way analysis of variance are generally acceptable. For the ICC_2, values of more than 0.60, are usually considered sufficient (Bliese, 2000; Chen, Mathieu, & Bliese, 2004; Kenny & la Voie, 1985). The $AD_{M(J)}$ has several advantages over the r_{wg} (James, Demaree, & Wolf, 1984) inter-rater agreement index. First, no modeling of a random null response distribution is required; only an *a priori* specification of a null response range of inter-rater agreement is preconditioned. Second, estimates in the metric of the original scale are provided, which allows for a more direct conceptualization and assessment of inter-rater agreement (Burke et al., 1999). As cutoff criteria for the AD, we followed the c/6 rule (the number of response options for an item divided by 6; in our case, 1.17) proposed by Burke and Dunlap (2002). The results indicate support for the aggregation of the age discrimination scale on the company level ($ICC_2 = 0.09$, $ICC_2 = 0.76$ $p < 0.001$, $AD_{M(J)} = 1.05$). Internal consistency estimates at the organizational level were $\alpha = 0.98$.

Affective commitment

We used four items adapted from Allen and Meyer's affective commitment scale (Allen & Meyer, 1990) following the proceeding by Eisenberger, Armeli, Rexwinkel, Lynch, and Rhoades (2001) and

added a very similar fifth item from the original scale (Allen & Meyer). A direct-consensus composition model was applied (Chan, 1998), in which the individual data was aggregated on the company level based on acceptable inter-rater agreement scores and intra-class coefficients. This procedure is in line with prior research that has operationalized commitment on a collective level (e.g., González-Romá et al. 2002). The wording of the items and their descriptives are depicted in Table 1. A CFA indicated a non-sufficient overall model fit ($x^2 = 24.9$, df = 5; CFI = 0.95, TLI = 0.98, RMSEA = 0.17), indicated by the high df/x^2 ratio and RMSEA value. Therefore, following the procedure by Cheng (2001) we excluded one item (''I am proud to tell others workers that I work at this company''), which showed high error correlations with other items and high modification indices from the model. The following second CFA indicated that all four commitment items loaded on a single construct and exhibited now very good model fit properties ($x^2 = 1.7$, df = 2; CFI = 1.00, TLI = 1.00, RMSEA = 0.00).

Aggregation statistics showed sufficient results ($ICC_1 = 0.12$, $ICC_2 = 0.83$ $p < 0.001$, $AD_{M(J)} = 1.05$) and justified aggregation of the commitment scale to the organizational level. Internal consistency estimates at the organizational level were $\alpha = 0.92$.

Performance

We measured performance following Comb's and colleagues (2005) recommendation to differentiate between operational and organizational performance. Thus, we applied three items for each dimension. For organizational performance we used company growth, financial performance, and return on assets as indicators. Operational performance was measured through the items employee retention and fluctuation, employee productivity as well as efficiency of business procedures. In keeping with prior research (Delaney & Huselid, 1996; Wall et al., 2004), the perceptual measures were benchmarked, in the sense that we asked key informants to assess firm performance relative to the performance of their industry rivals. The members of the companies' boards had to judge their own firms' current performances relative to those of their main competitors located within the same industry and in the same region (1 = *far below average*; 7 = *far above average*). Obviously, forward-looking stock market measures would be the best source for the organizational performance scales. However, given the fact that most of the companies in our sample are privately owned and public data is the most common source for market measures (Rogers & Wright, 1998), we were not able to collect such data. Aware of the potential problems regarding the use of subjective performance measures (Starbuck, 2004), empirical evidence has shown that subjective measures are valid and may be applied to gain insight into operational and organizational performance (Rowe & Morrow, 1999; Wall et al.).

We assumed that the overall company performance should consist of the two sub-dimensions, organizational and operational performance. Following this theoretical reasoning we constructed a second order performance measure that included both dimensions. To justify the structure of this construct we performed a CFA that showed a sufficient model fit ($x^2 = 9.4$, df = 8; CFI = 0.99, TLI = 0.99, RMSEA = 0.04). Internal consistency estimates were $\alpha = 0.87$.

Control variables

To account for a potential influence of organization size on our endogenous variables, and because organization size has shown to be related to various employee attitudes and behaviors (Pierce & Gardner, 2004; Ragins, Cotton, & Miller, 2000), we included organization size as a control variable in our analysis to prevent it from biasing our findings. We also controlled for the potential alternative hypothesis that higher levels of perceived age discrimination climate resulting from increased age diversity may occur only in smaller companies that feature more direct contact and interaction between several age groups. As is common practice (e.g., Schminke, Cropanzano, & Rupp, 2002), we measured

organization size by asking for the number of employees in the organizations (converted to full-time equivalents).

To account for Finkelstein et al.'s (1995) argument that perceived age discrimination arising from age diversity may actually decrease if aging workers become a more frequent and integral part of companies, we also entered the median age of the companies' employees as a control variable in our analyses.

We also controlled for organizations' affiliation with one of the four broad classes of industries (i.e., services, manufacturing, trade, and finance and insurance; as reported in the key informant survey), as has been done in prior research (e.g., Dickson et al., 2006; Sine, Mitsuhashi, & Kirsch, 2006). Participant organizations were assigned four dummy-coded variables indicating their affiliation with each of the industry categories.

Analytical procedures

As has been proposed by Anderson and Gerbing (1988) and applied in several publications (e.g., Bedeian, 2007; Richardson and Vandenberg, 2005), we conducted our data analysis in two steps. This was done so as not to confound the meaning of the study variables by the simultaneous estimation of measurement and structural model (Burt, 1976). In the first step, we executed a simultaneous CFA of all variables to establish a measurement model. In the second step, we applied structural modeling to evaluate the relationships among the constructs, as proposed in the conceptual scheme in Figure 1. To account for the mediation effects, we compared different mediation models to the baseline model (Judge & Colquitt, 2004) and, following the recommendation by Cheung and Lau (2008) and James, Mulaik, and Brett (2006), we also carried out bootstrapping procedures to test for the significance of the indirect effects. The observed data was evaluated using the AMOS 17.0 SEM program.

Results

Descriptive statistics

Means, standard deviations, and bivariate correlations for all study variables are presented in Table 2. The results indicate that, as hypothesized, (a) age diversity in companies is positively related to perceived age discrimination climate, (b) perceived age discrimination climate is negatively related to affective commitment, and (c) affective commitment is positively correlated with performance.

We also included the median age of the employees, company size and dummy variables for the four different industries in this analysis to check for an intercorrelation of these potential controls with our study variables. Results show that company size, median age, and industry dummies of service and production are significantly related to our focal study variables. The other types of industries are not found to have any influence on the endogenous variables under observation. Consequently, we decided to retain only company size, median age, and the two industry variables in further analyses in order to reduce the number of parameters to be estimated and, thus, to achieve the maximum power for the following tests (Bedeian, 2007). Additionally, unnecessary control variables may cause biased parameters estimates (Becker, 2005). Since we observed no remarkable correlation between the study's constructs, we assumed sufficient distinctiveness between the different measures.

Table 2. Aggregation statistics, means, standard deviations, and intercorrelations of study variables

	Aggregation statistics					*r*									
Variable	$AD_{M(J)}$	ICC_1	ICC_2	*M*	*SD*	1	2	3	4	5	6	7	8	9	10
1. Age diversity				0.26	0.05	—									
2. Median age				37.63	4.6	0.32	—								
3. Age discrimination climate	1.05	0.09	0.76	2.13	0.66	0.45	0.39	—							
4. Afffective commitment	1.05	0.12	0.83	5.10	0.51	−0.09	−0.08	−0.57	—						
5. Company performance				5.7	1.06	−0.33	−0.12	−0.17	0.27	—					
6. Company size				320.46	495.34	0.08	0.16	0.14	−0.18	−0.22	—				
7. Industry: service				0.50	0.50	−0.26	−0.17	0.18	−0.02	−0.01	−0.05	—			
8. Industry: trade				0.07	0.26	−0.19	−0.02	−0.11	0.03	0.12	0.01	0.28	—		
9. Industry: manufacturing				0.30	0.46	0.27	0.14	0.21	−0.03	−0.06	−0.02	−0.66	−0.18	—	
10. Industry: finance				0.05	0.23	0.14	0.10	0.01	0.02	−0.02	−0.00	−0.24	−0.06	−0.08	—

Note: Correlations greater than 0 17 are significant at the 0 05 level (*two-tailed*)

Measurement model

Our measurement model consisted of three latent constructs age discrimination climate, affective commitment, and performance with fifteen indicators and age diversity as a single indicator measure.

In the absence of an independent estimate for the single-item indicator in our model, we had to make an arbitrary choice for the factor's reliability (Anderson & Gerbing, 1988). Following the procedure used by Richardson and Vandenberg (2005) we assumed a conservative reliability of 0.7. The error terms of the indicator were set to a value of one, minus the reliability of the indicator, multiplied by its variance. In terms of the overall model fit for the measurement model, we received sufficient results for all central measures ($x^2 = 124.652$, df = 97; CFI = 0.99, TLI = 0.99, RMSEA = 0.05).

In addition to the overall assessment of the model fit, we conducted an item reliability and convergent validity analysis for each construct, the results of which are shown in Table 3. Organizational and operational performance are treated here as two separate constructs that together form the overall performance measure. The first column shows the standardized item loadings for each construct, all of which were statistically significant ($p < 0.001$).

None of the items have loadings less than 0.50, a threshold often used in factor analysis (Hulland, 1999). We also inspected the composite reliability (Raykov, 1997) and average variance extracted (Fornell & Larcker, 1981) for each construct. The composite reliability assesses the unidimensionality of a construct and should, at best, be above the 0.70 cut-off criteria (Raykov, 2002). All of our constructs fulfill this requirement. The average variance extracted estimates the proportion of variance explained in relation to the variance that is due to random error (Bedeian, 2007; Bagozzi & Yi, 1988). All our measures are above 0.50, indicating good internal consistency and that the amount of variance captured by each construct is larger than the variances caused by measurement error (Fornell & Larcker, 1981). All these results point to the sufficient convergent validity and item reliability of our three latent constructs.

Table 3. Measurement properties for study constructs.

Constructs and indicators	Standardized loadings	Composite reliability (CI)	Variance extracted estimate (EVA)
Age Discrimination Climate		0.99	0.95
Item 1	0.954		
Item 2	0.975		
Item 3	0.979		
Item 4	0.941		
Item 5	0.943		
Affective Commitment		0.96	0.87
Item 1	0.939		
Item 2	0.980		
Item 3	0.938		
Item 4	0.656		
Organizational Performance		0.89	0.55
Item 1	0.806		
Item 2	0.829		
Item 3	0.695		
Operational Performance		0.87	0.68
Item 1	0.768		
Item 2	0.828		
Item 3	0.631		

Note: *N* 128.

Structural model

In our second step of the analysis, we examined the structural portion of our specified model, the main results of which are illustrated in Figure 2. For simplicity, the control variables are not mentioned in this picture. However, paths from the control variables to each dependent construct were specified in all structural models, following the proceeding by Richardson and Vandenberg (2005). The overall results of the main model, as summarized in Table 4, indicate a generally good fit of the model to the data ($x^2 = 212.347$, df = 148; CFI = 0.97, TLI = 0.97, RMSEA = 0.06).

Hypothesis 1 predicted that age diversity should be positively related to perceived age discrimination climate within companies. This hypothesis was supported, since the path between age diversity and age discrimination climate was significant ($\beta = 0.35$, $t = 4.15$, $p < 0.001$). Following the advice from Lubinski and Humphreys (1990), we tested for a possible curvilinear relationship by entering the quadratic predictor variable in our model. Since this term turned out not to be significant, we found no suspicion of a nonlinear relationship.

Hypothesis 2, which predicted a negative relationship between perceived age discrimination climate and collective commitment, received support as well ($\beta = -0.68$, $t = -8.14$. $p < 0.001$). Because both hypotheses 1 and 2 were supported, we further examined the extent to which perceived age discrimination climate mediated the relationship between age diversity and collective commitment (hypothesis 2b). Our mediation prediction would be confirmed if the overall model fit would not be improved by the addition of the direct path from age diversity to collective commitment and the indirect paths would remain significant in the new model (For application of this method, see Judge & Colquitt, 2004.) As such, we added this direct path to our hypothesized model, referred to as "Mediation model 2" in Table 4, and re-estimated the model. Results indicated that the direct path was not significant on a 5 per cent level ($\beta = -0.14$,

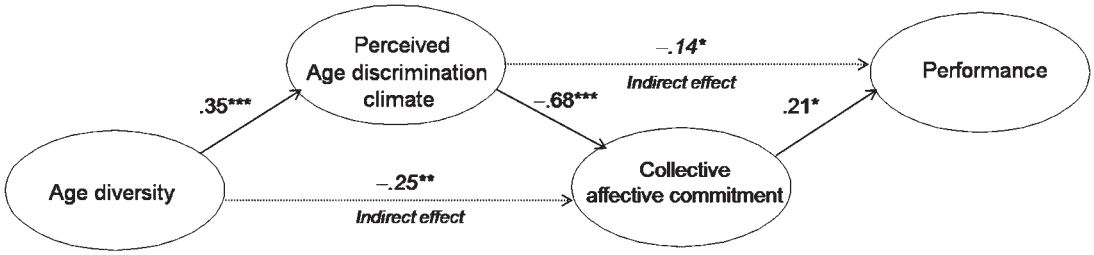

Figure 2. Structural model results

Table 4. Model comparison

Structural model	χ^2 ($N = 128$)	df	χ^2/df	$\Delta\chi^2$	Δdf	CFI	TLI	RMSEA
Hypothesized model 1	212.347*	148	1.44			0.97	0.97	0.06
Mediation model 2	210.658*	147	1.43	1.69	1	0.97	0.97	0.06
Mediation model 3	210.567*	147	1.43	1.78	1	0.97	0.97	0.06
Model 4	280.933*	148	1.90	68.59	0	0.94	0.94	0.08
Model 5	272.941*	148	1.84	60.59	0	0.95	0.95	0.08

Note: CFI Comparative fit index; TLI Tucker lewis index; RMSEA Root mean square error of approximation. All models are compared to the baseline model 1. *$p > 0.5$.

Table 5. Mediation analysis via bootstrapping

	Indirect effect	Standard error	95% Confidence intervals		Significance
Age Diversity → *Age Discrimination Climate* → Affective Commitment	0.25	0.07	0.36	0.15	0.002
Age Discrimination Climate → *Affective Commitment* → Performance	0.14	0.09	0.32	0.03	0.048

Note: Standardized estimates are shown. 1000 bootstraps samples were used. Two tailed significance.

$t = -1.65$, $p < 0.08$). The overall model fit remained virtually unchanged (see Table 4). The two paths of hypothesis 1 between age diversity and age discrimination climate ($\beta = 0.35$, $t = 4.18$, $p < 0.001$), as well as the path of hypothesis 2 between age discrimination climate and affective commitment ($\beta = -0.73$, $t = -8.27$, $p < 0.001$), remained significant. These results indicate a mediation of perceived age discrimination climate in the relationship between age diversity and collective affective commitment.

In a further step, we applied bootstrapping procedures, as proposed by Cheung and Lau (2008). In this analysis, the product terms of the direct path from the independent variable to the mediator and the direct path from the mediator to the dependent variable are examined with bootstrapping methods to achieve intervals for the mediation effects. As Cheung and Lau recommended, we used 1000 bootstrap samples to generate the results. Table 5 illustrates the results that further confirmed the proposed mediation. The indirect effect has the expected negative sign and is significant on a 1 per cent level. Thus, the effect of age diversity on collective commitment was mediated by perceived age discrimination climate in the companies.

Hypothesis 3, which stated that collective commitment would be positively related to overall company performance, was supported ($\beta = 0.21$, $t = 2.35$, $p < 0.02$). Applying the same proceeding as described above, we also tested for a mediating effect on overall performance of age discrimination climate through collective commitment. Adding to the model a direct path between age discrimination climate and performance did not improve the overall model fit, as illustrated by the ''Mediation model 3'' in Table 4. The χ^2 dropped only slightly and all the fit measures remained virtually unchanged (see Table 4). The direct path between perceived age discrimination climate and performance suggests no 5 per cent significant effect between the two variables ($\beta = 0.13$, $t = 1.49$, $p < 0.14$), while the two main effects remained significant. A bootstrapping analysis strengthened these outcomes. As Table 5 shows, the indirect effect was negative and significant ($\beta = -0.14$, $p < 0.05$). These results predict that collective commitment mediates the relationship between perceived age discrimination climate and company performance.

We further investigated two alternatives models. The first (model 4) assumed a direct linkage between age diversity and company performance with all mediation paths set to zero. The second (model 5) assumes a direct relation between perceived age discrimination climate and performance excluding the mediation by affective commitment. As the results in Table 4 show both models had a significantly worse fit to our data compared to the baseline model 1. That further strengthened indication that we may have discovered a good fitting model to the data.

Discussion

The purpose of this study was to explore the link between age diversity and company performance by shedding light on several potential mediators of this relationship. In a first step, age diversity on the

company level was examined for its influence on perceived age discrimination climate and for whether it indirectly relates to collective affective commitment via this mediator. Second, perceived age discrimination climate was assumed to have a negative effect on collective affective commitment within companies, which in turn should be positively linked to company performance. Therefore, we hypothesized a negative indirect effect of perceived age discrimination climate via collective commitment on the overall company performance.

In general we found support for all our hypotheses. In line with our hypotheses, age diversity was related to higher levels of perceived age discrimination climate in companies and indirectly also negatively influenced collective affective commitment of employees. Furthermore, perceived age discrimination climate showed the hypothesized negative link to collective affective commitment. Last, our analysis confirmed the mediated negative relationship of perceived age discrimination climate on overall company performance.

We believe that these results contribute to the literature by corroborating and extending prior findings in several ways. Concerning the age diversity literature, we were able to make a contribution regarding mechanisms influencing the age diversity/performance link by establishing perceived age discrimination climate on the company level as a mediator for the relationship between increasing diversity in terms of age and collective commitment of employees, which is positively related to overall company achievements. By doing so, we added to the stream of research on possible mediators and moderators that has emerged since Lawrence (1997) originated the definition of the ''black box of organizational demography.'' As one of the first studies in the diversity literature to do so, our study also investigated processes that may occur as a result of increased age diversity on the company level. Since our results show clear indications for a meaningful effect of age diversity on the company level, rather than only on the team level, this new level of analysis for diversity research, proposed by Van Knippenberg and Schippers (2007), appears to be a valuable road to follow for future investigation in the area. Future studies may also incorporate age diversity in teams and departments through a multilevel analysis and thereby showing that age diversity on the company level has an impact on the company performance over and above the lower level influences.

Our findings also contribute to the developing literature on ageism and age discrimination. First, with perceived age discrimination climate we describe an organizational level variable which we conceptualize as the aggregate member perceptions about the organizations' age related treatment of different age groups. Second, our results are a first attempt to establish a positive link between age diversity on the company level and perceived age discrimination climate. We relied on processes of similarity-attraction (Byrne, 1971), social identity (Tajfel & Turner, 1986) and self-categorization (Turner, 1987), as well as on violation of career timetables (Lawrence, 1984), and prototype matching (Perry, 1994) to theoretically explain this rather counterintuitive relationship. Overall, increasing age diversity seems to undermine social integration (Harrison et al., 1998) within companies and thus triggers higher levels of perceived age discrimination climate. Future studies may expand our results by integrating these mechanisms directly in empirical models, and thereby test our theoretical reasoning for the first hypothesis. Promising routes to follow might be to integrate variables like cohesion (Seashore, 1954) or age group identification (Garstka, Schmitt, Branscombe, & Hummert, 2004) on the organizational level as mediators in future models. Likewise, the extent of perceived age timetable violations or misfits between job holders and job-age prototypes should be tried to operationalize in further studies to empirically inspect our complex theoretical arguments. Integrating those variables might also help to fully understand the emergence of perceived age discrimination climate and thereby investigate whether this organizational level construct originates more from individual and leadership interactions or organizational rules and procedures set by the company's HR-department or top management.

Moreover, we built on social exchange theory (Shore & Wayne, 1993) and applied earlier findings on the relationship between certain work experiences and members' commitment (Meyer & Allen, 1991)

to the context of age discrimination as one relevant violation of social exchange processes. Finally, we partly replicated Ostroff's (1992) study and substantiated her findings on the effect of collective-level affective commitment on organizational performance.

Our control variables allow us to argue against several alternative explications for the relationships we observed. Since integrating company size in our analysis did not change the pattern of the results, our findings indicate that the appearance of perceived age discrimination climate on the company level is not affected by company size and, thus, that perceived discriminatory behavior triggered by the different processes mentioned above may occur, no matter how big the company is. Second, including the median age of the employees did not influence the observed relationships substantially, which indicates that the suggestion by Finkelstein et al. (1995) concerning the lower salience of age in environments with older personnel is not true for our dataset. Age diversity on the company level seems to play a decisive role in the appearance of an age discrimination climate, independent of the median age of the employees.

Practical implications

There are two important implications of our research for company managers. First, they must be aware that, with an increase in the age diversity of their workforce, higher levels of perceived age discrimination climate in their companies may occur. This relationship might surprise both line managers and HR professionals as it partly contradicts popular belief. Second, and perhaps even more important, our results indicate that perceived age discrimination climate is potentially related to performance. In line with previous research (Goldman, Gutek, Stein, & Lewis, 2006), we found clear indications that organizations may experience poor performance when employees perceive discriminatory treatment. Thus, age discrimination is not only an issue that should be avoided from a normative and ethical point of view, but it might also have business consequences if it is not adequately addressed.

To address these issues, companies should regularly assess the age composition of their employees in order to be more aware of the potential occurrence of perceived age discrimination climate. In this respect, an audit that includes an aging profile analysis and projection should be applied (Jonker & Ziekemeier, 2005). Second, if considerable age diversity is present, assessment tools such as employee opinion surveys, focus groups, exit interviews, and analysis of patterns of employees' grievances should be deployed in order to increase awareness of perceptions of age discrimination (Ensher et al., 2001).

If these analyses indicate serious levels of perceived age discrimination climate on the company level, several potential measures can be established to lower the perception of age discriminatory behavior in the company. For example, sensitizing the whole organization to the issues of the aging workforce seems to be a key requirement for keeping age discrimination on the company level low. As several authors have proposed (Armstrong-Stassen and Templer, 2005; Elliott, 1995; Rynes & Rosen, 1995) age awareness trainings for executives should be held to promote a positive view about the potential of different age groups in the company and to emphasize the relationship of an age-discriminatory corporate culture to lowered performance levels. Diversity trainings should also educate participants about procedural (e.g., process fairness) and interactional justice rules (e.g., fairness in offering information about the decision-making process and fairness toward affected persons) (Greenberg & Colquitt, 2005) in order to achieve a lower level of perceived discrimination for all employees (Avery et al.). Ensher et al. (2001) proposed organization-wide change efforts with a business-driven imperative that should be justifiable in light of our results, to avoid perceived discrimination. Companies should also show senior leadership's commitment to anti-age-discriminatory behavior and make their age-related HR practices transparent to all employees (Avery et al.). In sum, companies with high levels of age diversity should aim at pro-diverse work climates (McKay & Avery, 2005).

Limitations and future research directions

In spite of several methodological strengths (e.g., independent data sources for all focal study variables), the current study has several limitations that restrict the interpretation and generalization of our findings. First, the data for this study were collected at only one point in time, and participants included in the sample participated voluntarily, rather than being randomly assigned to the research. Therefore, no final conclusion about causality can be drawn. Future studies might overcome these weaknesses by applying longitudinal and quasi-experimental research designs for the study of antecedents and outcomes of age discrimination climate in companies (Shadish, Cook, & Campbell, 2002). That is especially the case for the relation between collective commitment and organizational performance that could also be in the reverse direction. Longitudinal analysis may also enable a test of the competing hypothesis that individuating information through inter-age contact and the presence of stereotype-inconsistent information may diminish age discriminatory behavior over time (Cuddy & Fiske, 2002; Erber, Etheart, & Szuchman, 1992, Hummert, 1999).

Second, although the study used a relatively large sample of German companies, the generalizability of its findings is limited because the data came from only one cultural environment, Germany. As the research by Chiu et al. (2001) indicated, there is some evidence for different discriminatory attitudes in different cultural backgrounds. Hofstede (2001) argued that the German national culture is characterized by relatively high levels of individualism and masculinity, by relatively low levels of power distance, and by medium levels of uncertainty avoidance and long-term orientation, any which characterizations may influence the level and form of age discrimination in companies. Therefore, future studies could possibly aim at a replication of our results using different cultural backgrounds. In a similar vein, we caution readers that our sample consisted of small and medium-size organizations with no more than 5000 employees. Future researchers could obtain study samples that include larger organizations in order to further generalize the present findings.

Third, the low response rate within organizations may be source of potential bias for our results. However, our average within-organization response rate of 65 per cent compares favorably to those reported in prior research (e.g., Griffith, 2006; Lincoln & Kalleberg, 1996). We conducted several *post hoc* analyses to investigate the potential influence of such a sampling bias, and those analyses revealed that the pattern of our results remained unchanged when (a) the response rate per organization was integrated as a control variable in the model and (b) companies with response rate below 30 per cent ($n = 9$) were excluded. The results from this additional analysis indicate a low probability of a biasing effect.

Finally, the firm-level performance outcomes were obtained from a single source, a key organizational informant, suggesting concerns related to reliability and accuracy, as well as causal reciprocity. In the literature, the reliability of key informant ratings is much discussed (e.g., Wright et al., 2001) and should be treated with caution. Future research may thus benefit from replicating the present study with objective performance outcomes.

Beyond these limitations, our study suggests several directions for future research. Scholars could, for instance, look in more detail at the antecedent side of the evolution of an age discrimination climate in companies. Another stream of future research may be to consider organizational factors, such as structures, cultures, values, and technology (Perry & Finkelstein, 1999), as potential sources of age discrimination on the organizational level, which might contribute to a more comprehensive understanding of the evolution of an age discrimination climate in companies. Research that links perceived age discrimination climate on the organizational level directly to leadership behaviors and HR-practices in companies may also be worthwhile. On the group level, for example, there is recent evidence that transformational leadership (TFL) is a potential moderator for the relationship between diversity and group performance (Kearney & Gebert, 2009). Replicating this effect on the company level with TFL

company climate as a boundary condition for decreased age discrimination might be interesting. Furthermore, although mostly on a descriptive level, current research has emerged about age specific HR-practices (e.g., age-specific training, incentives, career paths, health management, and recruiting) that may be a source of competitive advantage in an era of demographic change (e.g., Armstrong-Stassen and Templer, 2005; Loretto & White, 2006, Streb, Voelpel, & Leibold, 2008). It may be particularly valuable to investigate whether HR-practices that are adjusted to the specific needs of different age groups reduce the level of perceived age discrimination climate on the company level. Finally, a diversity climate (e.g., Mor Barak et al., 1998, Pugh, Dietz, Brief, & Wiley, 2008) may be a boundary condition that favors or impedes social integration among different age groups in companies and may thus be incorporated in future studies.

We hope that this study contributes to a better understanding of the emergence of perceived age discrimination climate and the performance consequences thereof on the organizational level, and that it provides a solid foundation for future research on these issues and for practical efforts to address demographic change in companies.

Author biographies

Florian Kunze is a research associate at the University of St. Gallen, Switzerland. His current research interests include consequences of the demographic change for companies, within-group processes, and dynamics in work teams and organizations, discrimination and stereotyping due to demographic characteristics, and leadership research.

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