



AGE CLIMATE

AGE STEREOTYPES IN ORGANIZATIONS AND OLDER WORKERS

by

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A thesis submitted in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in Psychology

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Date of Defense: December 21, 2009

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Yes, We Age.

- *Change We Can Believe In* -

ACKNOWLEDGEMENTS

I started working on this thesis in March 2006 at Jacobs University Bremen, then International University Bremen. From January to March 2008 I had the chance to continue my research at Wayne State University, Detroit (MI) on a scholarship from the German Academic Exchange Service. Afterwards I returned to Bremen to finish my dissertation.

I would like to thank several people for their contributions to this work. First of all I would like to thank my supervisor Ursula Staudinger for the support, time, and effort she has invested into my work. Her critical eye was invaluable for the continuous improvement of my research. I am thankful for her understanding in difficult times, for her encouragement, and for her belief in me. I also would like to thank Boris Baltes for making my stay at Wayne State an unforgettable experience that greatly influenced my view on academia and the United States. Thanks go to Thomas Staufenbiel and Christian Stamov Roßnagel for their help in the early stages of this dissertation and for joining my dissertation committee.

Second, I would like to thank my colleagues from the JCLL for their constructive comments and encouragement throughout these past three years. Most of all, I thank Katie Bowen, honorary age climate researcher for everything, Torsten Biemann for his methodological advice and Hannes Zacher who shares my interest in SOC at the workplace and helped improve my second study through his very useful comments. My thanks go also to Krystin Zigan for her help in the final steps of this dissertation, to Anja Müller for always going out of her way in order to make administrative burdens on her colleagues as light as possible, and to Marcus Weller and Annekatrin Hoppe for their help in making this English thesis sound less German.

Finally, I am forever grateful to my family, my wife Anna, and my friends for stick and carrot, for having faith in me, and for making my life worth living.

TABLE OF CONTENTS

I. General Introduction.....	9
1. Age Climate – A New Construct.....	11
1.1 Climate vs. Culture.....	11
1.2 Organizational Climate vs. Psychological Climate.....	13
1.3 Age Climate vs. Other Climates.....	13
1.4 Age Climate and Age Stereotypes	14
2. Age Climate Assessment.....	15
3. Age Climate and Work-Related Correlates.....	18
3.1 Psychological Age Climate and Work Related Outcomes.....	18
3.2 Organizational Age Climate and Aging Workforce Management.....	19
 II. Age Stereotypes in Organizations and Older Workers’ Organizational Commitment	 21
1. Introduction	21
1.1 Age stereotypes in the Workplace.....	23
1.2 Psychological Age Climate - Conceptualization and Measurement Approach ..	25
1.3 Assessing Psychological Age Climate	26
1.4 Psychological Age Climate and Organizational Commitment	28
2. Method	30
2.1 Participants.....	30
2.2 Procedure.....	31
2.3 Measures.....	31
3. Results	33
3.1 Scale Properties.....	33
3.2 Psychological Age Climate and Organizational Commitment	36
4. Discussion	38
4.1 Contribution to Theory and Research	39
4.2 Implications for Management	41
4.3 Limitations of the Study	43
4.4 Future Research.....	45

III. Transition between Study 1 and 2..... 48**IV. Psychological Age Climate and Successful Aging in the Workplace:
Adaptiveness of Selection, Optimization, and Compensation Strategy Use
under Constrained External Resources 50**

1. Introduction	50
1.1 Psychological Age Climate	52
1.2 Selective Optimization with Compensation	54
2. Methods	55
2.1 Participants	55
2.2 Procedure	56
2.3 Measures	56
3. Results	58
4. Discussion	64
4.1 Implications for Theory and Practice	64
4.2 Limitations and Future Research	67

V. Transition between Study 2 and 3 70**VI. Assessing Successful Aging Workforce Management: Organizational
Age Climate..... 72**

1. Introduction	72
1.1 Organizational Age Climate – Conceptualization	74
1.2 Organizational Age Climate – Organization Level Correlates	77
1.2.1 Recruitment and Retirement	78
1.2.2 Knowledge Transfer and Knowledge Generation	78
1.2.3 Health Management	80
2. Method	81
2.1 Participants	81
2.2 Procedure	83
2.3 Measures	84

3.	Results	86
3.1	Consensual Validity of Organizational Age Climate	86
3.2	Predictive Validity of Organizational Age Climate	87
3.2.1	Exploratory Statistical Tests.....	88
3.2.2	Recruitment and Retirement.....	89
3.2.3	Knowledge Transfer and Knowledge Generation	91
3.2.4	Health Management	94
4.	Discussion	95
4.1	Contribution to Theory and Practice	97
4.2	Limitations and Future Research.....	100
VII. General Discussion		104
1.	Summary of the Findings	104
2.	Contribution to Theory, Practice, and Policy	106
3.	Limitations	108
4.	Future Research.....	109
5.	Suggestions for a Successful Aging Workforce Management.....	114
5.1	Age-Friendly Recruitment and Retirement Practices.....	114
5.2	Age-Friendly Knowledge Transfer and Knowledge Generation Practices	117
5.3	Age-Friendly Health Management Practices	119
5.4	Conclusion.....	121
References		123
Appendix		156

TABLE OF FIGURES

<i>Figure 1.</i> Completely Standardized Path Loadings for Correlated Two Factor Model of Psychological Age Climate (PAC) and Image of Younger Workers (YI).....	36
<i>Figure 2.</i> Relationship between Psychological Age Climate and Affective Commitment, no Controls Included	37
<i>Figure 3.</i> The Proposed Model and Hypotheses	55
<i>Figure 4.</i> Moderation of the Relationship between Psychological Age Climate (PAC) and Work Ability of Older Employees by Age.....	60
<i>Figure 5.</i> Moderation of the Relationship between Psychological Age Climate (PAC) and Work Ability by SOC Strategy Use for Older Employees at Lower Ages (Panel A) and at Higher Ages (Panel B)	63
<i>Figure 6.</i> Age distribution in the three production companies <i>A</i> , <i>B</i> , and <i>C</i> split by gender. ...	91

TABLE OF TABLES

<i>Table 1.</i> Descriptive Statistics and Intercorrelations among Study Variables	34
<i>Table 2.</i> Results of Model Comparison for PACS and YI	35
<i>Table 3.</i> Results of Fixed Effects Regression Analysis of Affective Commitment on Psychological Age Climate	38
<i>Table 4.</i> Descriptive Statistics and Intercorrelations among Study Variables	59
<i>Table 5.</i> Results of Hierarchical Moderated Regression Analysis Predicting Work Ability ...	61
<i>Table 6.</i> Description of Companies and Sample of Older Workers (age 45+)	82
<i>Table 7.</i> Organizational Age Climate and Indices of Consensual Validity	87
<i>Table 8.</i> Indicators of Aging Workforce Management	89

I. GENERAL INTRODUCTION

For some time, the populations of modern industrialized nations have been undergoing major demographic change, simultaneously characterized by decreasing birth rates and increasing average life-expectancy. As the first wave of the Baby Boomers has begun to retire, retiring, many companies have reoriented their marketing strategies and identified the “Best Agers” as a financially potent and increasingly numerous target group (Gilman, 1986; Rosener & Prout, 1986). However, while this population segment has been identified as potential *customers*, companies have yet to acknowledge the potential of this demographic group to likewise contribute to organizational success as *employees*. The aging of the workforce is a topic that has received much attention in recent years. The problem is discussed within the larger frame of demographic change in western industrialized nations. Many books have dealt with the phenomenon, the arising questions, and possible answers (e.g. Goldberg, 2000; Hedge, Borman, & Lammlein, 2006; Mitchell, 1993; Rix, 1990; Snel & Cremer, 1994). The aging of society, especially the retirement of the baby boomers, will have a large impact on the development of the labor markets. Already today labor shortages especially with regards to qualified workers are being observed (Dennis, 1988; Dychtwald, Erickson, & Morison, 2006) and the unused potential of older workers may be one of the major resources to fill these gaps (Burkhauser & Quinn, 1997). In the future, companies will have no choice but to retain their present and attract new older workers to fill this gap. In order to maintain older workers’ productivity and motivation, to make best use of their potentials, and to be attractive as an employer, organizations will have to provide work and learning environments for older workers that are age-friendly (see P. B. Baltes & Baltes, 1990, regarding conditions of successful aging). This problem has not yet reached the

management level of all companies. In fact, there seems to be a need for legal regulations that prohibit the discrimination of older workers in hiring, training, and layoff.

In 1967 the U.S. Equal Employment Opportunity Commission released the Age Discrimination in Employment Act (ADEA). This law was amended several times (last in 1991). It was the purpose of this act to “promote employment of older persons based on their ability rather than age; to prohibit arbitrary age discrimination in employment; to help employers and workers find ways of meeting problems arising from the impact of age on employment” (U.S.-Equal-Employment-Opportunity-Commission, 1967, Section 621(b)). In late 2000, more than 30 years later, the European-Council decided on establishing a general framework for equal treatment in employment and occupation also in Europe (Council Directive 2000/78/EC). With regard to age the directive states “the need to take appropriate action for the social and economic integration of elderly people, [...] the need to pay particular attention to supporting older workers, in order to increase their participation in the labour force, [and] the prohibition of age discrimination is an essential part of meeting the aims set out in the Employment Guidelines and encouraging diversity in the workforce” (preamble). In Germany, only in August 2006, did the Lower House of German Parliament (Bundestag) pass a law which implemented this council directive with the aim to, among others, prevent or remedy disadvantages by reason of age (Deutscher Bundestag, 2006). All these regulations as well as the increasing number of age discrimination litigations (Faley, Kleiman, & Lengnick-Hall, 1984; McCann & Giles, 2002) point out that companies are far from esteeming older workers as having the potential they actually represent - their experience, their knowledge, their networks, and many other advantages a long work life has to offer. To benefit from these competences, skills, and qualities any organization will have to not only refrain from discriminating older employees, but start working on the age stereotypes that circulate among their members, thus creating an age-friendly work environment.

This work aims at developing the concept of age climate in organizations as a construct capturing these company specific age stereotypes. It presents and provides initial empirical validation of an instrument that is able to assess both individual age climate perceptions (psychological age climate), as well as the company specific age climate (organizational age climate).

1. Age Climate – A New Construct

When the term “social climate” was first introduced, different leadership styles were reported as the main determining factor (Lewin, Lippitt, & White, 1939). Since this time the measurement and the investigation of antecedents and consequences of “climate” have received considerable attention in the organizational psychology literature. Many literature reviews reported on this topic (e.g., Campbell, Dunnette, Lawler, & Weick, 1970; Joyce & Slocum, 1990; Rentsch, 1990; Rousseau, 1988; Schneider, 1990a; Schneider & Reichers, 1983) showing relations with a wide variety of work-related outcomes. Such reviews illustrate that climate research is quite a heterogeneous field. Since “most researchers do not differentiate precisely between cultural factors, climate variables, values, normative beliefs, norms and attitudes” (Kluge, 2002, p. 655), it seems useful to first establish the concept of “organizational climate” as it will be used in this study and to differentiate it from the related construct “organizational culture”.

1.1 Climate vs. Culture

There is an ongoing debate to which degree these two constructs are similar or different. Some researchers argue that both culture and climate research study the same phenomenon, only differing in the way that this phenomenon is interpreted (Denison, 1996). Others see them as clearly separate (Smircich & Calás, 1987) as both constructs stem from very different research traditions. Organizational culture has its basis in anthropological research and in the social construction framework (Berger & Luckmann, 1966; Mead 1934)

while organizational climate has originated from psychological research, mainly the Lewinian field theory (Lewin, 1951). Accordingly culture, on the one hand, is defined as “a pattern of basic assumptions, invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration” (Schein, 1990, p. 111). It is in this way that organizational culture is seen as an evolved context, rooted in history, sufficiently complex to resist attempts at direct manipulation. Climate, on the other hand, is seen as more situational, referring to thoughts, feelings and behaviors of organizational members as a reaction to the context they find themselves in. Consistent with their heritage both constructs refer to different measurement approaches: culture research often uses an ideographic approach relying largely on in-depth case studies which aim at a comprehensive picture of what is unique to a certain organization (Jaques, 1951), whereas climate research, using a more nomothetic approach, concentrates on quantitative and comparative questionnaire studies. These aim at the description of selected dimensions along which different work environments can be described and compared. The focus of such research lies in most cases on the analysis of the effects of variations in these dimensions. Especially effects on measures of work-related attitudes and work behavior are of central interest in the climate literature (e.g., Zohar, 2000).

A useful distinction encompassing the differences and of the aforementioned constructs was proposed by Rousseau (1988). The author argues that culture consists of causal and normative beliefs that are formed by some social units in order to make sense of and determine appropriate behaviors in the organization. By contrast, climate is based on individuals’ descriptive beliefs with regard to organizational attributes (practices and characteristics) that may or may not be shared among the members of a certain organizational unit.

1.2 Organizational Climate vs. Psychological Climate

It is this aspect of sharedness that defines one of the major distinctions within the climate literature - psychological climate and organizational climate. The two can be considered as variables at different levels. At the individual level “psychological climate has been conceptualized as a construct comprising an *individual*’s psychologically meaningful representation of proximal organizational structures and processes” (Parker et al., 2003, p. 390). In contrast, at the organizational level, organizational climate denotes the “*shared* perceptions of employees concerning the practices, procedures, and kinds of behaviors that get rewarded and supported in a particular setting” (Schneider, 1990b, p. 384). Thus, although organizational climate is conceptualized at a higher level, it is often assessed at the individual level, and constructed by aggregating the responses of organization members. This aggregation, however, is only valid if a sufficient consensus exists between organization members (James, 1982). In this dissertation, studies one and two address the concept of psychological age climate (PAC), while study three reveals some first insights into organizational age climate (OAC).

1.3 Age Climate vs. Other Climates

In order to specify the place of age climate in the larger field of organizational/psychological climates, a second important dimension of climates, should be introduced. This second dimension goes beyond the level of conceptualization of climates, and refers to their facet-specificity. In climate literature molar constructs that are trying to assess the social atmosphere of employee’s work environment in more general terms are contrasted by facet-specific climates. While the molar climate construct “appeared to meet the need for a synthetic, molar concept of the environment” (p. 18, Tagiuri, 1968), facet-specific climates are rooted in the idea that climates must be “for something” (p. 21, Schneider & Reichers, 1983). They capture “employees’ descriptions of an area of strategic focus or organizational

functioning” (p. 391, Parker et al., 2003). Examples are climates for safety (Zohar, 2000), innovation (Kauffeld, Jonas, Grote, Frey, & Frieling, 2004), or customer service (Schneider, Wheeler, & Cox, 1992). One special type of facet-specific climate can be described as subgroup climates. Examples are racial climate (Pike, 2002; Watts & Carter, 1991), gender climate (Foster et al., 2000), and LGBT climate (Liddle, Luzzo, Hauenstein, & Schuck, 2004), and they specifically address the work environment as it presents itself to members of a certain social subgroup. Here this dissertation aims at filling a gap in the literature by presenting the construct of *age* climate and providing an instrument to reliably assess the age-friendliness of a work environment at both the individual and organizational level.

1.4 Age Climate and Age Stereotypes

As stated earlier, this work is built on the assumption that the degree to which the climate in an organization can be considered as age-friendly will depend in large part on the images of older workers that are endorsed by its members. These are reflected in its policies, procedures and practices (Brooke & Taylor, 2005). A company that perceives older workers as important contributors to organizational success, as crucial resources for organizational development, and as human capital worthy of further development, can be expected to support their aging workforce and to appreciate its value for the organization. Such a perspective, however, can currently not be taken for granted with negative age stereotypes being a widespread phenomenon both in society at large as well as in the work force.

While the stereotypes of older adults as being vulnerable, inflexible, despondent, reclusive and impaired seem to be attributed most of all to individuals age 70-75 and above (Hummert, 1990), already older workers as young as 40 years of age (depending on the profession and the position in the company’s hierarchy) are confronted with negative stereotypes regarding their age group and with consequent age discrimination (Clapham & Fulford, 1997). The attributes associated with these older workers are somewhat different

from those associated with the very old. The main negative stereotypes about older workers describe them as poor performers who are resistant to change, unable to learn, shorter to remain with the company, and simply more costly (Posthuma & Campion, 2009). Furthermore, older workers are assumed to lack energy (Levin, 1988), be inflexible (Vrugt & Schabracq, 1996), and have higher health risks (Lahey, 2005). They are also perceived as being slower, less creative, and disinterested in training or even untrainable (Finkelstein, Burke, & Raju, 1995; Rosen & Jerdee, 1976a; Taylor & Walker, 1998). Such stereotypes persist even though research has repeatedly demonstrated their lack of validity (e.g., Avolio, Waldman, & McDaniel, 1990; Broadbridge, 2001; Kubeck, Delp, Haslet, & McDaniel, 1996; McEvoy & Cascio, 1989). Regarding a further theoretical elaboration on age stereotypes in the workplace and their potential negative consequences for stereotype victims, the reader is referred to paper one. In conclusion, it is the degree to which these attributes are associated with older workers by members of different organizations that builds the core of the concept of age climate.

2. Age Climate Assessment

In order to assess the need for a more age-friendly work environment in a certain organization an instrument that assesses the age climate perceptions in a given work context is needed. Apart from presenting and developing the concept of age climate, this dissertation is also aimed at the introduction of such an instrument. The scale should be short, easy to administer, have a sufficient face validity - in order to convince managers of the appropriateness of the chosen approach - and of course fulfill standard requirements of a psychometric inventory. More specifically the instrument would have to show sufficient reliability, a clear structure, and predictive validity for relevant work-related outcomes. In developing such a measure, a number of hurdles had to be overcome. The first was the lack of an adequate instrument that assessed age stereotypes specifically in the workplace. While

broadly used measures of age stereotypes and attitudes towards the old exist (Aging Semantic Differential, Rosencranz & McNevin, 1969; Facts on Aging Quiz, Palmore, 1980) they exclusively regard the very old and also contain items that are rather outdated. Thus, for this dissertation the literature on age stereotypes in the workplace was reviewed in order to develop a measure that would capture the main aspects of how older *workers* are stereotypically perceived.

A second hurdle was the expectation that, if the instrument asked too directly about negative age stereotypes, data quality might suffer from social desirability bias (Judd & Park, 1993). The tendency of some individuals to react more to the social desirability of a certain answer to an item than others - for example, out of a desire not to appear ageist - could artificially attenuate relations between age climate perceptions and other variables, and thus endanger predictive validity. It could furthermore falsely decrease homogeneity of responses within organizations, making it impossible to aggregate individual perceptions on the company level. Moreover, in case of blatantly undesirable options, it is even possible that not only some but most of the respondents report answers in a biased way, this way reducing variance in responses to a minimum. While it has often been suggested to use scales assessing the tendency to lie or distort answers in a favorable direction as a control when calculating the relations between study variables (Linehan & Nielsen, 1983; Rock, 1981), this approach has been found ineffective (Dicken, 1963; McCrae & Costa, 1983). A different approach is to ask respondents in a more subtle way. For example, Gaertner and McLaughlin (1983) showed for Caucasian college students that negative adjectives were not attributed more strongly to the stereotyped group, in this case African Americans, than to the reference group. Positive adjectives, however, were ascribed significantly more strongly to the reference group. In addition to items that are not so blatantly socially undesirable, another approach to assessing the age climate perceptions in an organization was considered. Instead of assessing individuals' own age stereotypes and later aggregating them on a company level to get an

indicator of the OAC, in this dissertation the referent shift approach (Chan, 1998) is used. By asking individuals about how they think older workers are regarded in their company, the referent is shifted from them to other company-members, thus alleviating the responsibility for a potentially socially undesirable response. Finally, similar to other sub-group climate assessments (Liddle et al., 2004) this dissertation focuses on the climate perceptions of the target group of the stereotypes, in this case the older workers, defined in this work as workers age 40 and above. Three reasons led to this particular cut-off. First, while it is difficult to set one cut off for all branches and positions, as described earlier, 40 years of age is the cut-off used by the ADEA. In the absence of a similar cut-off for Germany in the General Equal Treatment Act (AGG, Deutscher Bundestag, 2006), or for Europe in the European Council Directive 2000/78/EC, the cut-off used in the United States was chosen. Second, in order to be as inclusive as possible the lowest possible cut-off found in the German literature (i.e., the early forties, Filipp & Mayer, 1999) seemed to be a reasonable choice for a first sample. Finally, such a relatively low cut-off compared with public discussions of the generation 50+ (*Kölner Stadtanzeiger*, 2006, March 4) allowed to recruit a more powerful sample, given that in 2005 when data was collected the labor force participation rate of the 55+ in Germany was little more than 50 percent (OECD, 2009). For more details on the development of the measure and its factorial structure, as well as the reliability of the scale, the reader is referred to paper one, which focuses in its first part mainly on the construction of the Psychological Age Climate Scale (PACS). In order to be able to use the scale also for the assessment of a company's OAC, sufficient consensus in the ratings of company members needed to be established (James & Jones, 1974). Otherwise it would be invalid to speak of a *shared* climate perception, which is at the core of the idea of climate as an attribute of a higher level entity. Paper three reviews indices of consensus and applies them to ratings on the PACS.

It is important to note that this dissertation and the presented measure of age climate do not address other forms of intergroup bias that can together with age-stereotypes be

subsumed under the heading of ageism, namely age-related prejudice, and age discrimination (Finkelstein & Farrell, 2007). While age stereotypes are usually referred to as cognitive representations of older individuals, age-related prejudice is described as the affective part of ageism, in the sense of negative emotional attitudes towards older individuals. Finally, age discrimination constitutes the behavioral aspect of ageism and is manifested in the workplace in hiring and firing decisions as well as in decisions regarding promotion or further training participation to the disadvantage of older individuals, due to their age. The presented concept of age climate exclusively denotes the degree to which older workers are seen positively within their company.

3. Age Climate and Work-Related Correlates

Apart from introducing the construct of age climate and developing an instrument to assess it, another major goal of this dissertation was to provide first empirical validation on said instrument. Regarding potential correlates of age climate this work again distinguished between relations with PAC, that is, individual-level variables that might be related to individual age climate perceptions, and relations with OAC, that is organization level variables showing relations with the aggregated age climate score.

3.1 Psychological Age Climate and Work Related Outcomes

Current theories of job motivation, involvement, and productivity suggest that workers who are treated with respect and fairness are more likely to work in a manner that promotes and enhances their organization, their co-workers, and themselves (Ellis, 1996). Thus, the age climate in a company can be assumed to constitute a social resource for older workers. Consequently, and following research on other psychological climates (Parker et al., 2003) this dissertation analyzes relations with both, measures of work-related attitudes (more specifically organizational commitment) and more performance related variables (i.e., work ability). Specifically, in paper one the idea is put forth that older employees who work in an

environment characterized by negative age stereotypes, might conclude that their age group is not valued in their organization. This might easily result in them lacking the feeling to be ‘part of the family’ and thus decrease their affective commitment to their company. Such a relation is of particular interest, since a lack of affective commitment has been found to be related to withdrawal cognitions (Jargos, 1997) and actual turnover (Cohen, 1993) which pose a threat to companies that cannot afford to loose their older employees’ know-how and skills on an ever-more competitive labor market for highly qualified workers.

In paper two the focus lies on relations of PAC with work ability, a construct that has been found to be associated with social relations at work, including the recognition received in the work environment (Tuomi, Ilmarinen, Martikainen, Aalto, & Klockars, 1997). In Germany, with official retirement age increasing to 67 and effective retirement age already at 62 through recent policy changes (OECD, 2009), companies have to prepare themselves in order to guarantee continued high work ability of their aging workforce. Paper two additionally investigates interindividual differences in how older workers are able to deal with a more negative age climate. Assuming that with increasing age the salience and self-relevance of age stereotypes in the workplace would increase as well, the age climate perceptions were hypothesized to show a stronger relationship with work ability with increasing age. Finally, the use of the successful aging strategy of selective optimization with compensation (P. B. Baltes & Baltes, 1990) was assumed to play a moderating role, in that it might help older employees to cope with a work environment poor in social resources.

3.2 Organizational Age Climate and Aging Workforce

Management

In a first attempt to investigate possible antecedents of individual age climate perceptions, paper three targets at establishing the construct of OAC. Only if organization members agreed sufficiently on how older workers were seen within their company could the

search for organization level antecedents begin. These were expected to be found in different approaches to the aging workforce in different companies. Therefore paper three, relying mainly on interviews with managers of three production companies, tried to identify potential differences in the three main areas, relevant for adult development in the workplace (Staudinger, 2006), namely personnel management, knowledge management, and health management. Potential differences in recruitment and retirement strategies were assumed to coincide with differences in the age climate ratings. The same was the case for older worker participation in further education and finally in the way the work environment was structured in order to preserve and enhance older workers' health.

In the following, I will develop the construct of age climate as a measure of how positive older employees are seen within a given company. In addition, I will present an instrument intended to reliably assess individual (psychological) age climate perceptions as well as a company's *OAC*. Finally, I will investigate first evidence on possible correlates both on the individual and on the organizational level.

II. AGE STEREOTYPES IN ORGANIZATIONS AND OLDER WORKERS' ORGANIZATIONAL COMMITMENT

This study aims at analyzing the relation between older employees' perceptions of the age stereotypes in their organization and their organizational commitment. Building on the age stereotype and psychological climate literatures, we introduce the concept of *psychological age climate (PAC)*, as describing an individual employee's perception of the organization's view on older workers. We demonstrate the usefulness and robust psychometric properties of the Psychological Age Climate Scale (PACS). With a sample of 302 older employees (age 40+) from 8 companies, the PACS showed a high reliability and clear single factor structure. Using the fixed effects approach to clustering, we examined the relationship between individual-level (psychological) age climate and organizational commitment. As hypothesized, PAC showed significant associations with older employees' organizational commitment, which held even after controlling for age, tenure, and positive affect. Implications of these findings for future research and aging-workforce management are discussed.

1. Introduction

The aging of society in modern industrialized nations - especially the cumulative effects of the retirement of the baby boomers and decades of declining birth rates - will have a large impact on labor markets. These demographic changes have brought about an intensified focus on the aging of the workforce (e.g., Goldberg, 2000; Hedge et al., 2006; Mitchell, 1993; Rix, 1990; Snel & Cremer, 1994; Vaupel & Loichinger, 2006). Already today there are complaints about a lack of highly qualified workers in many occupations (Cohen & Zaidi, 2002; Dychtwald et al., 2006). In the future, companies will have no choice but to retain their

older workers longer as well as recruit new experienced workers in order to preserve economic growth (Feyrer, 2007). Furthermore, in order to ensure continued involvement and productivity of older employees, firms will have to provide work environments that fit the needs and make use of the strengths of this rather neglected bracket of the workforce (Baugher, 1978; Bourne, 1982).

One aspect of the work environment that is likely to have an influence on older workers' productivity is the degree to which they are confronted with negative age stereotypes (Brooke & Taylor, 2005). Lifespan research has emphasized that the effects of age-related changes in cognition for everyday functioning, on average, occur much later than most people suspect and that older adults possess cognitive potential that so far remains untapped (P. B. Baltes, Lindenberger, & Staudinger, 2006). Despite these facts, firms, superiors, and colleagues often attribute substantial decreases in performance and ability to people above the age of 50 (Hoff, 2005). It seems, in fact, that the magical barrier for calling a worker "older" is generally set even earlier, at around the early forties (Filipp & Mayer, 1999). These "older workers" are commonly described as being less flexible, demonstrating a lack of energy, and having higher health risks (Lahey, 2005) as well as being slower and less creative (Finkelstein et al., 1995), to name only some of the negative attributes stereotypically assigned to older workers.

While a long history of research on gender and race stereotypes seems to have made its way into research on work environments through concepts like gender climate (Foster et al., 2000) and racial climate (Pike, 2002), this is not the case for age stereotypes. To date, the construct 'age climate' and, likewise, instruments for measuring it, are curiously missing from the literature. This is surprising given that research has demonstrated negative relations between perceived age discrimination and work-related attitudes such as job satisfaction, job involvement, and organizational commitment (Orpen, 1995; Redman & Snape, 2006). In line with research on other psychological climates (Parker et al., 2003) and based on research

concerning age stereotypes and perceived age discrimination, we hypothesized that older workers' perceptions of the age stereotypes prevalent in their company, that is, the *PAC*, can be measured reliably and will be meaningfully related to an important work-related attitude, namely their organizational commitment.

1.1 Age stereotypes in the Workplace

Stereotypes are generally defined as associations between a given group and traits believed to be typical of that group (Fiske, 1998; Kunda, 1999). Research has revealed that while stereotypes about older adults are complex and multidimensional (Hummert, 1990; Slotterback & Saarnio, 1996), the negative stereotypes prevail (Kite, Stockdale, Whitley, & Johnson, 2005). This is also true for stereotypes about older workers (e.g., Lahey, 2005). A recent literature review has cast some light on this topic (Posthuma & Campion, 2009). The authors identify five major negative stereotypes about older workers: (a) older workers perform more poorly than younger ones (e.g., Ali & Davies, 2003; Dedrick & Dobbins, 1991); (b) older workers are more resistant to change than younger ones (e.g., Hansson, DeKoekkoek, Neece, & Patterson, 1997; Rosen & Jerdee, 1976b); (c) older workers are less able to learn than younger ones (e.g., Avolio & Barrett, 1987; Wrenn & Maurer, 2004); (d) older workers will remain less time with the organization than younger ones (e.g., Greller & Simpson, 1999; Hutchens, 1993); and (e) older workers are more costly than younger ones (e.g., Capowski, 1994; Finkelstein, Higgins, & Clancy, 2000). The stereotype that older workers are more dependable than younger ones was the only positive stereotype identified in the review (e.g., Cuddy & Fiske, 2002; Weiss & Maurer, 2004).

The presence of age stereotypes is not without consequences. Stereotypes can bias the information processing of the person that holds the stereotype. The automatic activation of memory contents that correspond with a social category can result in automatic behavior that corresponds with the stereotype (Chen & Bargh, 1997; Wentura & Rothermund, 2005). A

good illustration of this phenomenon, albeit from a different context, is the dependency-support script and the independence-ignorance script, observed among caretakers in homes for elderly residents (M. M. Baltes, 1988, 1996; M. M. Baltes & Wahl, 1992). People who work in nursing homes are more likely to associate old age with negative characteristics due to their repeated observations of the potential weaknesses that may, but do not have to, come with age. Above all, they experience the elderly persons' dependency on external help. One observed negative consequence of caretakers' old age-dependency stereotype is that they assist elderly inhabitants even when help is not required. Even worse, caretakers have been found to ignore or even penalize elderly residents' independent behavior. In the long run, such "dependency-support" and "independence-ignorance" behaviors lead to further decreases of elderly residents' autonomy. This example shows that age stereotypes can easily lead to discrimination on the basis of age (see also Perry & Finkelstein, 1999) and consequently become self-fulfilling prophecies (Jussim & Fleming, 1996; Ryan, Hummert, & Boich, 1995).

Also, work on old-age stereotype threat has demonstrated that activating age stereotypes, can detrimentally affect older adults' cognitive performance (e.g., Hess, Auman, Colcombe, & Rahhal, 2003). For example, in their study, Hess and colleagues presented participants with manufactured newspaper-type reports of research on memory and aging that highlighted the inevitability of memory decline with age. After reading these, older adults performed significantly worse in a memory task than younger adults. This was not the case for older participants reading reports that highlighted the controllability of memory performance even at higher ages. In sum, negative age stereotypes can lead to negative consequences for older people.

Especially in the workplace, "fear of harassment or discrimination may drain energy away from the work at hand, reduce creative energy, decrease collaboration, and increase feelings of isolation, anxiety and psychological distress" (Liddle et al., 2004, p. 35). Similarly, when older employees are systematically confronted with negative age stereotypes in their

work environment, it seems reasonable to assume that they get the impression that their (age) group is not valued in their company. As a result, they may not feel as much a ‘part of the family’, leading to a reduced commitment to their organization. In contrast, older employees, who feel that their age group is appreciated by their company, can be assumed to show higher commitment.

1.2 Psychological Age Climate - Conceptualization and Measurement Approach

Lewin and colleagues (1939) were the first to use the term “climate” to denote a social rather than an ecological environment. Since then, numerous studies have demonstrated significant relations between measures of climate in organizations and a wide variety of work-related outcomes, including job satisfaction (e.g., Schneider, 1975), burnout (e.g., McIntosh, 1995), job involvement (e.g., Brown & Leigh, 1996), organizational citizenship behavior (e.g., Moorman, 1991), job performance (e.g., Pritchard & Karasick, 1973), and organizational commitment (e.g., Martin, Jones, & Callan, 2005). Importantly, climate research has distinguished between organizational and work-group climate on the one hand and psychological (or individual) climate on the other. Psychological climate refers to an individual’s *perceptions* of his or her social environment (James & Jones, 1974; Jones & James, 1979). Organizational climate and work-group climate, although generally measured at the individual level, denote characteristics of the higher levels of the team or the company rather than the individual (Anderson & West, 1998). Organizational or work-group climate measures are generally obtained by aggregating the responses of the individuals in the relevant group. A second important dimension of climate research is the specificity of the domain under study. While some research has investigated the effects of a general, ‘molar’ climate (e.g., Carr, Schmidt, Ford, & DeShon, 2003; Weick, 1995), other approaches have focused on specific facets (e.g., racial climate Pike, 2002; safety climate Zohar, 2000; training

climate Tracey & Tews, 2005). In the present study we investigated individual's perceptions of the age stereotypes prevalent in his or her work environment, thus representing a *psychological* (vs. organizational) and *facet-specific* (vs. molar) age climate.

PAC differs from concepts like age discrimination (Finkelstein et al., 1995; Lahey, 2005) or ageism (Butler, 1969), which focus on behavioral aspects such as excluding older workers from informational networks or granting them less support for development in comparison to younger employees (Maurer, Weiss, & Barbeite, 2003). However, it is reasonable to assume that age climate and age discrimination are related. A negative age climate, one that is characterized by a less positive image of older workers, may cause subsequent acts of age discrimination (Posthuma & Campion, 2009). In turn, the observation of acts of age discrimination may impact the perception of the age climate.

1.3 Assessing Psychological Age Climate

We constructed a measure of PAC based on both previous climate research and age stereotype research. In previous climate research two different measurement approaches can be distinguished. First, climates concerning certain social subgroups (e.g., race, gender) have been assessed by comparing how different subgroups (e.g., men and women) regard the same aspects of the work environment (e.g., Foster et al., 2000, regarding gender climate). A second approach has been to directly address the targeted group and ask members about their experiences of discrimination (e.g., Liddle et al., 2004, regarding LGBT climate). The indirectness of the first approach leads to questionable validity, since differences in answers between the subgroups could lie within the subgroups as well as within different environments. The directness of the latter approach may lead to response biases. Some respondents, for example, might not be willing to share their experiences of discrimination, while others might use the questionnaire to promote an agenda of their own. A useful compromise of these two strategies is the referent-shift approach (Chan, 1998). Instead of

asking potential targets about their own experiences of discrimination, respondents are asked to report their perceptions of stereotypes that the company endorses regarding a typical member of their group. Since the focus is on the company and not the participant, this approach reduces the likelihood of a systematic response bias while still tackling the core question.

In addition to climate research, we also drew on measures of age stereotypes for developing our measure of PAC. Attitudes toward older people have been directly assessed, for instance, with the Facts on Aging Quiz (FAQ, Palmore, 1980), which asks for agreement vs. disagreement with several statements regarding aging and the elderly (e.g., ‘The majority of old people are senile’). Other instruments assess age attitudes more indirectly, like the Aging Semantic Differential (Rosencranz & McNevin, 1969). This instrument presents respondents with a list of bipolar adjective pairs asking them to decide which of the two adjectives would describe a person of a certain age more accurately. The same questions are asked again regarding a person of a different age. Although the simplicity of this approach has certain advantages (e.g., it is readily understood and easily administered), past critiques have highlighted several problems concerning this method, such as its exclusive focus on older males and the somewhat outdated and incomplete adjective list (e.g., Polizzi & Steitz, 1998).

Based on an integration of this research, we develop a measure of age climate that remains relatively unobtrusive but at the same time readily interpretable. The PACS asks respondents to indicate the degree to which certain adjectives describe how older workers in their company are generally perceived. This approach combines features of climate measures as well as age stereotype measures. Similar to the Aging Semantic Differential, our measure presents participants with a list of adjectives associated with older workers. However, instead of offering a choice between one positive and one negative adjective, which may prompt social desirability considerations, our measure includes only positive adjectives. As with other psychological climate measures, participants indicate their perception of the work

environment. That means neither are they asked to describe the stereotype they personally hold about older workers, nor are they asked to report on acts of discrimination they have observed or experienced. Asking participants to report directly on discrimination practices may arouse anonymity concerns and thus lead to biased responses - a problem we hoped to avoid. Finally, in line with other studies on subgroup climates (see Liddle et al., 2004), only the target group, that is, employees age 40+, completed the measure. We then tested the psychometric properties of the scale in a sample of older workers. With this approach we hypothesized that it would be possible to reliably measure PAC in organizations.

Hypothesis 1: The PACS allows to reliably measure PAC in organizations.

1.4 Psychological Age Climate and Organizational Commitment

Since no prior research existed that had already established relationships of PAC with other work-related constructs, we reviewed research on other psychological climates to generate hypotheses on such relations. Climate perceptions have been conceptualized as a mediator in the relationship between objective characteristics of the work environment and individuals' reactions in form of work-related attitudes and behaviors (Campbell et al., 1970; Carr et al., 2003). Consequently, numerous studies have demonstrated relationships between psychological climates and other individual-level constructs, such as employee attitudes and performance, have been found to relate to psychological climate in numerous studies (Field & Abelson, 1982; James & Hartman, 1977; Lawler, Hall, & Oldham, 1974; Litwin & Stringer, 1968; Payne & Pugh, 1976; Pritchard & Karasick, 1973). One variable that Parker and colleagues (2003) identified as directly related to psychological climates is organizational commitment. As organizational commitment strongly predicts withdrawal cognitions and actual turnover (Meyer, Stanley, Herscovitch, & Topolnytsky, 2002), this variable is especially relevant in times of demographic change, as employee retention, particularly the retention of highly qualified older workers, has become highly important. The construct

receives additional relevance since higher organizational commitment also has been found to lead to fewer absences, higher performance, and most strongly to more organizational citizenship behavior (Meyer et al., 2002). Finally, also research on the perception of age discrimination in the workplace has found relations with organizational commitment (Orpen, 1995). This led us to the conclusion that this variable might be particularly useful for a first attempt to validate the PACS, as age stereotypes are often considered as a predictor of age discrimination, even if not necessarily a very strong one (Finkelstein & Farrell, 2007).

Hence, we hypothesized that a positive relation exists between PAC and organizational commitment. That is, when older employees perceive that older workers are perceived more favorably, they will likewise be more committed to the organization. This assumption is supported by the idea that members of a subgroup who feel devalued due to their subgroup membership are likely to perceive themselves as less integrated into the larger group (here the company) and might thus feel less committed to it.

Hypothesis 2: Older workers' PAC is positively related to organizational commitment.

To test whether the PACS assessed the climate specifically for *older* workers as opposed to a general, non age-specific climate (i.e., employees' perception of a general appreciation of all employees), we also asked participants for their perceptions of the image of younger employees within the company. To do this, we asked participants to complete the same items that form the PACS with the instruction, however, to evaluate the extent to which the adjectives applied to how *younger* workers were perceived within the company. Including this additional scale in our analyses of the predictive relationships between PACS and organizational commitment also allowed us to partially control for possible common method biases, for example leniency biases, acquiescence biases, common scale format, positive item wording, and measurement context effects (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Furthermore, we also controlled for participants' positive affect at work, as peoples' tendency to view and experience their environment positively may influence their perception of the age

climate as well as their organizational commitment (Podsakoff et al., 2003). In addition, we included age as a control variable, since age might be related to perceptions of the age climate, with preferences for having a friendly work-environment increasing with age (Rhodes, 1983), as well as to measures of commitment (e.g., Finegold, Mohrman, & Spreitzer, 2002). Finally, organizational tenure was also included as control variable. On the one hand, tenure has been found repeatedly to be positively correlated with organizational commitment (e.g., Meyer & Allen, 1984). On the other hand, it seemed likely to assume that those older workers that perceived the age climate to be very negative might have self-selected out of the respective company, leaving those to stay that have a more positive perception. For those older workers who decided not to leave the company despite a rather negative age climate perception, a process of dissonance reduction could take place. Hereby, employees would change their perspective on the age climate in order to reduce the discomfort resulting from working in an environment that devaluates their contribution and potential.

Hypothesis 3: Among older workers PAC is positively related to organizational commitment controlling for the perceived image of younger employees, positive affect at work, age, and tenure.

2. Method

2.1 Participants

A sample of $N = 302$ participants age 40 years and older were recruited from eight companies in Western-Germany. Both medium-sized and larger companies were included in the sample. Median organizational size was 1,132 employees ($M = 1,783$). Different industrial sectors were represented (i.e., service and production). The average age of participants was 48.0 years (range 40 to 63). On average, participants had been in their current job for 11.7 years and had been with their current organization for 18.7 years. Participants had received an

average of 12.3 years of education with a standard deviation of 2.6 years. With lower workforce participation rates for women in older cohorts being typical for the German labor market, the gender distribution of the present sample with an overall of 34.8 % women matched the characteristics of the German workforce 40+. Summarizing the demographic variables, it is fair to say that the sample roughly corresponded with the characteristics of Germany's aging workforce.

2.2 Procedure

The PACS was administered from April to May 2005 as part of a larger interdisciplinary data collection protocol regarding the aging workforce. Within participating companies, questionnaires were distributed to employees selected to represent different organizational units, the age structure of the company's aging workforce, and its gender distribution. The overall response rate was 31.7 %.

2.3 Measures

Psychological age climate scale (PACS). We conducted an extensive literature review in order to develop sample items for a list of attributes which were (a) typically ascribed to older employees, (b) relevant for the work context across different occupations, and (c) easily observable. Existing measures of general age stereotypes, like the Aging Semantic Differential (Rosencranz & McNevin, 1969) focus on stereotypes about the old and very old and were therefore only partially useful to our focus on stereotypes about adults in late middle age. Many negative attributes ascribed to older workers actually represent the absence of a positive attribute typically associated with younger workers (e.g., lethargic versus energetic) (Goldstone and Jones, 2001). In this case we included the positive anchor in order to create a measure less susceptible to social desirability biases, which we thought would be exacerbated by using negative adjectives (i.e., people are less hesitant to ascribe positive characteristics to a social group than negative characteristics). A prescreening of the generated adjective list by

five aging workforce experts resulted in a list of 15 positive adjectives (e.g., productive, flexible, creative, reliable) that roughly represent four of the six stereotype clusters identified by Posthuma and Campion (2009). In a pretest, this first list of adjectives was presented to a sample of 50 older workers from three companies. The average age of the sample was 49.2 years (range 40 to 58 years) with 26.0 % women. Participants were asked to state their agreement with the statement “In my company older workers are seen as...” followed by each of the 15 adjectives, using a 4-point Likert scale ranging from ‘disagree’ (1) to ‘agree’ (4). Three items were excluded after the pretest: One item (career-oriented), since doubts arose whether it could be interpreted as clearly positive and two more (trustworthy and safety-oriented) due to their low corrected item-total correlation and in order to increase the homogeneity of the scale. The internal consistency of the final 12-item scale was $\alpha = .88$ in the pre-test sample. The original German items and an English translation of the 12-item PACS can be found in the Appendix.

Organizational commitment was measured, using the Affective Commitment Scale (ACS) by Meyer and Allen (1984; see McGee & Ford, 1987, for a complete list of items). It assesses commitment characterized by positive feelings of identification with, attachment to, and involvement in the work organization and has been validated repeatedly (e.g., Ko, Price, & Mueller, 1997). It includes eight items, such as “This organization has a great deal of personal meaning for me” and “I do not feel ‘emotionally attached’ to this organization” (reverse scored). Again responses were recorded on a 4-point Likert scale ranging from ‘disagree (1) to ‘agree’ (4). The scale was found to have a sufficiently high internal consistency of $\alpha = .78$.

Control variables. We included four control variables. The perceived image of younger employees was assessed by using the same 12 adjectives that were part of the PACS. However, this time respondents were asked to report how accurate the adjectives would describe how a typical *younger* employee is viewed within the company. As before, responses

were recorded on a 4-point Likert scale ranging from ‘disagree’ (1) to ‘agree’ (4). Cronbach’s alpha for this scale was .89. Positive affect was measured using the 10-item Positive Affect Scale (PAS) by Watson, Clark, & Tellegen (1988). Participants were asked to report on the frequency of their positive feelings at work during the last couple of weeks from ‘never’ (1) to ‘very often’ (5). Sample items are “excited”; “proud” and “enthusiastic”. Internal consistency for this sample was $\alpha = .76$. Finally, for each, age and organizational tenure, one item was included in the data collection protocol.

3. Results

The results are organized in two sections. First, we examined the psychometric properties of the PACS measure. Second, we examined the hypothesized relationship of PAC with organizational commitment. Means, standard deviations, and intercorrelations among study variables, as well as the obtained internal consistencies for the different scales are listed in Table 1.

3.1 Scale Properties.

The factorial structure of the PACS was examined using principal axis factor analysis on the 12 items, following the recommendation of Russell (2002). We used Muthén’s method to control for group differences due to clustered sampling (Muthén, 1989; 1994). Hereby list-wise deletion was used to deal with missing data and all items were group-mean centered. Using Kaiser’s criterion of an eigenvalue > 1 , the scree plot, and the explained variance as criteria, the factor analysis resulted in a single factor. This first factor had an eigenvalue of 6.97 and explained 58.04 % of variance in the 12 items. No other factor had an eigenvalue of greater than .78. The loadings of each of the 12 items on the single factor ranged from .63 to .83, so all items were retained (Ford, MacCallum, & Tait, 1986). Internal consistency for this sample was high with (Cronbach’s alpha = .94). For testing the second and third hypotheses,

responses to all 12 items were averaged, with more positive scores indicating more positive perceptions of the age climate for older employees in the respondent's company.

Table 1. Descriptive Statistics and Intercorrelations among Variables of Study 1

Variable	M	SD	1	2	3	4	5	6
1. PACS	2.87	0.56	(.94)					
2. ACS	3.13	0.51	.29**	(.78)				
3. YI	2.90	0.40	.25**	.12*	(.89)			
4. Age	47.95	5.75	.29**	.19**	-.04	-		
5. Tenure	18.73	10.21	.12*	.21**	-.11	.39**	-	
6. PAS	3.58	0.43	.32**	.38**	.20**	.03**	-.02	(.76)

Note. PACS = Psychological Age Climate Scale; ACS = Affective Commitment Scale; YI = perceived image of younger employees; PAS = Positive Affect Scale; Coefficient alpha values for multi-item measures are presented in brackets on the diagonal.

* $p < .05$ (two-tailed) ** $p < .01$ (two-tailed)

In addition, we wanted to examine if the PACS indeed assessed the image of specifically *older* workers within the company, as opposed to a more general climate of employee appreciation. In order to assess the age specificity of our measure, we conducted a confirmatory factor analysis, testing a two factor solution of the 12 items of the PACS and the 12 items of the image of younger workers. If the two constructs were best represented by a two-factor solution this would support the age-specificity of the PACS. For the computation of the model LISREL 8.80 utilizing maximum likelihood estimation was used (Jöreskog & Sörbom, 2006). Again, all items were group-mean centered prior to the analysis. The chi-square was 665.16 ($df = 252$; $p = .00$). A chi-square value that is two to three times the degrees of freedom is considered an acceptable fit (McIver & Carmines, 1981). The root mean square error of approximation (RMSEA) was .078, which meets the minimum acceptable level of .08 (Price & Mueller, 1986). The fit indices for the model were: non-normed fit index (NNFI) = .96, incremental fit index (IFI) = .96, comparative fit index (CFI) = .96, all exceeding the .95 criterion suggested by Hu and Bentler (1999). In addition, the parsimony goodness of fit index (PGFI) was .70, which clearly exceeded the acceptable level of .50 (Byrne, 1998).

All of the path loadings were significant ($p < .01$) and ranged from .39 to .83. In order to verify that the uncorrelated two-factor structure was the best representation of the PACS items and the items for the image of younger workers, two alternative models were estimated, one proposing a correlated two-factor structure, and another proposing a single factor structure (Mathieu & Farr, 1991). The model fit indicators for the correlated two-factor structure showed a slightly improved fit. For the single-factor structure they showed a considerably worse fit. The results for these models are shown in Table 2. In addition, chi-square difference tests were conducted to compare the three alternative models. These results are also shown in Table 2.

Table 2. Results of Model Comparison for PACS and YI

Model:	RMSEA	NNFI	IFI	CFI	PGFI	χ^2	df	χ^2_{diff}	df _{diff}
2 correlated factors	.077	.96	.96	.96	.70	652.41	251		
2 uncorrelated factors	.078	.96	.96	.96	.70	665.16	252	12.75	1
1 single factor	.206	.84	.85	.85	.43	3121.4	252	2468.99	1

Note. PACS = Psychological Age Climate Scale; YI = perceived image of younger employees; Both χ^2_{diff} scores are significant at the $p < .01$ level.

The model with two correlated factors shows a significantly better fit than each of the other two models, with a correlation of .27 between the two constructs. The path-diagram of the final model with two correlated factors, including the standardized path coefficients can be found in Figure 1.

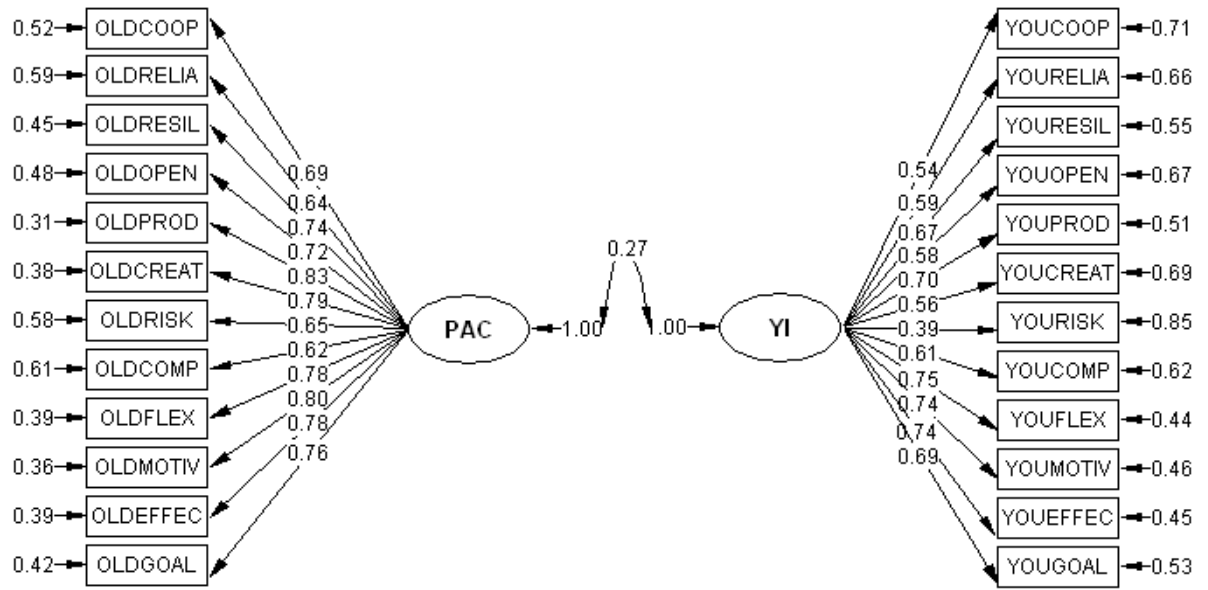


Figure 1. Completely Standardized Path Loadings for Correlated Two Factor Model of Psychological Age Climate (PAC) and Image of Younger Workers (YI)

3.2 Psychological Age Climate and Organizational Commitment

We used the fixed effects approach to clustering to analyze the relationship between PAC and organizational commitment (Snijders & Bosker, 1999). This approach allowed us to control for the dependency in the data due to employees being nested within the eight companies in our sample. Due to the reduced number of clusters more elegant methods like generalized estimating equations or HLM could not be used, each requiring at least 10 if not 30 or more clusters (Horton & Lipsitz, 1999; Norton, Bieler, Ennett, & Zarkin, 1996; Snijders & Bosker, 1999). In accordance with this approach, seven dummy variables that accounted for differences in means of the eight companies were included into the regression equation.

The PACS did significantly predict individuals' affective commitment (H2), $F(1, 293) = 30.85, p < 0.001$. The more positive respondents perceived the age climate in their company the more committed they were (Figure 2).

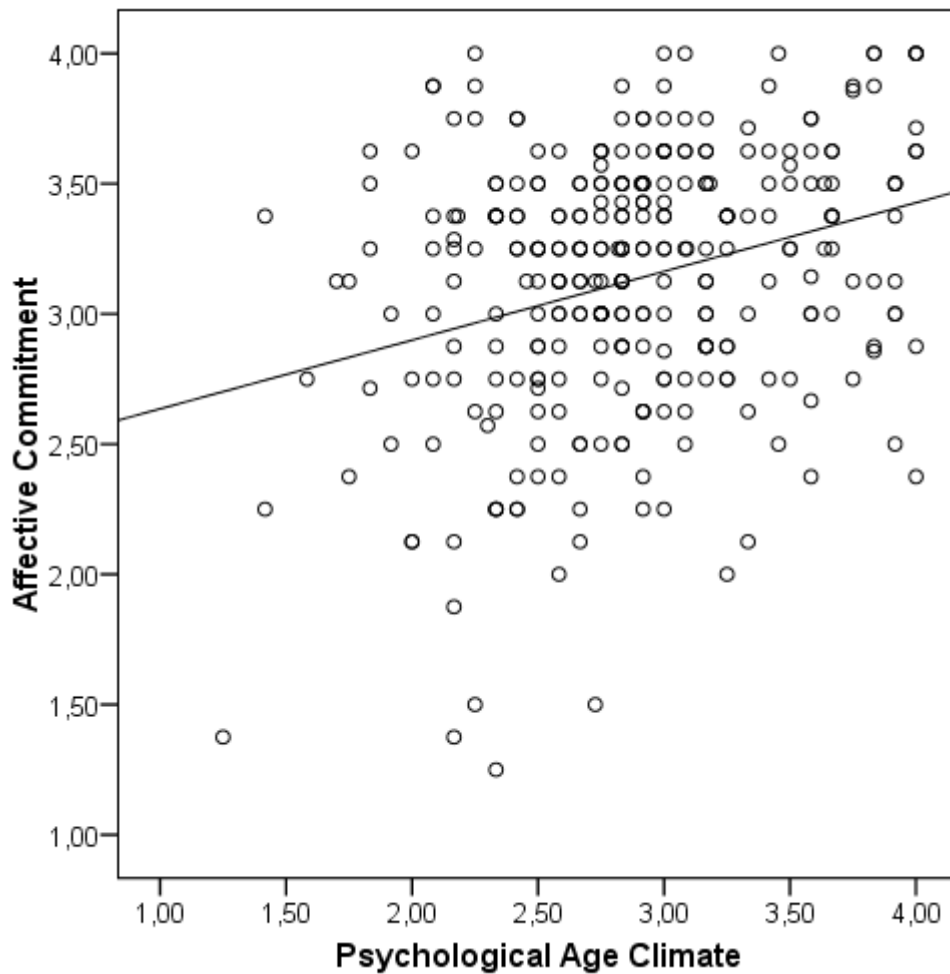


Figure 2. Relationship between Psychological Age Climate and Affective Commitment, no Controls Included

Regression results are presented in Table 3. Analyses were repeated controlling for perceived image of younger employees in the company, positive affect at work, age, and organizational tenure. While the strength of the hypothesized relationship decreased, it remained significant $F(1,289) = 6.93, p < 0.01$ (H3). Interestingly, only positive affect at work ($F(1,289) = 39.45, p < 0.001$) and organizational tenure ($F(1,289) = 6.34, p < 0.05$) were additional significant predictors of affective commitment, while age and the image of younger workers in the company failed to contribute unique variance.

Table 3. Results of Fixed Effects Regression Analysis of Affective Commitment on Psychological Age Climate

Parameter	B	Std. Error	t	Sig.	Partial Eta Squared
Intercept	2,36	,19	12,65	,00	,35
PACS	,28	,05	5,55	,00	,10
Company A	-,08	,14	-,60	,55	,00
Company B	-,03	,14	-,22	,83	,00
Company C	-,08	,14	-,56	,58	,00
Company E	-,23	,13	-1,72	,09	,01
Company F	-,20	,15	-1,34	,18	,01
Company G	,17	,14	1,25	,21	,01
Company H	,03	,12	,25	,81	,00
Company D	0(a)

Note. ACS = Affective Commitment Scale; PACS = Psychological Age Climate Scale;

a: This parameter is set to zero because it is redundant.

4. Discussion

The goal of this study was to examine the relationship between older workers' perception of age stereotypes present in their company (PAC), and one important work-related outcome, namely organizational commitment. In order to answer this question an instrument for the assessment of PAC was developed. The PACS had a high reliability and a solid single factor structure. It could clearly be distinguished from a measure assessing the image *younger* workers in the company, indicating the age-specificity of the measure. The hypothesized relation with organizational commitment was supported and is in line with recent meta-analytic findings on correlates of psychological climates (Parker et al., 2003) and age discrimination (Orpen, 1995). The relation held even after controlling for the image of younger workers, positive affect, age and organizational tenure. Altogether, these analyses provided initial support for the utility of the PACS as a self-report measure of PAC within organizations, thus offering managers a useful tool for identifying an area of possible strength or weakness in an increasingly competitive labor market characterized by demographic change.

4.1 Contribution to Theory and Research

While age stereotypes in the work context have recently gained attention by researchers both in management and I/O psychology (e.g., Posthuma & Campion, 2009), so far little to no research has investigated the empirical relationship between the age stereotypes salient within the work context and work-related outcomes. The PACS closes a gap both in age stereotype and psychological climate research in that it allows the measurement of age stereotypes within a specific work environment. While measures that assess race climate and gender climate both exist, the literature is so far devoid of an instrument that assesses the age climate in a company and thus captures the climate for the last of the three major dimensions of organizational diversity. In constructing the PACS we referred to other measures of age stereotypes like the Aging Semantic Differential (Rosencranz & McNevin, 1969) and applied them to the organizational setting. Employees age 40 and older were asked to report their level of agreement to 12 adjectives as representing the company's view on older employees. These adjectives covered a broad set of age stereotypes that are relevant in the workplace. In order to reduce the scale's susceptibility to social desirability biases we exclusively focused on positive attributes. The result is a highly reliable scale that is relatively short and easy to use. It provides researchers with an efficient tool for measuring individuals' perceptions of their company's view on specifically older employees. The instrument opens the door to research on antecedents, correlates, and consequences of company-specific age stereotypes, i.e. age climates.

Recent research (Parker et al., 2003) has provided strong evidence for the relationship of psychological climates with several work-related outcomes, both attitudinal (e.g., job satisfaction) and behavioral (e.g., job performance). In line with this research and research on correlates of age discrimination in the workplace (Orpen, 1995), we hypothesized that PAC should be significantly and positively related to organizational commitment. Our results

showed that indeed older employees, who perceived the age climate in their company to be more positive, reported a stronger affective commitment to their organization. Due to the relevance of affective commitment for withdrawal cognitions, turnover, absence behavior, organizational citizenship behavior, job performance, and even stress and work-family conflict (Meyer et al., 2001), this indicates that the more positively the image of older workers in a given company is perceived, the higher the likelihood that older employees stay with the company, get involved and contribute to the productivity of their company.

PAC was also positively related to the perception of the image of younger workers in the company. This might seem surprising at first glance, since one could assume that in companies where older workers are seen especially negative this age bias could also lead to younger workers being viewed in a more positive manner. However, this, albeit small, positive relation could also hint at the fact that companies which value their older workers do at the same time appreciate the strengths of their younger workers, thus truly creating an age-fair work environment.

In order to ensure the relationship of PAC with affective commitment was not due to a general climate of employee appreciation, in a second step, we included this variable in the analysis. The findings held even after controlling for the image of younger workers in the company, which suggests that it is specifically the age-related perception of older employees that influences older employees' working lives. The results remained stable, also after additionally controlling for positive affect. Consequently, it can be assumed that the relationships between PAC and work-related outcomes are not a simple reflection of a general tendency of the respondents to view their working life in more or less positive way. Finally, the relationship remained stable, even after controlling for age and tenure, variables that have been proposed to be related with organizational commitment (e.g., Arnold & Feldman, 1982; Porter, Steers, Mowday, & Boulian, 1974; Steers, 1977; Welsch & LaVan, 1981).

The presented results extend earlier findings that analyzed the relationship between age discrimination and work-related outcomes. Orpen (1995) found that a higher degree of perceived age-based discrimination coincided with reduced job satisfaction and organizational commitment. In light of our findings, it seems that even without explicit reference to the behavioral component of age discrimination, detrimental effects of age biases in the workplace can be expected. This study offers first evidence that it suffices for older workers to perceive a negative age climate in the company for their organizational commitment to suffer.

4.2 Implications for Management

As employees' perceptions of the company's age climate influence desirable work-related attitudes, it is vital that managers gain insight into the image of older workers their organization endorses. Otherwise they run the risk of losing their older workers' company-specific know-how, their internal and external networks and the skills that they developed through internal further education as older workers withdraw their resources from the organization through lowered organizational commitment, predictive of withdrawal cognitions and actual turnover (e.g., Meyer et al., 2002). Higher organizational commitment has also been found to lead to fewer absences, higher performances and most strongly more organizational citizenship behavior (Meyer et al., 2002). Consequently, it seems likely that creating a positive age climate can help companies to retain older workers and better profit from their reliability, increased experience and job-related knowledge, as well as their generative behavior (e.g., Peterson & Stewart, 1996). The 12-item PACS provides an accessible and easily administered measure of PAC and promises to be useful for organizational climate surveys and organizational development interventions.

Managers may be well advised to acknowledge that many of the commonly held stereotypes against older workers lack empirical support; in fact, several stereotypes have

been proven wrong. For example, the stereotypic expectation that job performance declines with age has received no clear support. Often performance improves with age (as age usually comes with increasing tenure and, thus, increasing job-related experience), and when declines are found, they are usually small (Avolio et al., 1990; McEvoy & Cascio, 1989; Ng & Feldman, 2008; Waldman & Avolio, 1986). In addition, individual differences in skill and health explain individual performance much better than age differences. Even more important is the finding that, in contrast to the stereotypic belief that investments (e.g., in training) in older employees do not pay off due to their shorter remaining time with the company, the return on such investment efforts can be higher than that with younger workers, since older workers are less likely to quit and to take their new skills with them (Broadbridge, 2001; Hedge et al., 2006; Levine, 1988; Sterns & Doverspike, 1987).

Management should, thus, be aware of the presence of such faulty suppositions in their organization. Assessing the PAC as a potential predictor of age discrimination (Posthuma & Campion, 2009) can help prevent or at least stop developments within the company that can lead to costly litigation for employers (see Faley et al., 1984). If knowledge on the PAC is used to inspire management policy changes that better ensure equal opportunity, it can save the company not only the costs of settling such cases but also the potential damage they can cause to the company's reputation.

In sum, in order to maintain and even improve the commitment of the company's own aging workforce, it may be useful to assess the PAC in the company and if necessary, devise adequate measures to make it more favorable. Such measures have been proposed before (Finkelstein et al., 1995) and should include: (a) sensitizing individuals to the types of situations in which discrimination has been found more likely to occur, (b) educating the workforce on the myths versus realities of aging workers, (c) informing decision makers of principles of stereotyping and categorization to help them realize how stereotypes can unknowingly operate, (d) explicitly valuing diversity not only referring to gender, race, and

education but also to age, and most of all (e) managing individuals according to their individual talents instead of stereotypic preconceptions. This will also help to promote the company's attractiveness as an employer for new highly qualified and motivated older employees, and will thereby help gain and maintain a competitive advantage in a world of demographic change. For this purpose, the PACS is a useful tool since practitioners and consultants in the field face a bewildering choice of measures of ageist tendencies, but few have, like the present scale, been conceived of, and validated, specifically in an organizational setting.

4.3 Limitations of the Study

The present study is not without limitations. First, the cross-sectional design of the study, while being a widely-used method in applied and field psychological research (especially in organizations, see Spector, 1994), limits our ability to draw conclusions about causality. Consequently, the current findings await further examination in longitudinal and experimental studies.

Second, common method bias may have distorted our results since both the independent and dependent variables were assessed by paper and pencil self-report measures. However, the analyzed variables pertain strongly to individuals' perceptions and feelings, and it would be difficult to assess them through actual behaviors and more objective measures. Besides, findings of some researchers have shown that common method bias is not strong enough to invalidate the findings (Doty & Glick, 1998). In addition, the positive relationship between PAC and affective commitment remained significant even after controlling for positive affect. Positive affect has been recommended as a control for common method bias (Podsakoff et al., 2003). Likewise, controlling for the image of younger workers in the company did not change our results. Including this measure helped to address additional

possible common method biases, for example leniency biases, acquiescence biases, common scale format, positive item wording, and measurement context effects.

A third limitation of this study refers to the relatively small number of companies included in our sample. While only a true multilevel design would be able to fully account for the dependency in the data due to the clustered sampling, at least 20, better 30 or more, clusters (i.e., companies) are necessary for this approach (Horton & Lipsitz, 1999). Still, we corrected for the otherwise potentially overestimated standard errors in the best feasible manner by applying group-mean centering in the factor analyses and by using the fixed effects approach to clustering in the regression analysis.

Finally, one could argue that our measure of PAC is incomplete, in that it only includes three to four of the six major age stereotype at work clusters identified by Posthuma and Campion (2009). The stereotype of older workers performing poorly is clearly covered by the PACS items (e.g., productive, effective) and the same is true for the stereotype of older workers being more resistant to change (e.g., creative, flexible). Also, a bit more indirectly, the stereotype of older workers having a lower ability to learn is covered, since several of the items constitute preconditions for learning (e.g., cooperative, open, motivated). Finally, the single positive stereotype of older workers being more dependable was included (e.g., reliable). The two stereotype clusters of (a) older workers having a lower remaining life-time with the organization compared to younger workers and (b) older workers being more costly than younger ones, have not been covered for a reason. It was our impression that these factors are mainly relevant for management decisions in hiring, firing, and retiring, as well as in providing further training to older workers. While these aspects are highly relevant in the workplace, they seem much closer linked to age discrimination and much less observable in every day contact for the targets of the PACS. It could be hypothesized, though, that the degree to which managers endorse these stereotypes would influence how their subordinates perceive the age climate within the company. This effect might be mediated by actual

managerial decisions to hire specifically older employees and to offer or even encourage them to participate in further training.

As a concluding remark we would like to emphasize the fact that the hypotheses have been confirmed across a variety of organizations from different sectors and of different sizes, which points to the external validity of the results. Given the relevance of age stereotypes to behavior within organizations, pursuing this line of research seems both theoretically and practically worthwhile.

4.4 Future Research

While this study has presented first evidence for a relation of work-related age stereotypes and organizational commitment, the process behind this relation remains an open question. A closer look at established antecedents of organizational commitment might prove useful (e.g., Meyer et al., 2001). It is easily conceivable that, for example, PAC perceptions are related with perceptions of role conflict and role ambiguity (Rizzo, House & Lirtzman, 1970), since older workers are on the one hand expected to perform well, just as any other employee, yet on the other hand negative age stereotypes convey doubt about whether they are actually capable of doing so. Furthermore, perceptions of interactive, distributive, and procedural justice might play a mediating role, especially if the age climate perceptions are based on actual acts of discrimination. Finally, the strongest single predictor of organizational commitment, perceived organizational support (Meyer et al., 2001), is very likely to be related to older workers' perception of the age stereotypes prevalent in their organization. Future research should also investigate, to which degree an individual's subjective age (e.g., Goldsmith & Heiens, 1992) might influence the relationship of PAC and work-related outcomes. Whether an individual worker considers himself as belonging to the group of older workers might very well play a moderating role. In this context the individual's status in his or her company might be worth investigating, since it has been proposed that stereotypical job

biographies exist, which set certain normative benchmarks for each career step (Wentura & Rothermund, 2005). Also, the industry an employee works in, respectively the actual job the worker performs might play a role (see Perry & Finkelstein, 1999, regarding job stereotypes). Moreover, it might be interesting to investigate the relationship of PAC with alternative work-related outcomes. For example, mediated through its relation with organizational commitment, PAC might also show relations with measures of turnover intentions and turnover, as well as organizational citizenship behavior and other contextual performance measures, like absenteeism, tardiness and other counterproductive work behaviors (Meyer et al., 2001).

It would further be interesting to look at the relationship between PAC and organizational commitment with younger workers. On the one hand, one might assume that they profit from a more negative age climate, since here their age group might be favored in comparison to the older workers. On the other hand, younger employees' commitment might also suffer from a negative age climate if, due to the presence of negative age stereotypes, they cannot see a future for them with their company.

Lastly, a multilevel dataset with a sufficient number of clusters would offer the opportunity to use the presented scale in order to establish a measure of the *OAC*, which would assess the *shared* perception of the age climate among company members and thus allow for comparisons between companies (Parker et al., 2003). Such a dataset could also help identify both organization-level antecedents and outcomes of age climate. Of specific interest would be the analysis of management strategies that specifically target the aging workforce or of supervisor attitudes towards aging.

To summarize, this paper has presented first evidence on the relationship between age stereotypes in the workplace and older workers organizational commitment. As a measure of the company-specific image of older workers, and thus assessing the PAC within organizations, the PACS was developed and showed robust psychometric properties. So far

only race and gender stereotypes have been conceptualized in the form of sub-group climates in the work context. By offering a conceptualization of age stereotypes within the work context, the PACS closes a gap in both the climate and the age stereotype literature. The new instrument offers managers a useful tool to identify an area of potential strength or weakness in their company that is particularly relevant in times of demographic change.

III. TRANSITION BETWEEN STUDY 1 AND 2

After introducing the concept of age climate in organizations as filling a gap in the climate literature, paper one successfully established the construct validity of the PACS as a reliable unidimensional instrument for the assessment of individual age climate perceptions of older employees. The paper showed that individual PACS-ratings were significantly and positively related to older workers' affective commitment, thus presenting evidence on the predictive validity of the PACS. The first aim of paper two was to complement this evidence of a relationship between PAC and work-related attitudes by assessing its relationship with a more performance related construct, namely work ability. The high relevance of the construct could be considerably substantiated if it were possible to show that age climate perceptions are not only associated with older workers motivation but also their ability to contribute significantly to their company's success. The second and more important purpose of paper two was to investigate interindividual differences in the relationship between of older workers' age climate perceptions and outcome variables.

When investigating the aging workforce, it is crucial to consider major insights into adult development gained from lifespan developmental psychology. Importantly, many of the negative normative changes in cognitive and physical performance associated with aging occur much later than commonly assumed (P. B. Baltes et al., 2006). While indeed a normative decline in fluid cognitive abilities generally starts around the age of 30, in most cases individuals easily compensate for these losses in everyday working life into their sixties. They hereby rely increasingly on crystallized capacities such as work experience (P. B. Baltes, et al, 2006). Despite these facts, age stereotypes are likely to gain in salience and self-relevance with increasing age. In light of declining fluid abilities, obvious facial cues, which constitute a major indicator of categorizing individuals into social groups (Hummert, Garstka,

& Shaner, 1997), and knowledge of one's own chronological age, aging individuals will find it more and more difficult to disidentify from the group of older workers, the older they become. Therefore, the second paper of this dissertation analyzes the moderating effect of age on the relation between PAC and work ability.

A second and even more important result from cross-sectional and longitudinal studies focusing on adult development (e.g., Schaie, 1983, 1996, 2005) has been that as age increases, so does interindividual variability. As one potential factor explaining interindividual differences in the reaction to the work environment, paper two assesses the differential use of the successful aging strategy of selective optimization with compensation (SOC; P. B. Baltes & Baltes, 1990) and its moderating effect on the relationship between PAC and work ability. Moreover, paper two hypothesizes, that such interindividual differences are of increasing importance with increasing age. Therefore, paper two also investigates the effect of a three-way interaction of age, SOC strategy use, and PAC on work ability.

IV. PSYCHOLOGICAL AGE CLIMATE AND SUCCESSFUL AGING IN THE WORKPLACE: ADAPTIVENESS OF SELECTION, OPTIMIZATION, AND COMPENSATION STRATEGY USE UNDER CONSTRAINED EXTERNAL RESOURCES

The aging of the workforce in modern industrialized nations has led researchers to take a closer look at older workers. Successful aging at work requires both internal (e.g., regulatory mechanisms) and external (e.g., supportive context) resources. In the present study with 273 older workers (40-63 years) from different occupations, we investigated the relationship of psychological age climate (PAC, i.e., the perceived image of older workers in a company), as an indicator of the perceived age-friendliness of the individual's work environment, with older workers' work ability. In addition, interactions of PAC with age and Selection, Optimization, and Compensation (SOC) strategy use of developmental regulation were tested. Results showed that the perception of a less favorable age climate was related to lower work ability. This relationship was stronger at higher ages. Finally, at higher ages SOC strategy use was able to buffer the detrimental effect of an unfavorable PAC on work ability. Potential implications for successful aging workforce management are discussed.

1. Introduction

Demographic change has brought increased attention to the concept of successful aging among both practitioners and researchers in psychology. The concept of aging as a lifelong process, always composed of gains and losses which vary greatly across and within

individuals, has strongly influenced the view on older adults (e.g., P. B. Baltes et al., 2006). Numerous longitudinal studies have empirically supported the viewpoint that development trajectories differ significantly between individuals and increasingly so as they age (e.g., Busse & Maddox, 1985; Nelson & Dannefer, 1992; Schaie, 1996). The question researchers in the field of lifespan psychology have been trying to answer is which external and internal factors contribute to an optimal balance of losses and gains that is, successful aging. It has been suggested that both development-enhancing and age-friendly environmental conditions as well as internal resources are needed to age successfully (P. B. Baltes & Baltes, 1990).

One important environment of adult life is the work context. Recently, a construct that captures one feature of the age-friendliness of a particular work environment has been introduced, that is, the age climate (Noack, Baltes, & Staudinger, 2009). This construct assesses the perceptions of how favorable older workers are seen in an organization in terms of age stereotypes associated with them, thus representing an external resource for older workers. One important *internal* resource contributing to successful aging is a set of self-regulatory mechanisms called selective optimization with compensation (SOC). SOC strategies help individuals to compose their lives and reach their goals (P. B. Baltes, & Baltes, 1990), especially under circumstances of restricted external resources.

Certainly, whenever examining successful aging a crucial question concerns the criterion. Researchers have offered multiple criteria, for example, satisfaction with life (Palmore, 1979) or active engagement with life (Rowe & Kahn, 1997). However, one criterion that is part of most conceptualizations, and that has been found to be relevant especially in the workplace is adaptability and health (Robson, Hanson, Abalos, & Booth, 2006). When the Finnish Institute of Occupational Health started to focus on the construct of work ability in the early 1980s, the conceptual definition was presented by the question, how good an individual worker was able to do his or her job at present and in the near future with respect to work demands, health and mental resources (Tuomi et al., 1991). Following this

perspective, the present study investigates the relationship of PAC as an external resource with work ability as one indicator of successful aging.

We hypothesized that older employees' work ability would suffer from a less positive age climate. In addition, we assumed that this external resource becomes more important at higher ages. Further, we hypothesized that internal resources such as the availability and use of SOC strategies would be able to buffer the negative effects of the age-unfriendly work environment, a less positive age climate represents. Finally, we assumed that this buffering effect would be especially strong at higher ages.

1.1 Psychological Age Climate

Already in 1988, Tager stated that "myths about aging can produce a stressful environment for older workers" (p. 57). Such myths often are represented in stereotypes about older workers. Age stereotypes associate certain characteristics with a person solely due to the membership in a specific age group (Fiske, 1998). While stereotypes about older adults are complex and multidimensional (Hummert, 1990; Schmidt & Boland, 1986), in most cases older individuals are seen rather negatively (Kite et al., 2005). In general, these stereotypes are associated with old age rather than with middle or late adulthood, but research on age stereotypes in the workplace has found that even individuals as young as 40 years of age have to fight labels such as 'performing poorly,' 'resistant to change,' or 'unable to learn' (see, Posthuma & Campion, 2009). Such characteristics capture the notion that older workers are not worth investing in, be it by means of training, and/or career development. If such a perspective is pervasive in a work environment, it threatens an important resource that Hobfoll and Wells (1998) describe as having a "valued role at work" (p. 123).

Thus, it seems worthwhile being able to capture this characteristic of the work context. PAC was developed for exactly that purpose (Noack et al., 2009). It is a construct that captures the individual worker's perception of his or her work environment with regard to

how positive older workers are regarded in the organization, respectively to which degree common negative age stereotypes are endorsed within the company. The construct has to be distinguished from *OAC*, in that the latter conceptualizes the perception of the work environment that is *shared* among organization members, and thus constitutes an attribute of organization rather than the individual (Anderson & West, 1998). PAC represents one specific aspect of the work environment, that is, its age-friendliness and has its parallel in other subgroup climates, such as gender climate (Foster et al., 2000) or racial climate (Pike, 2002). In line with Rhodes' (1983) assessment that a given environment, for example, co-worker relations and age-related expectations of others, influences work attitudes and behavior of older workers, past research has revealed that PAC shows meaningful relationships with work-related outcomes, namely with affective organizational commitment (Noack et al., 2009). Specifically, the more positive the age climate was perceived, the more committed older workers were to their company.

Certainly, successful aging in the work context can also be measured by a different criterion such as the older worker's health and adaptability (see Robson et al., 2006, for a review on domains of successful aging). Older workers' work ability, as representing this domain of successful aging, has been found to be associated with social relations at work, including recognition and supervisor's attitudes (Tuomi et al., 1997). Given that PAC represents the perceived appreciation of older workers in a certain work context, this study, hypothesized a direct association of PAC with work ability. Building on the assumption that the salience and self-relevance of age stereotypes in the workplace would increase with age, we also hypothesized that age would moderate the relationship between PAC and work ability, in the sense that the age climate perceptions would show an even stronger relationship with work ability at higher ages.

1.2 Selective Optimization with Compensation

When confronted with limited resources, reserve capacities like knowledge about and use of self-management strategies have the potential to facilitate development (P. B. Baltes, & Baltes, 1990). More specifically, “by using strategies of selection, optimization, and compensation, individuals can contribute to their own successful aging” (p. 27). The model of Selective Optimization with Compensation (SOC) has received great attention in research on successful aging. While *Selection* focuses on the choosing and setting of goals, *Optimization* refers to the flexible usage of goal-related means, and *Compensation* involves a response to loss in goal-relevant means through the application of different external or internal goal-related means in order to maintain goal pursuit (e.g., P. B. Baltes et al., 2006). SOC has been conceptualized as a synchronized ensemble of strategies that work in concert in order to optimize the balance between losses and gains throughout life (Marsiske, Lang, Baltes, & Baltes, 1995). Researchers found that SOC strategy use was positively related to subjective well-being (Freund & Baltes, 2002), self-reported maintenance of important job competencies and goal attainment (Abraham and Hansson, 1995), as well as autonomous setting of work goals and employees’ subjective recollection of supervisor-rated work performance (Bajor & Baltes, 2003).

SOC researchers have proposed that the effectiveness of SOC strategy use depends on the general availability of external resources to individuals (B. B. Baltes & Dickson, 2001; Jopp & Smith, 2006; Wiese, Freund, & Baltes, 2000, 2002). Specifically, SOC strategy use has been found to be effective in protecting a person’s physical and mental well-being when the individual’s resources were low (e.g., Young, Baltes, & Pratt, 2007). Following this line of argument, in our study we hypothesized that SOC strategy use could act as a buffer against the detrimental effect of a less positive PAC on older workers’ work ability. Finally, we hypothesized that SOC strategy use would have a stronger moderating effect at higher ages

due to an increase in losses of biological, mental, and social reserves (P.B. Baltes, & Baltes, 1990), constituting a further limitation of resources. As Abraham and Hansson (1995) put it, “One would not necessarily expect that older persons would be more likely to employ SOC strategies. One would, however, expect that the employment of such strategies would become more necessary for performance maintenance with age.”(p. 101). Their results confirmed this assumption, as only for higher ages (49 years and older) correlations of SOC strategy use with ability and performance were significant. See Figure 3 for our model and hypotheses.

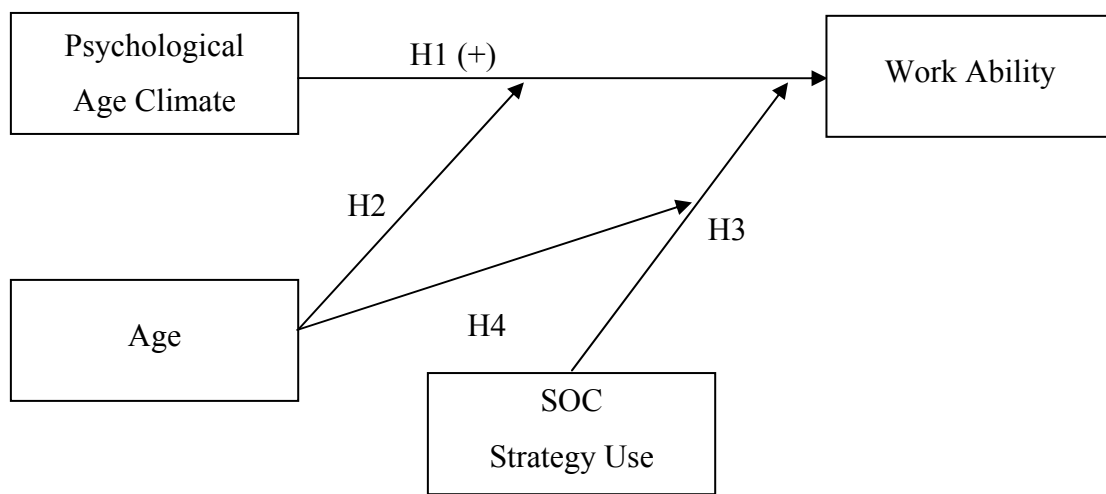


Figure 3. The Proposed Model and Hypotheses

2. Methods

2.1 Participants

A sample of 273 participants aged 40 years and above was recruited from seven large and medium-sized companies in Germany. Companies came from both the service and the production sector. The average age of participants was 47.98 years ($SD = 5.74$, range 40 to 63 years). 33% of the participants were female. On average participants had received 12.24 years of formal education ($SD = 2.59$). Since a smaller proportion of female employees is rather

typical for these cohorts of the German labor market, the sample corresponded roughly with the characteristics of Germany's aging workforce.

2.2 Procedure

The measures for this study were administered from April to May 2005 as part of a larger interdisciplinary data collection protocol regarding the aging workforce. Within the eight companies, questionnaires were distributed to employees selected to represent different organizational units, the age structure of the company's aging workforce, and its gender distribution. In order to ensure anonymity participants mailed the questionnaires directly to the research institution. Data on all measures relevant to this study could be successfully obtained from all but one of the sampled companies. A total number of 1751 questionnaires were distributed among employees of these seven companies. Of these 1751 questionnaires, 527 (30.1%) were completed. Of the 527 respondents, 273 were age 40 and older, thus meeting the inclusion criteria of the current study.

2.3 Measures

Psychological Age Climate (PAC). In order to assess PAC, participants completed the PACS (Noack et al., 2009). Specifically, participants were asked to indicate the extent to which they agreed or disagreed with each of 12 adjectives describing how older workers were viewed in their company using a 4-point Likert ranging from 'disagree' (1) to 'agree' (4). All adjectives were positive in valence so as to minimize social desirability bias. The adjectives represent three broad types of age stereotypes in the workplace that had been identified by the authors reviewing the literature. These types match largely with three of the six age stereotypes at work clusters, identified by Posthuma and Campion (2009): (a) older workers perform poorly; (b) older workers are resistant to change (c) older workers are dependable. Sample items are "productive" (a); "flexible" (b) and "reliable" (c). Responses to all 12 items were averaged, with more positive scores indicating more positive perceptions of the age

climate for older employees in the respondent's company. Internal consistency for the current sample was high with a Cronbach's alpha of .94.

Work Ability. Participants' work ability was assessed using an adaptation of the Work Ability Index (Tuomi, Ilmarinen, Jahkola, Katajarinne, & Tulkki, 1998). The Work Ability Index (WAI) is by far the most used, and well-accepted instrument to measure work ability, as is demonstrated by its availability in 21 languages. It assesses seven aspects of work ability, among which work ability compared with lifetime best, sick leave during the past year and own prognosis of work ability two years from now. Due to anonymity concerns of the participating companies, for our study we had to exclude the third dimension, which, using a check list, assesses the number of current diseases diagnosed by a physician. The scale, consisting of the 6 remaining items, showed a sufficient internal consistency for our sample, with an alpha of .75, which lies in the normal range found cross-nationally for the WAI (Radkiewicz & Widderszal-Bazyl, 2005).

Selective Optimization with Compensation. For the assessment of participants' SOC strategy use, we used the 24-item short version of the 48-item SOC questionnaire developed by P. B. Baltes, Baltes, Freund, and Lang (1999). The dichotomous items are formulated, such that each of them consists of two statements, one statement describing behavior reflecting one of the SOC strategies and the other statement offering a reasonable, non-SOC-related alternative strategy (i.e., distractor). When responding to the questionnaire items, participants were asked to decide which of the statements, characterizing the life-management behavior of two fictitious Persons A and B, described them better in terms of how they generally approach their professional life. The sum of affirmative responses to all items reflecting SOC-strategies represented the individual scores for SOC strategy use. The two-statement, forced-choice format was used in order to reduce social desirability from biasing the answers (Stange, Freund, & Baltes, 2000). Since we were interested in the use of SOC behaviors as a functional set we computed an overall SOC score, as has been done in many previous studies (e.g.,

Baltes & Heydens-Gahir, 2003; Jopp & Smith, 2006; Young et al., 2007). In past research with SOC, the overall score was always the most potent predictor (B. B. Baltes & Heydens-Gahir, 2003). With the current sample, Cronbach's alpha of the scale was .67.

Control Variables. We included three control variables. In order to address the issue of common method bias when using self-report scales (Podsakoff et al., 2003), we controlled in our analyses for positive affect. Positive affect was measured using the 10-item Positive Affect Scale (PAS) by Watson et al. (1988). With this scale, participants were asked to report on the frequency of their positive feelings at work during the last couple of weeks from 'never' (1) to 'very often' (5). Sample items are "excited"; "proud" and "enthusiastic". Internal consistency for this sample was $\alpha = .78$. Past research has shown that physical stress at work is a major predictor of work ability (Aittomaki, Lahelma, & Roos, 2003). In order to ascertain that differences in participants' work ability were not caused by this factor, in addition, we controlled for the effects of a physically stressful environment by using a 22-item checklist on the presence of physical and environmental stressors at the workplace (Slesina, 1987). Participants were asked to report the frequency of stressors, such as "unnatural posture", "heavy lifting", "noise", or "heat" during their work on a 4-point scale from 'never' (0) to 'very often' (3). Internal consistency was $\alpha = .92$ for this sample. Finally, one item assessing the participants' gender was included in the data collection protocol.

3. Results

Table 4 shows the means, standard deviations, and intercorrelations of all study variables, as well as the obtained internal consistencies for all scales. To test the hypotheses of the study, the fixed effects approach to clustering was used in order to control for the dependency in the data, due to clustered sampling (Snijders & Bosker, 1999). For this approach, 6 dummy variables that accounted for differences in means of the 7 sampled companies were included into the regression equation. Due to the rather small number of

clusters (i.e., companies) more elegant methods like generalized estimating equations or HLM could not be used, each requiring at least 10 if not 30 or more clusters (Horton & Lipsitz, 1999; Snijders & Bosker, 1999). Table 5 shows the results of the hierarchical regression analysis. Of the control variables positive affect had a significant positive effect on work ability ($\beta = .50, p \leq .01$), while the frequency of physical and environmental work stressors present during everyday work was significantly and negatively related to work ability ($\beta = -.25, p \leq .01$) in the first step of the regression analysis. Together, the control variables explained 30 percent of the variance in work ability.

Table 4. Descriptive Statistics and Intercorrelations among Variables of Study 2

Variable	M	SD	1	2	3	4	5	6	7
1. WAI	36.09	4.11	(.75)						
2. PACS	2.84	.56	.21**	(.94)					
3. Age	47.98	5.74	-.04	.27**	-				
4. SOC	.69	.14	.12	.19**	.00	(.67)			
5. PAS	3.56	.45	.49**	.32**	.04	.21**	(.78)		
6. Gender	.33	.47	.01	-.03	-.15*	-.04	.04	-	
7. Work Stressors	.84	.50	-.21**	.14*	-.05	-.03	.02	-.12*	(.92)

Note. Listwise $N = 273$. For gender, 0 = male and 1 = female. WAI = Work Ability Indicator; PACS = Psychological Age Climate Scale; SOC = use of selective optimization with compensation strategies; PAS = Positive Affect Scale; Coefficient alpha values for multi-item measures are presented in parentheses on the diagonal. * $p < .05$ (two-tailed) ** $p < .01$ (two-tailed)

In line with our first hypothesis, which assumes a positive relationship between PAC and work ability, Table 5 shows that PAC significantly and positively predicted work ability ($\beta = .12, p \leq .05$). Individuals who perceived the age climate to be less favorable for older workers, also reported a reduced work ability, while those perceiving a more positive age climate, reported a higher work ability. According to our second hypothesis, age moderates the relationship between PAC and work ability, such that the relationship is stronger for employees at older ages. Our data supported this hypothesis. As shown in Table 5, the interaction effect of PAC and age significantly predicted work ability when it was entered into

the third step of the regression analysis ($\beta = .10, p \leq .05$). A simple slope analysis for two-way interactions (Aiken & West, 1991) indicated that the relationship between PAC and work ability was much stronger for older employees at higher ages ($B = 1.70, SE = .58, \beta = .23, t = 2.95, p \leq .01$) as compared to older employees at lower ages, where it failed to be significant ($B = .12, SE = .59, \beta = .02, t = .21, p > .10$). Figure 4 displays the significant interaction effect between age and PAC that supported our second hypothesis.

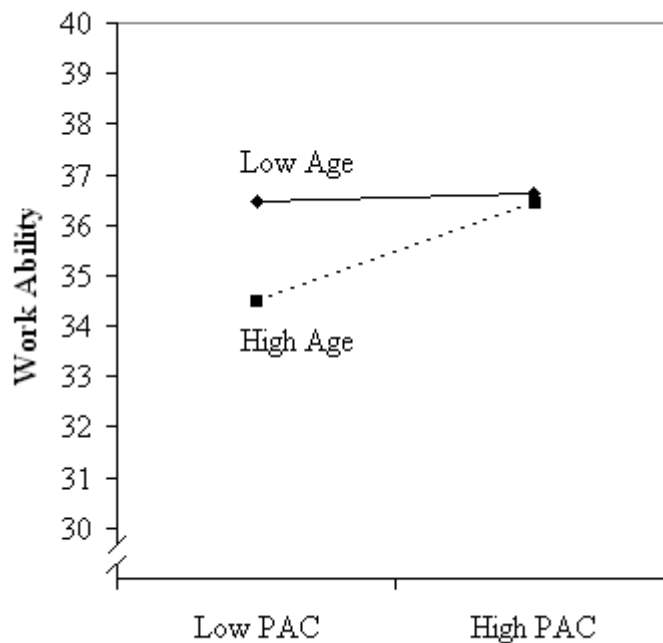


Figure 4. Moderation of the Relationship between Psychological Age Climate (PAC) and Work Ability of Older Employees by Age

Table 5. Results of Hierarchical Moderated Regression Analysis Predicting Work Ability

Step / Predictor variable	Dependent Variable: Work Ability											
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Intercept	36,09	,21		36,09	,21		36,00	,22		36,00	,22	
Step 1: Control Variables												
Company A	.68	.75	.05	.70	.75	.06	.70	.75	.06	.61	.75	.05
Company B	.48	.72	.04	.61	.73	.05	.57	.73	.05	.49	.73	.04
Company C	-.49	.79	-.04	-.29	.78	-.02	-.40	.79	-.03	-.52	.79	-.04
Company D	-.35	.98	-.02	-.42	.98	-.03	-.14	.99	-.01	-.30	.99	-.02
Company E	.02	.75	.00	.09	.75	.01	.01	.75	.00	-.12	.75	-.01
Company G	-.90	.72	-.08	-.90	.72	-.08	-.84	.72	-.07	-.90	.72	-.08
PAS	4.53	.48	.50**	4.25	.50	.47**	4.29	.50	.47**	4.18	.50	.46**
Gender	-.26	.51	-.03	-.40	.52	-.05	-.45	.51	-.05	-.36	.51	-.04
Work stressors	-2.03	.50	-.25**	-2.29	.51	-.28**	-2.24	.51	-.27**	-2.13	.51	-.26**
Step 2: Main Effects												
PACS				.90	.42	.12*	.91	.42	.13*	.93	.42	.13*
Age				-.09	.04	-.12*	-.10	.04	-.13*	-.08	.04	-.12*
SOC strategy use				-.49	1.54	-.02	-.78	1.59	-.03	.49	1.71	.02
Step 3: Two-Way Interactions												
PACS * Age							.14	.07	.10*	.17	.07	.13*
PACS * SOC strategy use							-1.79	2.68	-.04	-2.78	2.72	-.06
Age * SOC strategy use							-.02	.30	-.01	.05	.30	.01
Step 4: Three-way Interaction												
PACS * SOC strategy use * Age										-1.11	.57	-.12*
ΔR^2					.02†			.02			.01*	
R^2		.30**			.32**			.34**			.35**	

Note. Listwise $N = 273$. For gender, 0 = male and 1 = female. WAI = Work Ability Indicator; PACS = Psychological Age Climate Scale; SOC = use of selective optimization with compensation strategies; PAS = Positive Affect Scale. All predictor variables were mean-centered.

† $\leq .10$. * $p \leq .05$. ** $p \leq .01$.

Analyses did not support our third hypothesis. The proposed moderation of the relationship between PAC and work ability by SOC strategy use failed to be significant. However, our findings of a significant three-way interaction of PAC with age and SOC strategy use ($\beta = .12, p \leq .05$) confirmed our fourth hypothesis, suggesting that SOC strategy use does moderate the relationship between PACS and work ability but only at higher ages.

Consistent with our expectations, a simple slope analysis for three-way interactions (Preacher, Curran, & Bauer, 2006) indicated that the relationship between PAC and work ability was more strongly positive for older employees at higher ages with *low* SOC strategy use ($B = 3.22, SE = .96, \beta = .44, t = 3.35, p \leq .01$) than for older employees at higher ages with *high* SOC strategy use ($B = .60, SE = .79, \beta = .08, t = .76, p > .10$). A two-tailed significance test for three-way interaction slopes (Dawson & Richter, 2006) indicated that there was a significant difference between these simple slopes ($t = 2.44, p \leq .05$). At lower ages SOC strategy use did not significantly moderate the relationship between PAC and work ability, which offers an explanation to the insignificant two-way interaction of PAC with SOC strategy use. The simple slopes for older employees at lower ages both with high and with low SOC strategy use were insignificant and did not differ significantly from each other. The slope for older employees at higher ages with low SOC strategy use, however, differed significantly from both, the slope for lower age, high SOC strategy use ($t = 2.39, p \leq .05$), and the slope for lower age, low SOC strategy use ($t = 2.98, p \leq .01$). Hence, it is at higher ages that the supportive power of SOC unfolds its full effect with regard to buffering the dysfunctionality of low PAC. The moderating influence of SOC strategy use on the positive relationship between PAC and work ability for older employees at higher ages and for older employees at lower ages, respectively, is shown in Figure 5.

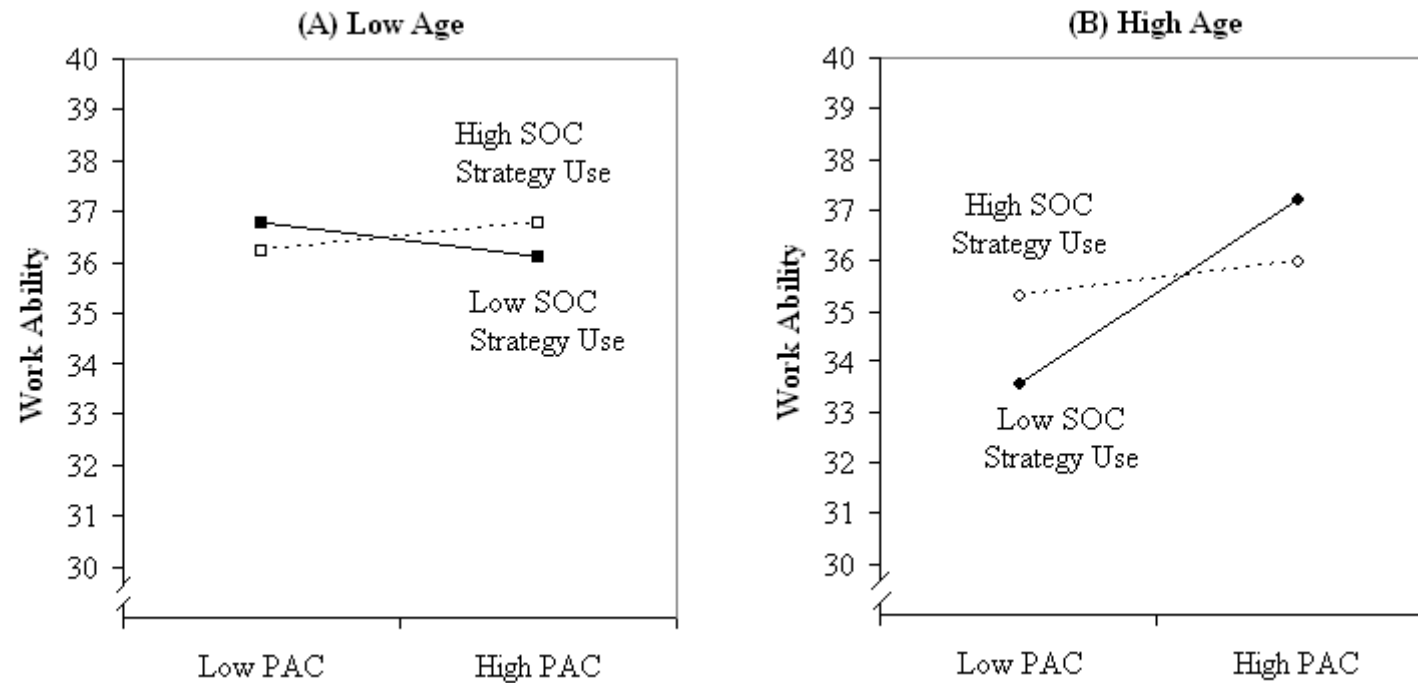


Figure 5. Moderation of the Relationship between Psychological Age Climate (PAC) and Work Ability by SOC Strategy Use for Older Employees at Lower Ages (Panel A) and at Higher Ages (Panel B)

4. Discussion

The concept of PAC describes older employees' perception of how favorable their age group is regarded in their company (Noack et al., 2009). The goal of this study was to analyze to what extent individual age climate perceptions are related to older workers' work ability. Based on the notion that, for older workers, a positive age climate constitutes an important external resource, we hypothesized a positive relationship between the two constructs. Furthermore, we hypothesized that age climate perceptions would be more strongly related with work ability at higher ages, due to a higher salience and self-relevance of negative age stereotypes. In line with a resource model of aging and findings that showed the protective function of self-regulatory mechanisms for developmental outcomes, we further hypothesized that SOC strategy use would buffer the negative effects of an unfavorable age climate on older workers' work ability. Lastly, we hypothesized that SOC strategy use would constitute an even stronger resilience factor at higher ages. The results generally supported our hypotheses.

PAC was significantly and positively related with work ability, thus older workers' perception of an unfavorable age climate in their company posed a threat to their successful aging at work. A significant two-way interaction with age, however, revealed that this relationship is rather weak at lower ages and becomes much stronger at higher ages. Finally, while SOC strategy use did not moderate the relationship of PAC with work ability at all ages it significantly did so at higher ages. Older employees at higher ages who reported to make more use of SOC strategies seemed to suffer less from and were thus more resilient against an unfavorable PAC than those who made less use of SOC strategies.

4.1 Implications for Theory and Practice

Although invisible and intangible, a company's age climate seems to have a powerful meaning for older workers especially with regard to creating age-fair workplaces. In the past,

research on aging in the workplace has considered characteristics of workplaces mainly with regard to questions of ergonomics (e.g., Douglas, Reed, Schwoerer, & Potter, 2004; McMahan & Phillips, 1999; Ilmarinen, 2001; Minter, 2002) and less in terms of psychological characteristics such as leadership (Kearney & Gebert, 2009) or the nature of the social environment. Our findings suggest that the construct of age climate should also be considered when it comes to identifying facilitative or debilitative aspects of the work context. The availability of the necessary resources (including contextual ones) for reaching one's goals has been found to be related to different measures of adaptive functioning (e.g., Diener & Fujita, 1995). Our findings that for older adults at higher ages the perception of a less positive age climate, i.e. an age-unfriendly work environment, is detrimental to their work ability suggest that PAC can be considered such a resource.

Furthermore, our findings extend prior research on the effects of PAC (Noack et al. 2009) by showing that individuals differ in the way they are affected by PAC. While past research has shown that indicators of self-regulation are related directly to subjective physical health (Staudinger, Fleeson, & Baltes, 1999), use of self-regulatory skills like SOC strategies has also been found to constitute a resilience factor in times of scarce resources (Staudinger, Freund, Linden, & Maas, 1999). According to the action-theoretical framework described by P. B. Baltes and Baltes (1990) SOC strategies take over the function of developmental regulation. In using them, individuals manage their lives successfully, especially under constrained resources (e.g., time, energy, support). They help individuals to focus their limited resources on a reduced (selected) set of goals, to pursue these using their resources optimally, and to compensate for declines in or losses of resources by activating or generating alternative ones. Thus, in many contexts where resources are increasingly scarce and tough allocation decisions become more pronounced, effectively using SOC strategies can help to maximize gains and minimize losses (B. B. Baltes & Dickson, 2001). This is true for situations of work-family conflict for middle aged employees (B. B. Baltes & Heydens-Gahir,

2003) and in cases of low job complexity for older employees (Zacher & Frese, 2009). Our findings showed that SOC strategy use could buffer also the negative effect of a less positive age climate perception for older employees at higher ages. Thus, they add to these contexts and show that also when dealing with an unfavorable age climate, use of self-management strategies such as SOC constitutes a useful competence of aging workers.

Companies, on the one hand, may, thus, have one more reason to provide SOC strategy use training for their employees, and consider including this competence among those for which they select incoming members for. Aging employees, on the other hand, in the interest of maintaining and increasing their own employability should also consider more actively engaging in these strategies. Their use may help to protect against circumstances that cannot be prevented, which is especially useful given that negative age stereotypes are still a widespread phenomenon in the workplace.

Our findings point out that PAC is of increasing relevance with more and more restricted resources, calling for action in order to provide age-fair work environments. This call is not alleviated, however, by our finding that SOC strategy use may help to resist the detrimental effects of an unfavorable age climate, since “age-friendly environments refer to ecologies that, in addition to providing development-enhancing conditions, are less taxing on person’s reserve capacities” (P. B. Baltes & Baltes, 1990, p. 20). As employees’ perceptions of the company’s age climate show significant and positive relations not only with their affective commitment (Noack et al., 2009), but also with their work ability, it is vital that managers gain insight into the image of older workers that is held within their organization. Otherwise they run the risk of endangering not only the productivity but also the health of their aging staff. Since larger reserve capacities facilitate the search for environments that are more conducive to the individual’s successful aging (P. B. Baltes & Baltes, 1990), managers of a company with an age unfriendly work environment might find themselves confronted

with high turnover of specifically those older employees who are best able to compensate for an unfavorable age climate using their reserve capacities, i.e. SOC strategies.

At the same time the age climate of a company is possibly easier to change and at lower costs in comparison to measures of major ergonomic restructuring such as, for example, the rearrangement of conveyor belt procedures. While it was not the focus of this study to develop and analyze ways to change an unfavorable age climate, it seems a reasonable suggestion to start with checking official company documents and communication for discriminating language, followed by an age-fairness assessment of policies and practices in evaluation, training, recruitment, and promotion (Dennis, 1988). A useful further step could be to provide age diversity trainings for managers. A program could be set up that informs company members about facts on aging and dispels myths about older workers, especially in light of findings that the presence of a company policy against ageism resulted in less negative views of older workers (Chiu, Chan, Snape, & Redman 2001).

4.2 Limitations and Future Research

Limitations of the current study refer to the cross-sectional design of the study, which, while being a widely-used method in applied and field psychological research (Spector, 1994), limits our ability to draw conclusions about causality. Therefore, the current findings have to be explored further in longitudinal and experimental studies.

Furthermore, the presented results may be subject to common method bias since both predictor and criterion have been assessed by paper and pencil self-report measures. Future research is called to assess work ability more objectively, for example, by including the third dimension of the Work Ability Index (Tuomi et al., 1998), which assesses the number of current illnesses diagnosed by a medical doctor, using a 51-item check-list. The validity of our approach is supported, however, by findings showing that common method bias is generally not strong enough to invalidate the findings (Doty & Glick, 1998). Also, while

common method bias may inflate relationships between variables, it actually leads to an underestimation of interaction effects (Evans, 1985; McClelland & Judd, 1993). Common method bias therefore cannot account for the three interactions that constitute central findings of the current study. However, the hypothesized main effect of PAC on work ability could have been due to an underlying tendency of the respondents to generally answer in a positive manner. In order to rule out this possibility, we used positive affect as a control variable in all analyses (Podsakoff et al., 2003).

A third limitation of this study consists in the comparatively small number of companies that we were able to sample. In future research, a true multilevel design would have to be employed in order to fully account for the dependency in the data due to clustered sampling. For this purpose, at least 20, better 30 or more, clusters (i.e., companies) have been recommended (Horton & Lipsitz, 1999). Still, we corrected for the otherwise potentially overestimated standard errors in the best feasible manner by using the fixed effects approach to clustering in the regression analysis. While our company sample was small, it was also heterogeneous, representing different organizational sizes and sectors and thus giving additional support to the relevance of our findings for a broad range of contexts.

In the current study, similar to prior research (e.g., B. B. Baltes & Heydens-Gahir, 2003; Jopp & Smith, 2006; Young et al., 2007; Zacher & Frese, 2009), we decided to use an overall SOC score, to gather first insights into the relationship of PAC with SOC strategy use, due to its generally high predictive power. Future research, apart from investigating the possible effects of PAC and SOC on work ability with a more longitudinal design, should also investigate possible differences between the four separate SOC strategies with regard to their differential effectiveness in reducing the negative impact of an unfavorable age climate on older workers' work ability at higher ages. Furthermore, this study leaves open the question what mechanisms underlie the relationship of age climate perceptions, SOC strategy use, and work ability. While having a valued role at work is considered a resource in itself (Hobfoll &

Wells, 1998), age climate perceptions might be related to other resources as well. For example, it is likely that a less stereotypic and more positive view on older workers is related to a higher amount or greater availability of beneficial social support. Alternatively, it would be interesting to investigate if a less positive age climate also functions as a social stressor. If older workers are seen rather negatively in their work environment, social isolation and social conflict might follow (Frese & Zapf, 1987) and jeopardize older workers' well-being and work ability.

V. TRANSITION BETWEEN STUDY 2 AND 3

Together, paper one and two provided evidence for the predictive validity of individual age climate perceptions. Older workers, who perceived the age climate in their company to be more positive, also were more committed to their organization and had higher work ability than those who perceived the age climate to be less positive. Two very important questions remain, however. The first is whether these individual perceptions are just that, individual perceptions, or if they refer to an attribute of the employee's company that represents an aspect of the organizational reality. This is the same question as whether or not such a phenomenon as OAC exists at all. In order to answer these questions, a long tradition of climate research (e.g., James & Jones, 1974) calls for indicators of homogeneity in answers of the individual members within each organization. Within-organization agreement on the nature of the age climate is required to actually claim that the company can be characterized by one indicator of OAC, thus providing evidence of consensual validity (Anderson & West, 1998). Paper three tries to answer this question.

The second question refers to possible correlates at the organizational level, given the construct of OAC can be established. How is a company with a more positive image of older workers different from a company that endorses more negative age stereotypes? In trying to follow up on this question, paper three focuses on aging workforce management practices. Chiu and colleagues (2001), for example, found support for their hypothesis that the presence of a company policy regarding ageism might result in less negative views of older workers. Whether or not the organization had a policy against ageism emerged as a positive predictor of the rating of older workers' adaptability. Since none of the companies surveyed in paper three, had such a policy in act, the focus was on other management practices, that were potentially indicative of the age-fairness or age-friendliness of the work environment at

different companies. Areas investigated by paper three were personnel management, knowledge management, and health management which have been found to have particular relevance for the development of older workers (Staudinger, 2006; Knauth, Karl, & Braedel-Kühner, 2005). Paper three presents results on quantitative indicators for such practices, but also integrates supplementary qualitative information from case studies on three of the sample companies. A second distinction of paper three to the other two is the age range considered. Building on the findings of paper two, where PAC perceptions were not related to outcomes at ages slightly above forty, paper three used an age cut-off of 45. This provided a substantial sample, while at the same time adapting the age range to those who might actually consider themselves older workers.

VI. ASSESSING SUCCESSFUL AGING WORKFORCE MANAGEMENT: ORGANIZATIONAL AGE CLIMATE

This paper introduces the concept of organizational age climate (OAC), defined as employees' *shared* perceptions of how favorable older workers are perceived within their organization. Building on prior work on PAC, data of $n = 204$ employees age 45+ from $k = 8$ companies was used to assess the consensual validity of OAC. Furthermore, relations of OAC with indicators of aging workforce management are investigated with a sub-sample of three companies, selected for similarity of focus and demographics of their workforces. Results show that there is sufficient agreement within companies to justify aggregation of individuals' perceptions of the OAC and demonstrate that companies have significantly different OACs. In addition, we uncover first evidence suggestive of a relationship between companies' OAC and their personnel, knowledge, and health management practices that lays the groundwork for future research. Results are discussed in light of findings from three case-studies on the aging workforce management of the sub-sample of companies.

1. Introduction

The aging of the workforce, that is, ever fewer entries of young, highly qualified individuals into the labor market, and longer working lives for all employees (Alley & Crimmins, 2007), challenges companies in their goal to maintain and further increase productivity and thus remain competitive on national and international levels (Bass, Quinn, & Burkhauser, 1995). Therefore, it is surprising that HR managers have only recently begun to seriously address the topic of the aging workforce (Hedge et al., 2006) despite calls as long as 15 years ago for organizations to better attend to the facilitation of the potential of older employees (Friedan, 1993). If companies are to prepare themselves against the impact of

demographic change, they will have no choice but to “develop structures, practices, policies and procedures that create a work environment that maximizes the strengths of older workers in terms of their performance, work attitudes and motivation, and physical and psychological well-being” (Farr, Tesluk, & Klein, 1998, p. 145). While most organizations are unprepared to meet this challenge (e.g., Capowski, 1994; Hedge et al., 2006; Leibold & Voelpel, 2008; Strack, Baier, & Fahlander, 2008), little research has been conducted on organizational correlates of a successfully managed aging workforce (Lepak, 2008; Lepak & Shaw, 2008; Warr, 1994). Thus, there is a need for research that examines how organizationally relevant variables (e.g., structures and practices) operate as environmental factors to influence older employees’ performance, well-being, and attitudes. Negative age stereotypes (e.g., older workers performing poorly, resisting change, and being unable to learn) predominant in the workplace are one central aspect of the work environment that is likely to have an influence on older workers’ productivity. In fact, more than two decades ago, Liebig stated that for effective utilization of the aging workforce, “a non-ageist or age-neutral perspective will need to predominate [in organizations]. This will require a critical self-examination of both personal and corporate tendencies to age bias and stereotyping.” (1988: p. 18).

In this vein, the concept and measurement of a PAC was recently introduced by means of the PACS (Noack, Bowen, & Staudinger, 2008; Noack et al., 2009). PAC refers to individuals’ perceptions of how positive their company views older workers. Importantly, older workers’ perceptions of the age climate were significantly related to their organizational commitment (Noack et al., 2009) and their work ability (Noack & Staudinger, 2009). Since, however, both studies focused on individual (psychological) climate perceptions the question remains, whether these are based on an organizational reality or if they merely lie within the individual. The current study, therefore, extends this prior work by developing a conceptualization and measurement of the *organizational* counterpart of PAC. More specifically, the current study hypothesizes that age climate perceptions are shared among

company members, so that in line with organizational climate research (e.g., James & Jones, 1974; Parker et al., 2003) the aggregated perceptions validly form a construct of *OAC*. Consequently, we hypothesize that companies differ significantly with regard to their *OAC*. Finally, in a first attempt to understand what organizational structures and practices could be associated with a more positive or less positive *OAC*, we investigate the different personnel, knowledge, and health management strategies of three of the sampled companies and compare them with their respective *OACs*.

1.1 Organizational Age Climate – Conceptualization

The term “climate” was first introduced to the social sciences in 1939 as describing a social as opposed to ecological environment (Lewin et al., 1939). The authors compared reactions of children to three different types of team climates, autocratic, democratic, and laissez-faire. Since then, numerous studies have demonstrated significant relations between measures of organizational climates and a wide variety of work-related outcomes, including burnout (e.g., McIntosh, 1995), job involvement (e.g., Brown & Leigh, 1996), and job performance (e.g., Pritchard & Karasick, 1973). While psychological climate refers to an individual’s perception of his or her social environment (James & Jones, 1974; Jones & James, 1979), organizational climate, although generally also measured at the individual level, denotes a characteristic of the superordinate company-level, rather than the individual (Anderson & West, 1998). Often the organizational climate is obtained by aggregating individuals’ responses. Since organizational climate has been defined as “the shared perceptions of employees” (Schneider, 1990, p. 384), this aggregation is only meaningful if there is sufficient agreement between the individuals’ perceptions of the climate.

A second important distinction with regard to climate is whether it is global in nature or specific. Here the literature discerns molar climate from facet-specific climate. While the molar climate construct “appeared to meet the need for a synthetic, molar concept of the

environment” (Tagiuri, 1968, p. 18), facet-specific climate is rooted in the idea that climates must be “for something” (Schneider & Reichers, 1983, p. 21). It captures “employees’ descriptions of an area of strategic focus or organizational functioning” (Parker et al., 2003, p. 391). Examples of this notion are climates for safety (Zohar, 2000), training (Tracey & Tews, 2005), innovation (Kauffeld et al., 2004), or customer service (Schneider et al., 1992). One set of facet-specific climates are subgroup climates, for example, gender climate (Foster et al., 2000) or racial climate (Pike, 2002). OAC fills a gap in this literature as it represents the subgroup climate for the last major demographic variable in the workplace – age. Specifically, age climate describes the work environment with regard to how positive older workers are viewed within a given organization, in terms of the age stereotypes associated with them.

In a few years a large part (more than 40% until 2030) of the workforce will consist of workers 45+ (OECD, 1998), and while not much is truly known about this particular age bracket of employees, many mainly negative stereotypes of older workers exist. The main negative stereotypes about older workers describe them as poor performers who are resistant to change, unable to learn, shorter to remain with the company, and simply more costly (Posthuma & Campion, 2009). These negative age stereotypes are not a recent phenomenon. Already in their 1988 meta-analysis, Kite and Johnson reported that older individuals are seen generally rather negative, a finding that still holds true today (Kite et al., 2005). Workers, hereby, are already perceived as “old” starting around their early forties (Filipp & Mayer, 1999), and the traits ascribed to them are similar to the ones that usually are associated with individuals well past retirement (i.e., > 65 years). This suggests that it is their *relative* as opposed to their absolute age that makes older workers targets of negative age stereotypes (Boerlijst, Munnichs, & Heijden, 1998).

In reflecting the dominant *image* of older workers in the company, OAC does not directly touch upon acts of age discrimination, the behavioral component of age biases (see Finkelstein & Farrell, 2007, Fiske, 2004, and Kite & Smith Wagner, 2002, regarding the

distinction between cognitive and behavioral components of social biases). However, it is our conviction that age-related organizational behaviors, procedures, and practices form the base of the sense-making process underlying a shared age climate perception. Individuals search their social environments for feedback about their value and status. This value and status is communicated in form of behaviors, attitudes, norms, and stereotypes directed toward not only single individuals but also toward social groups. Consequently, it can be assumed that in assessing how positively older workers are viewed within their company older workers reflect on personal experiences with and observations of acts of age discrimination, age-biased language, as well as directly expressed age stereotypes (McCann & Giles, 2002; Posthuma & Campion, 2009; Shore & Goldberg, 2004). These acts can include observable behaviors, such as excluding older workers from informational networks, granting them less support for development (Maurer et al., 2003), offering them fewer promotion opportunities, providing them worse performance evaluations, and laying them off more frequently than younger ones (Posthuma & Campion, 2009). Common examples of age-biased language are “that old goat,” and “too long on the job” (Bessey & Ananda, 1991).

Older workers, who share the same work environment, can be expected to also share, at least to a certain degree, the experience and observation of such behaviors. In this study we therefore assumed that it is possible to attain consensus among older workers’ views of how positive their age group is perceived in their respective companies. More specifically, we hypothesized that their PAC perceptions were similar to an extent that has been found for other climates. This way it would be possible to obtain an attribute of the organization (OAC) rather than the individual.

Hypothesis 1a: The degree, to which older employees of a particular company agree on how positive older workers are perceived in their organization, is within the range found for other organizational climates.

Many indicators and cut-off criteria of within-group agreement have been introduced and discussed in the literature to ascertain the validity of the aggregation procedure that usually leads to the organizational climate variable (see e.g., Burke & Dunlap, 2002; Dansereau & Alutto, 1990; James & Jones, 1974). The individual indicators used for testing this hypothesis are presented in the results section of this paper. Similarly, we hypothesized that based on their unique sets of organizational practices, procedures, and behaviors with regard to the aging workforce companies would differ significantly in their OAC.

Hypothesis 1b: Companies differ significantly in their OAC.

Only by showing that companies can be distinguished with regard to their OAC, can the usefulness of the construct for further investigations of organization level antecedents, correlates, and consequences be established.

1.2 Organizational Age Climate – Organization Level Correlates

After establishing the construct of OAC as an organization level variable that is able to differentiate companies on the basis of their view on older workers, the question arises, what organization level variables are actually associated with it. It is reasonable to assume that age-related management strategies, policies, and decisions have an influence on the employees' shared perception of older workers in the company (Farr et al., 1998). Thus, a further aim of the current study was to explore, which organizational factors are associated with a more or less positive OAC. For this investigation we focused on three management areas that have been identified as crucial for a successful aging workforce management and which therefore should be particularly relevant for OAC (Dennis, 1988; Staudinger, 2006):

1. Personnel management (recruitment and retirement practices),
 2. Knowledge and experience management (knowledge transfer and generation), and
 3. Health management.
-

1.2.1 Recruitment and Retirement

Two areas of personnel management that provide easily accessible information about the views of a company on older workers are recruitment and retirement strategies. A recent study highlighted that companies do not adequately consider their age structure (Munson, 2003). Out of 150 HR executives, 66% reported that their companies did not even have an age profile of their workforce, meaning that they have no hard data on how eventual retirement patterns will affect their business. A balanced age structure, apart from sending a positive signal to workers of all ages, also allows for a distribution of tasks among older and younger workers according to their individual strengths and weaknesses, while at the same time offering the possibility to construct age-heterogeneous teams with all the advantages this may entail (Kearney & Gebert, 2009; Kessler & Staudinger, 2007). Whether or not a company explicitly recruits older workers into its staff can therefore be seen as indicating that the company considers older workers as productive (Posthuma & Campion, 2009). This demonstrated attitude can potentially reverberate, and may thus be perceived by the older employees who work within the company. The same is true for the question of whether a company tries to retain its older employees for as long as possible, or instead tries to lay them off as early as possible (Posthuma & Campion, 2009). A company that encourages early retirement, particularly in times of recession, signals that older workers are the least necessary contributors to the success of the company. It is highly likely that these types of personnel decisions have an impact on the age climate in the company.

Hypothesis 2a: OAC is positively related to companies' engagement in age-friendly recruitment and retirement practices and procedures.

1.2.2 Knowledge Transfer and Knowledge Generation

Good knowledge and experience management is another management area that can contribute to a climate of appreciation of older workers (Staudinger, 2006; Leibold & Voelpel, 2006). It is astounding that this appreciation is sometimes lacking given that

experience has been consistently related to work performance (e.g., Waldman & Avolio, 1993). If managers recognize the know-how of older workers as valuable, they will be aware of the threat of knowledge loss due to mass retirement - a consequence of demographic change. They will furthermore take measures to avoid such drainage by devising procedures that enable older employees to pass on their experience, for example by providing them with the role and status as teacher or mentor (Schetagne, 2001). Certainly, the expressed value for older workers' experience will have favorable consequences for the company's OAC.

Accepting this knowledge and experience as a resource also means to invest in its further development, for example, through participation in company-based further education. While older workers often are reluctant to volunteer for training or retraining because they feel anxious about their ability to succeed in a training program or fear competition with younger individuals, this may also be due to the expectation that supervisors would encourage them if they felt it was appropriate (Sterns & Doverspike, 1988). However, organizational policies and reward practices frequently do not encourage employees to engage in skills updating activities (Farr & Middlebrooks, 1990; Forteza & Prieto, 1994; Fossum, Arvey, Paradise, & Robbins, 1986). In this regard age stereotypes can become self-fulfilling prophecies. People use stereotypes to make decisions (e.g., in hiring, training allocation, and performance management), for instance, when they cannot devote sufficient thought to or do not have enough information about the unique characteristics of each person (Perry, Kulik, & Bourhis, 1996). Consequently, managers, affected by the negative stereotype of older workers being resistant or unable to learn, may deny them adequate training opportunities and the support for developing new knowledge and skills, leading to obsolescence and decline in work motivation, work-related self-efficacy, and finally to a reinforcement of the stereotype (Kozlowski & Farr, 1988; Kozlowski & Hults, 1987; Lindsley, Brass & Thomas, 1995; Maurer, 2001). Indeed, older employees are frequently ignored altogether when employees are assigned to training programs (Sterns & Doverspike, 1989). In addition, the training

measures that are offered are rarely tailored to their learning skills or interests (Schooler, Caplan, & Oates, 1998). Without access to adequate training the know-how of aging workers is condemned to be outdated sooner or later. Consequently, if the access to training programs is blocked for older workers this can easily be interpreted as a sign of biased management attitudes regarding older workers' learning competencies. In contrast, if managers, supervisors, and peers encourage and reinforce older workers in their training efforts (Sterns & Doverspike, 1988), this would speak in favor of their faith in older workers' learning abilities. Building on the notion of age stereotypes as self fulfilling prophecies, the participation of older workers in training measures at their company can, theoretically, be considered as an antecedent as well as a consequence of the OAC.

Hypothesis 2b: OAC is positively related to companies' engagement in age-friendly knowledge transfer and knowledge generation practices and procedures.

1.2.3 Health Management

Companies that consider older employees to be an important resource can be expected to take measures to protect this resource and invest in its physical maintenance (Staudinger, 2006). Many physical changes occur with aging, including functional losses (e.g., decrease in breathing capacity, nerve conduction velocity and cardiac function; Strehler, 1977), homeostatic declines (e.g., loss in thermoregulation, loss in glucose regulation; Hayner, Kjelsber, Epstein, & Francis, 1965), cardiovascular alterations (e.g., reduced resting heart rate, increased blood pressure, reduced blood vessel elasticity; Kohn, 1977), and others (e.g., skin changes, decreased hearing ability, gastrointestinal changes, body composition changes; McDonald, 1988). Unfortunately, research suggests that recent cohorts, including many Baby Boomers, have even higher levels of musculoskeletal conditions than previous cohorts, potentially placing them at increased risk of disability (Reynolds, Crimmins, & Saito, 1998). Along the same lines, in a ten-year longitudinal study it was shown that without adequate measures to deal with age-related changes, work ability generally declined with age (Tuomi &

Ilmarinen, 1999). The degree, to which a company invests in the sustainable health of its workforce across the entire career, can thus be considered a further reflection of its appreciation of their aging workers as a resource that needs to be protected. Based on this notion, we hypothesized that companies with a more positive OAC should also be more active in this area of aging workforce management than companies with a less positive OAC.

Hypothesis 2b: OAC is positively related to companies' engagement in age-friendly health management practices and procedures.

2. Method

2.1 Participants

Prior research on PAC focused on workers age 40 years and older based on the age stereotype at work literature, the cut-off defined by the Age Discrimination in Employment Act (ADEA, 1967), and in order to be as encompassing with the sample as possible (Noack et al., 2009). Findings, however, showed that PAC affected older workers' work ability only at higher ages (Noack & Staudinger, 2009), giving indirect evidence that many employees consider themselves part of the group of older workers later than at age 40. Since the assessment of a company's OAC focuses on the age climate perceptions of the target group - the older workers - these findings suggested that the age-cutoff for the current study be increased. In order not to lose too much power due to a comparatively low labor force participation rate of older workers in Germany (in 2005 52.1 % of individuals age 55 and older; OECD, 2009), the cut off was only increased to the age of 45 and older.

Hence, for the assessment of OAC a sample of $N=204$ participants age 45 years and older was used that were recruited from eight companies in Germany. Both medium-sized and larger companies were included in the sample. Median organizational size was 1141 employees ($M = 2035$). Different industrial sectors were represented (i.e., service and production). The average age of participants was 51.1 years (range 45 to 63). The gender

distribution of the present sample with an overall of 29.4 % women matched the characteristics of the German workforce 45+. It is, therefore, fair to say that the sample roughly corresponded with the characteristics of Germany's older portion of the workforce.

An overview on the company properties is provided in Table 6.

Table 6. Description of Companies and Sample of Older Workers (age 45+)

Company	Sector	Product/Service	Size	n	%f	Sample	
						%blue	Age(M)
A	Production	Quartz glass	826	25	12.0	72.0	51.8
B	Production	Mining technology	838	29	24.1	46.4	51.7
C	Production	Car components	6550	25	4.0	92.0	50.5
D	Service	Finances	1234	13	84.6	0.0	50.9
E	Service	Medical care	1981	23	65.2	13.0	51.0
F	Service	Human Resources	1000	15	33.3	0.0	51.3
G	Service	Insurances	2800	27	44.4	0.0	50.2
H	Service	Energy and public transport	1048	47	12.8	34.8	51.1

Note. n = number of participating employees in sample; %f = percent female employees in sample; %blue = percent blue collar employees in sample; Age(M) = Mean age of employees in sample

The number of companies included in the present study is not large enough to allow for a regression of OAC on different indicators of aging workforce management. Hence, for a very first explorative investigation of the predictive validity of OAC we chose a different approach. In order to minimize the effect of unobserved differences between the companies, we selected companies to be as similar as possible with regard to their workforces. The highest degree of homogeneity in factors like proportion of blue collar workers and proportion of female workers existed between the three companies from the production sector. Consequently, they were selected into a subsample for the comparison of OAC with indicators of aging workforce management practices and procedures. In the following these three production companies will be presented shortly.

Company A has manufactured and produced high purity quartz glass for over a century. Expertise and experience with high temperature processes as well as innovative

solutions for material technology have been the key factors in the company's success. Clients of company *A* come from such diverse fields as precise optics, laser techniques, chemical industry and information transmission. A major market for company *A* lies in supplying components for the production of semi-conductors. The company is composed of five units the biggest of which involves the manufacturing. Here, nearly three quarters of the personnel are employed mostly in the three production sub-units, each of which is situated in different locations. In total, company *A* employed 826 people in early 2005.

Company B designs, produces, advertises, and sells cutting-edge mining technology. Especially in the field of stabilizing structures for deep mining it is highly competitive. Products include everything revolving around the installation, management, and maintenance of mining machinery. About half of its 840 employees work at the two production locations. For the most part, employees work in 6 autonomous production islands. Each of the production islands is responsible for one specific system or product.

Company C produces car components, mainly through automated manufacturing but also in part on the conveyer belt. The company has only one client as it is often the case in this branch. More than two-thirds of its 6550 employees work in the five production areas that either revolve around one specific car component or are responsible for the production of the machines used for the manufacturing process. Only workers in these five areas participated in the current study.

2.2 Procedure

From April to May 2005, the measures for this study were administered as part of a larger interdisciplinary data collection protocol regarding the aging workforce. Within participating companies, questionnaires were distributed to employees selected to represent different organizational units, the age structure of the company's aging workforce, and its gender distribution. In order to ensure anonymity participants mailed the questionnaires

directly to the research institution. Data on OAC could be successfully obtained from all of the sampled companies. A total number of 1872 questionnaires were distributed among employees of the eight companies. Of these 1872 questionnaires, 593 (31.7%) were completed. Of the 593 respondents, 204 were age 45 and older, thus meeting the inclusion criteria of the current study. For the sub-sample of the three production companies 332 questionnaires had been distributed and 186 (56.0 %) were completed. Of the 186 respondents of these three companies 79 were age 45 and above.

2.3 Measures

Organizational age climate. In order to assess the OAC, participants completed the PACS (Noack et al., 2009). Specifically, participants were asked to indicate the extent to which they agreed or disagreed with each of 12 positive adjectives describing how older workers were viewed in their company using a 4-point Likert ranging from ‘disagree’ (1) to ‘agree’ (4). The adjectives represent three broad types of age stereotypes in the workplace that had been identified by the authors reviewing the literature. These types match largely with three of the six age stereotypes at work clusters, identified by Posthuma and Campion (2009): (a) older workers perform poorly; (b) older workers are resistant to change; (c) older workers are dependable. Responses to all 12 items were averaged, with more positive scores indicating more positive perceptions of the age climate for older employees in the respondent’s company. Internal consistency for the 12-item scale was high with a Cronbach’s alpha of .94 for both the full sample and the three company sub-sample. The OAC index was computed by averaging the PAC scores across all participants from a specific company, a procedure that is in line with climate literature (e.g., Parker et al., 2003).

Recruitment and retirement practices. For assessing the recruitment strategies participants were asked to report their organizational tenure. Two variables were generated from this information: a) the percent of older employees that had been with the company for

ten or fewer years, a cutoff frequently used in order to describe the end of advancement within the organization (see Morrow & McElroy, 1987), and b) the minimum tenure of older employees in each company sample. Both variables were used as indicators for whether the company had hired older workers. Furthermore, the age distribution of the three production companies was analyzed in order to identify the age focus and retirement practices. Hereby two cut-offs were of particular interest. On the one hand, in order to investigate the youth focus in recruiting, we assessed the percentage of workers younger than 40 years old, following the cut-off set by the ADEA. On the other hand, in order to investigate the retirement practices, we assessed the percentage of workers age 55 and older, following the cut-off set by the OECD (2009).

Knowledge transfer and knowledge generation practices. Concerning the companies' inclusion of older workers in the respective knowledge management strategy and its realization, participants were asked to report participation in further education measures within the last three years. The average number of trainings per older employee was used as an indicator of training participation for older workers within the companies.

Health management practices. Finally, the actual health of the participants was assessed as one indicator of the companies' health management. In order to determine the health status of a company's older employees as objectively as possible with self-report data, participants were asked to complete an item assessing the number of days the employee had to stay completely at home due to illness during the past 12 months (Item 5 of the work ability inventory (WAI), Tuomi et al., 1998). The five points of the item are labeled: 'no day' (1), 'at maximum 9 days' (2), '10-24 days' (3), '25-99 days' (4), and '100-354 days' (5). In addition, participants completed the second scale of the Nordic Questionnaire (Kuorinka et al., 1987). Participants answered 9 items (yes/no) regarding whether they had been unable to work normally throughout the last 12 months due to pain or problems in any of nine regions of the musculoskeletal system, such as shoulders, elbows, or lower back. Cronbach's alpha for the

nine item scale was .67 for the three company sub-sample. The average number of symptoms per employee served as the second indicator for the health status of the company's older workers.

3. Results

3.1 Consensual Validity of Organizational Age Climate

Climate researchers have used two different approaches for ascertaining a minimum level of agreement within organizations in order to establish that a shared climate does actually exist. The first approach measures agreement based on the variance on the individual items within each organization like, for example, the r_{wg} -indicator (James, 1982; James, Demaree, & Wolf, 1984) and the average absolute deviation index AD_M (Burke, Finkelstein, & Dusig, 1999; Burke & Dunlap, 2002). A second approach measures agreement based on the relation of between-group and within-group variance, using the intra-class correlation (ICC) statistics (Bartko, 1966, 1976), F -values (Drexler, 1977) and η^2 -values (James, 1982) from univariate ANOVAS.

In support of hypothesis 1a, Table 7 shows that the $r_{wg(J)}$ within the eight companies ranged from 0.94 to 0.97 with an average of 0.96, far exceeding in each company the 0.7 threshold-level used by George (1990) and Nunnally (1978) as a sufficient level of consistency among members of a group. The average $AD_{M(J)}$ ranged from 0.51 to 0.63 with an average of 0.55, falling somewhat below the maximum tolerable average deviation of 0.67 for a 4-point Likert-scale (Burke et al., 1999). The $ICC(1)$ of 0.10 and the η^2 of 0.12 values match the median of 0.12 that James (1982) reported for climate studies and are certainly within the range of 0.05 to 0.20 that Bliese (2000) reports as typical. Similar values have been reported as acceptable by other researchers (e.g., Schneider, White, & Paul, 1998). Furthermore, with a value of 0.73 the $ICC(2)$ lies well above the 0.60 level Glick (1985) recommends as a cutoff, indicating that the company-means of the individual PACS scores can be interpreted as

reliable indicators of the OAC. In addition to demonstrating sufficient consensus among members of each company, the discriminatory power of OAC must also be confirmed in order to justify aggregation (Rousseau, 1988). Therefore, one-way ANOVAS were used to test for between-company differences in age climate scores. Analyses revealed significant differences between companies ($F(7, 196) = 3.69, p < 0.001$), far exceeding the minimum criterion for group differences suggested in the literature (i.e., F ratio greater than 1; Hays, 1981) thus supporting our hypothesis 1b. These results show that indeed it is justified to aggregate the PAC scores to the company-level, thus providing a reliable and internally valid measure of OAC. The OAC scores for each company are depicted in Table 7.

Table 7. Organizational Age Climate and Indices of Consensual Validity

Company	n	OAC		Homogeneity	
		M	SD	$r_{wg(J)}$	$AD_{M(J)}$
A	25	3.12	.54	.96	.54
B	29	3.17	.48	.97	.53
C	25	2.86	.57	.95	.56
D	13	2.74	.64	.94	.63
E	23	3.03	.55	.96	.55
F	15	3.32	.49	.97	.54
G	27	2.81	.44	.97	.51
H	47	2.77	.55	.96	.53

Note. OAC = Organizational Age Climate

3.2 Predictive Validity of Organizational Age Climate

To explore the predictive validity of the OAC scores, we used quantitative indicators to compare the three production companies regarding recruitment and retirement, knowledge transfer and knowledge generation, and health management. While both company A and B exhibit a rather positive OAC with ratings of 3.12 and 3.17, respectively, older workers in company C seem to be regarded less favorably, with an age climate rating of 2.86. Thus, according to our hypothesis we expected companies A and B to be rather more supportive of older workers in these three areas than company C.

3.2.1 Exploratory Statistical Tests

Despite relatively small sample sizes we analyzed differences in personnel, knowledge, and health management by using Analysis of Variance. The omnibus multivariate test of any differences on the four dependent variables (organizational tenure, average training participation over the last three years, sick-leave days in the past 12 months, and average number of musculoskeletal symptoms, due to which unable to work normally in the past 12 months) showed a significant overall effect, $F(8, 146) = 3.34$, $p < .01$. Due to this encouraging result, we continued by assessing univariate contrasts with ANOVAs. The results showed that contrasting company *A* and *B* with company *C*, for all variables apart from the average number of musculoskeletal symptoms, a significant difference in the expected direction could be observed (see Table 8). When looking more closely at the latter variable, the difference, however, was in the same direction, with 60%, respectively 65.5%, of *A*'s and *B*'s employees, but only 56% of *C*'s employees having been symptom-free in the last 12 months. This difference gets even more pronounced when looking at the participants that reported 3 or more symptoms (12%, and 3.4 % for *A* and *B*, resp. vs. 24% for *C*). In order to control for the possibility that the corresponding differences in OAC and the health data might be due to differences in the proportion of female and/or blue collar workers in the three samples, we repeated the calculations on a subsample of exclusively male production workers in each of the three companies. Though not always significant due to the much reduced sample sizes, the results pointed in the same direction.

In the following we present next to the quantitative indicators also supplementary information about each company in our sub-sample, separately for the three investigated dimensions of aging workforce management. This additional information was extracted from each of three case studies where company *A* has been studied by Bartlick (2005), company *B* by Bernhard (2005), and company *C* by Katz (2005).

Table 8. Indicators of Aging Workforce Management

Variable	Company			ANOVA Contrast (A+B vs. C)	
	A	B	C	F(1,76)	p (2-tailed)
OAC	3.12	3.17	2.86	5.19	.03
Personnel Management					
Tenure \leq 10 years	28.0 %	13.8 %	4.0 %	3.92	.05
Minimum tenure	4.0 ys	0.5 ys	8.0 ys		
Knowledge Management					
N of trainings (3 years)	1.36	0.86	0.28	10.15	.01
0 trainings (3 years)	44.0 %	48.3 %	72.0 %		
2+ trainings (3 years)	40.0 %	24.1 %	00.0 %		
Health Management					
WAI5	1.68	1.45	2.04	5.01	.03
0 days of sick-leave (12 months)	56.0 %	69.0 %	32.0 %		
1-9 days of sick-leave (12 months)	24.0 %	17.2 %	44.0 %		
NORDB	0.8	0.59	1.20	2.47	.12
0 symptoms (12 months)	60.0 %	65.5 %	56.0 %		
3+ symptoms (12 months)	12.0 %	3.4 %	24.0 %		

Note: OAC = Organizational Age Climate; WAI5 = item 5 of the Work Ability Index: five-point item that assesses the amount of sick leave days in the last 12 months; NORDB = scale B of Nordic Questionnaire: average number of musculoskeletal symptoms that caused an inability to work normally in the last 12 months

3.2.2 Recruitment and Retirement

Due to strong economic pressures a few years prior to the data collection company *A* had to lay off nearly every fourth employee. The company decided to mainly dismiss their younger workers, this way keeping the know-how of their older workers (Bartlick, 2005). This decision is also reflected in the company's age distribution (see Figure 6). At the time of our study relatively few workers were younger than 40 years old (37%) and none younger than 20. The appreciation of the skills and knowledge of older workers, however, also shows when looking at the recruitment specifically of older workers. Until very shortly before the major lay-off, the company was still directly recruiting older workers. In our sample of older employees, the minimum organizational tenure for a member of company *A* was 4 years, and 28% of all older (45+ years) employees had stayed with company *A* for ten years or less (see Table 8 for a summary of the quantitative data). While partial retirement is an option for

organization members (Bartlick, 2005), there still was a sizeable amount of workers aged 55+ (11%).

As Bernhard (2005) reports, management interviews revealed that each year company *B* recruits new employees in the range of about 5% its current workforce size and plans to do so also in the future. The company hereby recruits both trainees and experts. Indeed, nearly 14% of our sample of older employees had worked for the company for ten or fewer years. The company's recruitment of older workers was also reflected in the comparably low tenure (half a year) of the company's most recent older recruit. Although company *B* also offers the opportunity for partial retirement (Bernhard, 2005), 15.5% of the overall staff is 55 years or older, while 26 % are younger than 40 (see Figure 6).

According to Katz (2005), ten years before data collection, company *C* lay off a significant number of workers. These were exclusively workers older than 55 years and they were sent into early retirement. Just two years later, the company newly recruited a large number of 25-29 years old employees. Since then the company recruits nearly exclusively among their own young trainees. This is in stark contrast to companies *A* and *B* and is also reflected in the age distribution of the company (see Figure 6) where the cohorts of those younger than 40 years of age amount to more than 50% of the company's workforce. The quantitative indicators reflect the same trend: The most recent older member of the company had been recruited 8 years ago, and among our sample of older employees only 4% reported tenure of ten or fewer years. Furthermore, early retirement seems to be the normative career path in company *C*, as only 7% of all employees were aged 55 years or older.

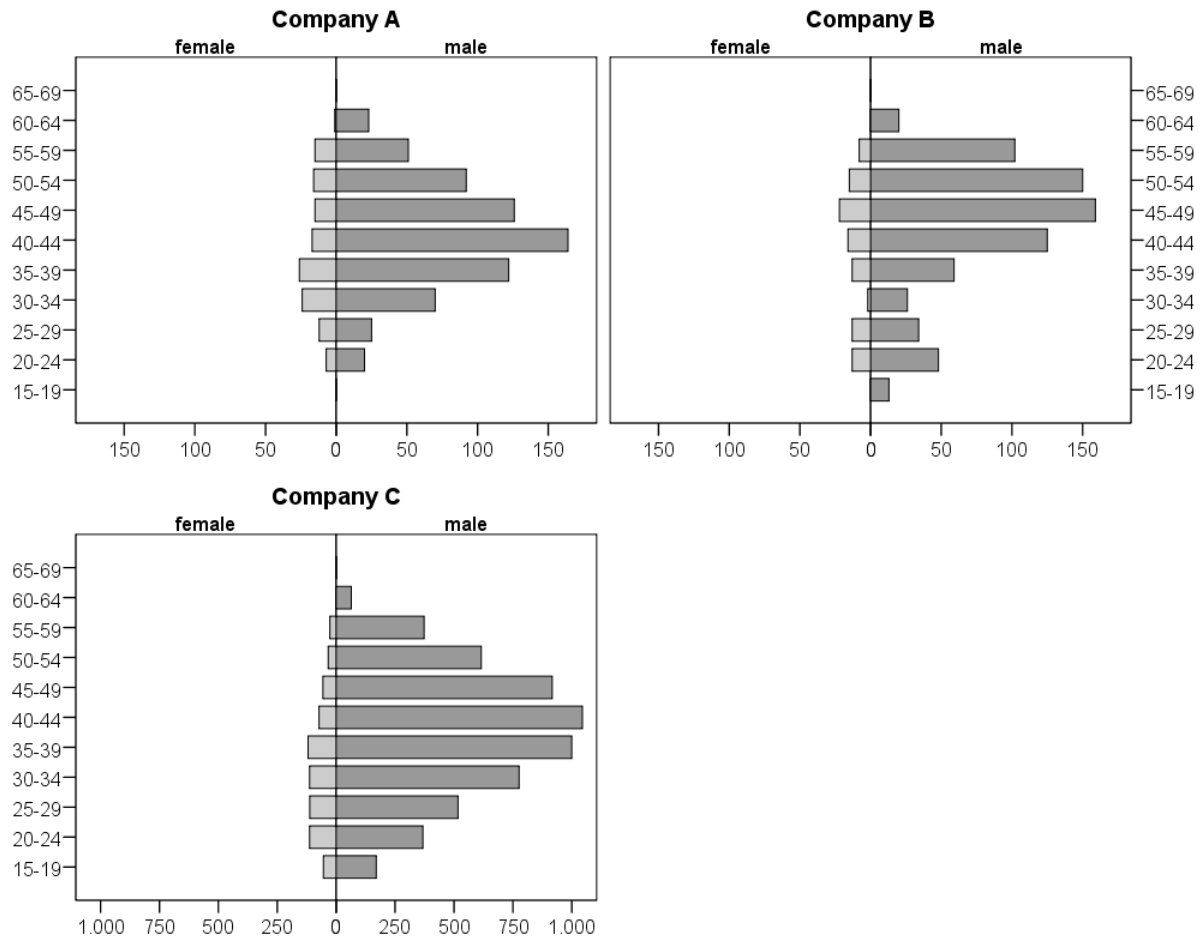


Figure 6. Age distribution in the three production companies *A*, *B*, and *C* split by gender.

3.2.3 Knowledge Transfer and Knowledge Generation

As Bartlick (2005) reports, company *A*, based on its participation in the business excellence initiative of the European Foundation for Quality Management, has recently launched an initiative toward the formation of a structured knowledge management, highlighting the awareness on the issue. Two programs that address knowledge transfer are currently already under way in company *A*. The first is a voluntary mentor program, in which older employees are paired with new recruits to share useful knowledge and transfer their expertise about company practices, procedures, and processes. The second recently launched program is a multiplier program in which employees with expert knowledge are trained to transfer their knowledge to others. In the management interviews conducted by Bartlick

(2005), older employees were described as the main carriers of know-how, due to their active contribution to the development of the current organizational structure. In this they are also supported by the company through further training practices. In our sample of older workers, 40% reported to have participated in two or more trainings during the last three years. On average they participated in 1.36 trainings per person.

For company *B*, Bernhard (2005) reports that management interviews showed awareness of the threat of knowledge loss due to early and normal retirement. Consequently, a policy for a more professional knowledge management was in preparation at the time of data collection to be presented to the board of governors. In individual departments, a system of succession planning had already been installed. As part of this system, retiring experts in key positions of these departments can suggest who should succeed them. Then the retiring employee works in tandem with his or her successor for the last one or two years of the retiring employee's term (Bernhard, 2005). Furthermore, the management interviews revealed that know-how and competent personnel are seen as the major competitive strengths of the company. Managers reported that they highly valued older workers' all encompassing experience and knowledge, their high reliability, high involvement and engagement, their high social competences and finally their role as stabilizers of organizational procedures as well as their role as key elements for knowledge transfer. As one example of this positive attitude towards older workers, one manager reported, "Our senior colleagues are as solid as a rock. Without their knowledge and experience we could never have realized complex projects like the implementation of the production islands so successfully" (Bernhard, 2005, p.30). The management in company *B* also reported awareness of the necessity for age-specific education methods in order to maintain and further increase the know-how of their older employees. Accordingly, the regard for older workers' expertise and their training needs was also reflected in the high participation rates of older employees in further education measures. Similar to company *A*, more than 50% of the older workers in company *B* also reported to

have participated at least in one training measure, while 24% had received even two or more trainings during the last three years, resulting in an average number of 0.86 trainings per employee.

In comparison, company *C* management interviewees reported to Katz (2005) that the company did not have a general knowledge management strategy. Katz further relates that most employees could not access information on training opportunities since the company generally focused on offering task-related trainings as opposed to need-related ones. While the interviewees rated the employees' general level of qualification highly, Katz states that for some highly qualified specialists their current position did not allow them to apply their full knowledge and they had to perform tasks that required only a minimum of know-how. Thus, the trainings that were offered sometimes lacked application opportunities in everyday work. Also, the interviews revealed that trainings were not evaluated through follow-ups. One manager announced that, "Learning must never stop, no matter the age" (Katz, 2005, p. 17) because, as another manager put it, "He who stops learning, stops living," (p. 18). However, both qualified their statements by pointing out that enlisting employees in further education measures only made sense if the employee would stay with the company long enough so that the company could realize a return on its investment. Otherwise, the financial investment necessary for providing an employee with such training measures would not be sensible from the company's perspective and the employee him- or herself would have to at least partially cover the financial costs of the training (Katz, 2005). Such a perspective is a direct reflection of one of the six age stereotype clusters identified by Posthuma & Campion (2009). Also interviewees were skeptical regarding older employees' capacity to learn completely new topics or to participate in more general seminars, while some even questioned the ability of older workers to learn something new, given their reduced vitality. The quantitative indicators reflected this negative attitude: Overall, only 28% of older employees had participated in trainings in the last three years, and no employee reported having participated in more than

one training. Thus, on average, older employees at *C* participated in just 0.28 training measures.

3.2.4 Health Management

Managers of company *A* reported that the health of their employees had been in the focus for quite a while (Bartlick, 2005). The company had invested a lot in supporting their employees' health by implementing preventive measures to improve work conditions as well as employee fitness. A training designed to prevent back injury had been offered on a broad scale. Furthermore, one of the three production sites had been recently ergonomically restructured. Employees at the site additionally received ergonomic coaching. As Bartlick reports, managers of *A* declared that encouraged by the success of these measures an extension of this program to other units is being considered. The quantitative indicators revealed an average of 1.68 on the sick days item, corresponding with 56% of participants indicating that they had not taken a single sick-leave day, while 24% had taken one to nine days of sick-leave. The average number of musculoskeletal symptoms that had caused an inability to work normally in the last 12 months was 0.8 among our sample of older employees of company *A*, with 12 % of our participants reporting 3 or more symptoms.

As reported by Bernhard (2005), production in company *B* is organized mainly as autonomous manufacturing in production islands. Hereby, as a manager of company *B* stated, "in order to guarantee a balanced strain on all workers, we take care that members of one production island rotate regularly" (Bernhard, 2005, p. 33). In addition to favorable working conditions the company also offers preventive back training to employees. Finally, the company facilitates a number of sports activities, such as Squash, Soccer, and Volleyball. The quantitative health indicators likewise reflected this positive approach. For company *B* the average rating of days of sick-leave in our sample of older employees was 1.45 with 69 % of participants not staying home for even one day during the last twelve months due to health reasons and 17% staying home for one to nine days. An average of 0.59 musculoskeletal

symptoms was reported by the participants as having caused detriments to functionality at work during the last 12 months, with only 3.4 % reporting three or more symptoms.

Company *C*, in contrast, seemed to invest relatively little in the health of its workforce. In comparison to *B*, in company *C* job rotation, job enlargement and job enrichment were still underdeveloped tools in the attempt to reduce unnecessary strain for employees. According to Katz (2005), management interviews revealed that so far, the company had not yet made ergonomic advancements for sufficiently adapting to the needs of older workers and that employees were not always coached on how they could best maximize the benefit of the present ergonomic adjustments. Furthermore, apart from post sick-leave interviews, the company made no use of preventive back trainings or any other measures to invest in the fitness of the workforce, nor did the company facilitate any sports activities or related infrastructure (Katz, 2005). Katz also reports that managers were not completely convinced of the usefulness (again in the sense of return on investment) of such measures. The health-related quantitative indicators reflect the health management efforts: The average scale-rating of the number of sick-leave days was 2.04, and considerably higher than in *A* or *B*, with only 32% of older employees reporting not to have missed one day of work in the last twelve months due to health problems, whereas 44% of the sample of older employees reported having taken between one and nine sick days. Among the three companies, with 1.20 the average number of musculoskeletal symptoms during the last 12 months was highest in *C*. Here 24 % of participants reported to have suffered from 3 or more symptoms.

4. Discussion

The current study aimed at developing the concept of OAC (OAC) as an attribute of a company's perspective on its older employees. More specifically, we hypothesized that individual perceptions on how favorable older employees are regarded within a certain company (PAC; Noack et al., 2009) are based on an organizational reality, and thus are shared

among company members to a similar degree as is typical for other organizational climates (e.g., Bliese, 2000). Similarly, we hypothesized that companies would differ significantly from each other in the degree to which their older employees are perceived favorably. In order to lay the ground for future research on organization level antecedents, correlates, and consequences of OAC, this study, furthermore, tried to take a first glance at which organizational structures and procedures might be related to a company's OAC. Therefore, we hypothesized that OAC would be positively related to age-friendly practices regarding recruitment and retirement, knowledge transfer and knowledge generation, and health management.

Our results generally supported our hypotheses. Specifically, with sufficiently high values for agreement in PAC ratings within the eight companies of our sample and significant differences between them, first evidence for the consensual validity of OAC could be gathered. Furthermore, in a sub-sample of three companies selected for homogeneity regarding type of work (i.e. companies from the production sector) and demographic characteristics of its workforce (i.e., proportion of female and blue collar workers), OAC was positively related with indicators of age-friendly practices in all three investigated management areas. The two companies with a significantly more positive OAC compared to the third also had recruited a significantly higher amount of older employees recently. Besides, their older employees had received a significantly higher number of trainings recently, and the health status of their older employees was significantly more positive. Supplementary information from three case studies on the selected companies supported these findings. Overall, the results of this study suggest a further systematic investigation of the relationship between OAC and aging workforce management practices.

4.1 Contribution to Theory and Practice

With the conceptualization of OAC an important gap in climate literature has been filled. While the perception and treatment of other demographic subgroups in the workforce has already been translated into a respective organizational climate a couple of years ago, for example with gender climate for female workers (Foster et al., 2000) and racial climate for workers from ethnic minorities (Pike, 2002), only now a construct and measure is available that specifically addresses the atmospheric situation of *older* workers in the organizational context. The presented findings on the consensual validity of OAC offer first empirical support to the notion that PAC perceptions are not simply subjective and idiosyncratic for an individual older worker but express an impression of the work environment that is shared with members of the same organization. Together with the finding of significant differences in the OACs of different companies they, thus, give evidence that OAC represents an aspect of the organizational reality.

Moreover, this study suggests that investigating management strategies and practices in the three selected areas could constitute a promising approach for trying to understand which organizational structures foster the development of a company's age climate, respectively, are a manifestation thereof. In general, it seems that many management practices that are beneficial for younger workers continue to be so also at later stages in life. As an example, autonomous manufacturing, as it is implemented in company *B*, offers unique working conditions to employees, characterized by job rotation, job enrichment and job enlargement (Antoni, 1996). Similar to other autonomous teams (e.g., Landy & Vasey, 1991), this employee-initiated restructuring of roles and responsibilities offers older and younger team members the possibility to divide tasks, for example, according to individual physical fitness, thereby maintaining a high level of team performance. Occupational health psychologists have suggested this form of manufacturing as the least detrimental for

employee health and functioning since it minimizes monotony, mental fatigue, and stress, as well as repeated strain on singular parts of the body (Alcalay & Pasick, 1983; Broadbent, 1985; Hacker & Richter, 1984; Herbst, 1974; Melin, Lundberg, Söderlund, & Granqvist, 1999). Our findings suggest that it might be worth to additionally investigate effects of autonomous manufacturing also on the age climate in a company, that is, on how positive older workers are perceived.

While many employers are reluctant to train older workers and in fact offer them less on-the-job training than their younger co-workers (Simpson, Greller, & Stroh, 2002), this is often based on stereotypic misconceptions. For example, managers often think that such an investment would not pay off due to a lower number of years older workers are expected to remain with the company. Our findings support this proposed link between negative age stereotypes prevalent in a company - in terms of an unfavorable OAC - and the encouragement (or lack thereof) for older workers to participate in further education with their company. Breaking this link will be one of the major challenges for companies in order to maintain high productivity with an aging workforce. Especially, since research has shown that older workers are much less likely to switch their employer and therefore guarantee an actually higher probability that new skills are actually applied at their current employer than younger workers (e.g., Hedge et al, 2006, Levine, 1988). Simpson and colleagues also highlight that the reference period for such a pay-off is often unrealistic. Rather than focusing on the remaining organizational life-time, the 3 to 5 year period that HR management professionals typically use to evaluate training investments should be considered. Moreover, continued company tenure alone is no guarantee that the company will be able to garner a return on its investment in employee development if the employee does not have the opportunity to actually apply the knowledge gained from training in the context of his or her work. It is particularly important to make sure that older employees also get the opportunity to apply the knowledge they acquire. Otherwise, their commitment to learning efforts and their

job satisfaction could be jeopardized even more than has been found for employees at younger ages (Montenegro, Fisher, & Remez, 2002). Of course, without the possibility to apply newly gained knowledge, also no transfer to the job can occur (Sterns & Doverspike, 1988). Consequently, Maurer and colleagues (2003) call for support at work for development activities of older workers. Such support might include the support for development by supervisors and coworkers, but also the availability of development and learning resources. Encouragingly Maurer (2001) described literature that found positive relationships between support for development, self-efficacy, and employee development. The findings of the present study suggest that also the age climate in a company could be considered such a support factor with company members expressing their faith in older workers' learning abilities. Future research should investigate this link more closely.

Finally, our results indicate that recruitment and retirement practices are worth investigating with regard to assessing their impact on the age-friendliness of a work environment. Our findings, hereby, support the notion that age discrimination in recruitment can influence the age climate in the company (Lahey, 2005). Our findings also support the idea that partial retirement in the sense of a phased retirement with part-time presence of older employees at least until they reach retirement age is to be preferred over early retirement with an ad-hoc exit from the labor market (Dychtwald et al., 2004; Hedge et al., 2006; Paul, 1987). This way, not only will the company be able to attract skilled older workers and retain productive retirement-age workers (Paul, 1988) but also will older employees be able to show that they can still contribute to both the company's productivity and the social life at the organization. The resulting positive interactions between age groups will, in line with Allport's (1954) Contact Hypothesis, help reduce younger employees' negative stereotypes of older workers (e.g., Chiu et al., 2001; Hassell & Perrewé, 1995) and at the same time reduce the threat of knowledge loss, since key carriers of know-how remain with the company (DeLong, 2004).

In sum, our results give a first hint that the OAC of a company might constitute a relevant indicator of the age-friendliness of a company's work environment. At the same time they present a first validation for an instrument for its assessment. As such, the new concept and measurement of OAC answers a call that has been raised already more than twenty years ago (Liebig, 1988). Thus, OAC offers both researchers and practitioners a useful tool to assess an area of potential strength or weakness in companies' efforts to address the challenge of the aging workforce.

4.2 Limitations and Future Research

The present study is not without limitations, the first and foremost being the comparatively small sample size, both on the organizational and individual level. This is especially true for the sub-sample used for testing our second hypothesis. Clearly a much larger sample, especially in terms of companies, is called for in order to draw externally valid conclusions. However, next to testing the consensual validity of OAC, this study succeeded in making a first attempt at exploring which routes towards a better understanding of age climate, possible antecedents, correlates, and consequences, would be worth following. Further, the concentration on production companies clearly limits the ability to generalize our first explorative results. However, it seems plausible that explicitly hiring older workers, encouraging their participation in further education, and taking care of their health might be positively related with OAC in other sectors as well. Recent research, for example, has shown that attitudes toward older workers generally do not differ between the service and manufacturing sector (Chiu et al., 2001), although specific attitudes may be more important in different domains (e.g., health-related stereotypes in the manufacturing sector vs. learning-related stereotypes in the service sector). Future research should therefore on the one hand, enlarge the focus to include companies from the service sector also for the investigation of the predictive validity of OAC. On the other hand, the focus should be narrowed by sampling

more companies from the same industry in order to reduce or control for unobserved variation between companies, which in our small sample was not possible since companies from the service sector were much too diverse.

The second limitation of this study lies with the indicators used for testing the second hypothesis, which have to be considered as rather rough proxies for the investigated management practices. Especially the number of trainings received, as an indicator of older worker involvement in further education, will largely depend not only on the industry of the company, but also on career-variables of the individual (Maurer et al., 2003). Thus, for future research it might be worthwhile to consider adapting existing scales for support for development (e.g., Maurer et al., 2003) and to apply them specifically to older workers. Similarly, the assessment of older employees' health status as an indicator of companies' efforts to protect and appreciate their aging human resources must be considered a rather distal parameter. Future research is, therefore, called to systematically assess the support companies give their older workers for engaging in health-protective and fitness enhancing activities.

Third, the cross-sectional design of the study, while being a widely-used method in psychological research (especially in organizations, see Spector, 1994), limits our ability to draw conclusions about causality. While it is plausible to assume that a less favorable age climate leads managers to more easily discriminate against their older employees based on faulty assumptions about older workers, it is just as well possible that an unequal treatment of older workers forms the basis of the shared age climate perceptions. A longitudinal analysis on the changes in OAC following the implementation of individual aging workforce management practices over time is needed in order to disentangle these effects. Fourth, the age cut-off of 45 years and older chosen for this study to define older workers might be set too low given recent findings that PAC was related with older workers' work ability only at higher ages (Noack et al., 2009). A sufficiently large sample of workers age 50 and older

would be recommended for future research. Fifth, while we provided evidence for the consensual validity and presented first findings on the predictive validity of OAC, further validation is necessary. Especially the convergent and discriminative validity of OAC should be explored. How do changes in the age climate relate to changes in other climates (e.g., safety climate, training climate, gender climate)? Does the age climate measure correlate with other measures of age stereotypes? These questions remain for future research to answer.

In addition, it might be interesting to investigate if a construct like a team-level or work-group age climate exists. It is not unlikely that the direct supervisor's attitudes towards aging influence the age climate in a certain team, since working group leaders disproportionately contribute to the psychological context by imposing their own values and assumptions on the group (Schein, 2004). Besides, it would be useful to investigate how OAC relates to a couple of additional variables, like for example turnover and productivity. It would also be interesting to look at managers' and supervisors' attitudes toward aging and older workers, which might influence employees' perceptions of OAC by either amplifying or neutralizing the age-related perceptions salient within the company. OAC might also be related to performance appraisal processes. While age-biased performance assessments might influence the age climate in a company, it is also likely that a more positive age climate will reduce the likelihood of such biases to occur (Cleveland & Landy, 1983, 1987; Sterns & Alexander, 1988). Consequently, future research should investigate OAC as a mediator between aging workforce management practices and age-related attitudes of leaders on the one hand and organizational outcomes on the other hand. Finally, building on a proposition of Schneider, Salvaggio, and Subirats (2002), not only the value of the age climate but also its strength should be considered since it might constitute an important moderator in the relationship between OAC and other variables.

In conclusion, this study provided first evidence on the consensual validity of OAC. This construct assesses the age-friendliness of a work environment, in terms of how favorable

older employees are perceived by a company's members. Furthermore, based on an explorative investigation of management practices in the sampled companies, this study offered important suggestions for future research on age climate and its relation with successful aging workforce management, especially in the areas of recruitment and retirement, knowledge transfer and knowledge generation, as well as health management.

VII. GENERAL DISCUSSION

The concept of age climate describes how favorably older employees are perceived within a given organization. It integrates research on organizational (and psychological) climates (e.g., Parker et al., 2003) and research on age stereotypes in the work environment (e.g., Posthuma & Campion, 2009). The main goals of this dissertation were (1) to develop the construct of age climate and present an instrument for its measurement, (2) to investigate relationships of individual age climate perceptions with work-related outcomes at the individual level, including interindividual differences in these relationships, and (3) to assess the consensual validity of the developed scale as well as to explore relationships of the shared OAC perceptions with organizational level outcomes. In the following I will briefly summarize the findings of the three empirical studies compiled in this dissertation and elaborate on their contribution to theory and practice. Furthermore, I will discuss the limitations of the approach taken while at the same time giving recommendations for future research on age climate. Finally, I will open a perspective on successful aging workforce management based on insights gained from the research endeavor this dissertation constitutes.

1. Summary of the Findings

In study 1 the organizational climate and age stereotypes in the workplace literatures are reviewed and the construct of age climate is developed to fill a gap in both fields of research. At the time this research was conducted, no widely accepted measure of age stereotypes in the workplace existed. Neither was an instrument available to assess company-specific perceptions of older workers. In developing the construct of age climate, this dissertation followed prior research that translated stereotypes about demographic sub-groups in the workforce into a concept of organizational climate. This prior research aimed at describing the unique atmosphere of a specific work environment as it presents itself to the

relevant subgroup. Gender climate (Foster et al., 2000) and racial climate (Pike, 2002) are two examples. Furthermore, study 1 develops a measurement approach to assess age climate perceptions by referring to different clusters of age stereotypes that have been identified as being widely spread in the workplace (e.g., Posthuma & Campion, 2009). The PACS was developed to assess the perceptions on how favorably older workers are viewed within a given company. A focus in the development of the scale was for it to be less susceptible to social desirability biases than other measures of age stereotypes, which explicitly use negative anchors, such as the Aging Semantic Differential (Rosencranz & McNevin, 1969). Study 1 also provides evidence for good internal consistency and a clear single factor structure of the PACS. It was also shown that the PACS can be distinguished clearly from a second scale, which assessed the company-specific perception of *younger* workers, thus demonstrating the age-specificity of the scale. Finally, study 1 was able to establish a significant positive relationship between older workers' age climate perceptions and their affective commitment, which gives first evidence to the predictive validity of the construct.

Study 2 extends these findings by testing the relationship between older workers' PAC and work ability, a construct that is less attitudinal and closer to performance-related measures. This relationship was only significant for employees at higher ages. Furthermore, study 2 examined interindividual differences in the relationship of PAC and work ability. For older employees at higher ages study 2 could show a moderating effect of the use of a self-management strategy called 'selective optimization with compensation' (SOC; P. B. Baltes & Baltes, 1990). In fact, SOC strategy use served as a resilience factor for older individuals at higher ages who perceived the age climate to be less favorable for older employees of their organization. These findings are in line with recent research, where SOC strategy use was found to protect against the detrimental effect of low job complexity on older workers' focus on opportunities (Zacher & Frese, 2009).

Finally, study 3 provided first evidence for the consensual validity of the PACS. Respondents within each of the eight sampled companies agreed on the perception of their company's age climate to a degree typical for climate research. Companies differed significantly in their OAC, an indicator built by aggregating the PAC ratings of each company. Furthermore, study 3 explored possible relationships of OAC with management practices in the areas of recruitment and retirement, knowledge transfer and knowledge generation, as well as health management. The findings suggest that all three areas are promising routes to pursue more systematically in future research on antecedents, correlates, and consequences of OAC.

2. Contribution to Theory, Practice, and Policy

This dissertation provides empirical underpinnings to calls for more age friendly work environments that have been raised already three decades ago (e.g., P.B. Baltes & Baltes, 1990). It highlights the importance of age stereotypes in the workplace as one factor contributing to such an age-friendliness. In doing so, it extends prior research on the effects of age discrimination on important work-related attitudes (Orpen, 1995; Redman & Snape, 2006). In order to identify how well a work environment is prepared for the aging of the workforce it will not suffice to look at discriminatory behavior towards older workers. When the underlying image of older workers is characterized by negative attributes that stigmatize older colleagues and subordinates as poor performers who are unable to adapt and unwilling to learn, the victims of these stereotypes will have a hard time to contribute to the company's success at the best of their abilities. With the PACS this dissertation developed a useful tool to assess the age-friendliness of a work environment, for practitioners and researchers to use. Companies are now in the situation that they can reliably assess the age climate in their organization. This empowers them to coordinate measures to change it, thus improving the commitment and work ability of their current aging staff and guaranteeing their continued

employability and productivity. It furthermore offers them the opportunity to position themselves at the labor market as an attractive employer for highly qualified older workers, one of the most accessible and valuable human resource in the years to come. Finally, this dissertation emphasizes that the workplace is an important context for plasticity in adult development, especially with regard to the age images that aging individuals are exposed to. It is plausible that besides affecting older workers' work-related outcomes, age stereotypes in a given work environment will also have an impact on the attitudes of all company members towards aging. These attitudes have been shown to be an important predictor of functional health. For example, Levy, Slade, Kunkel and Kasl (2002) could show that positive self-perception of aging was predictive for longevity. In a longitudinal study, life expectancy proved to be higher by 7.5 years in the case of a more positive perception. This effect remained even after the authors controlled for age, gender, socio-economic status, and other variables and was partly mediated by will to live. Thus, this dissertation highlights the need to address the issue of age images in our society and especially in today's corporate world. It calls for future research on how these images are formed as well as how they could be changed, particularly in light of findings that expose many of them as being far from true (e.g., Ng & Feldman, 2008, with regard to the relationship of age with job performance). Despite differences between companies in the degree to which these negative stereotypes are endorsed, they are still a widespread phenomenon in many modern industrialized countries. Therefore, and in light of the evidence on the negative consequences of negative age stereotypes this work emphasizes the need for a broad public campaign, revealing up-to-date insights into adult development and the accuracy of age stereotypes - specifically at the work place.

3. Limitations

This dissertation is not without limitations. First of all, it has to be noted that all data from study 1 and 2 and most of the data from study 3 stem from the same source, namely older employees' self-reports, assessed via questionnaires. This opens the door to a number of common method biases that could jeopardize the validity of the relationships that were found. However, in study 1 and 2, I controlled for the potentially strongest confounder, the effect of current mood (Podsakoff et al., 2003). In study 3, I included a second and third source by using additional information from companies' age distributions and from case studies on the three companies that were used for an exploration of the predictive validity of OAC.

Second, in order to explore the construct of OAC, data was collected from a number of different companies. This clustered sampling would call for a multilevel approach to analyze the data where variance components can be clearly allocated to either individuals or organizations. Due to the small number of companies, this approach was not feasible with the current data. However, I used the fixed effects approach to clustering recommended by Snijders and Bosker (1999) for 10 or fewer clusters to control for mean-level differences between the companies and thus correct the otherwise underestimated standard errors.

Third, although in studies 1 and 2 our theoretical assumption was that PAC would predict work-related outcomes, the direction of this relationship could not be tested with the cross-sectional approach used in this dissertation. Future research should monitor longitudinally the implementation of successful aging workforce management practices, companies' age climates, and work-related outcomes on both the individual and organization level.

Finally, the definition of age climate used in this dissertation focused on the image of older workers and thus on age stereotypes in organizations, the cognitive facet of age biases (Finkelstein & Farrell, 2007) as opposed to either age-related prejudice (affective facet) or age

discrimination (behavioral facet). Thus, our conceptualization may be somewhat troublesome for organizational researchers who generally understand climate as “perceptions of employees concerning the practices, procedures, and kinds of behaviors that get rewarded and supported in a particular setting” (B. Schneider, 1990a, p. 384). However, in line with laboratory research on age stereotypes (e.g., Hess et al., 2003), we have shown that the cognitive associations with older workers salient within a company do indeed have an influence on older adults, independent of whether discrete acts of actual discrimination take place. Nonetheless, future researchers may wish to consider measuring our conceptualization of age climate alongside company-specific age discrimination and prejudice against older workers. Measuring the cognitive, affective and behavioral aspects of age biases in companies would not only help to further validate the age climate measure (e.g., by testing whether images of older workers correlate with observed instances of age discrimination), but also help to further reduce the gap between social and organizational psychology. This dissertation has taken a first step in that direction.

4. Future Research

In all three studies I have already made a number of suggestions on where to go from here, and do not want to reiterate all of them. However, a couple of points seem worth mentioning. First of all I would like to make some suggestions on how to improve the developed measure. The PACS does not include all six stereotype clusters, identified by Posthuma and Campion (2009). In the final 12-item version of the PACS the clusters ‘resistant to change’ and ‘less productive’ are represented by several items and the positive cluster ‘more dependable’ is represented by one item (reliable). The cluster ‘less able to learn’ is covered indirectly by assessing preconditions for learning (e.g., cooperative, open, motivated), while no items were included regarding the clusters ‘more costly’ and ‘lower remaining time with the company’. Future attempts to refine the scale should increase the

representation of the positive cluster, for example by adding the adjective ‘loyal’ to the list. Furthermore, the learning-related cluster should be integrated more explicitly, for example by including the attributes ‘willing to learn’ and ‘able to learn’, which could also be subsumed under ‘prepared to learn’. We considered the remaining two clusters as relevant mainly for decision makers in hiring, firing, promotion, and training. However, it would be interesting to include adjectives assessing the ‘more costly’ and ‘lower remaining time with the company’ stereotypes, especially when using the PACS with supervisors and managers.

Second, an important next step in further developing the construct and measurement of age climate would be to integrate alternative indicators. It would be very interesting to integrate findings from different sources, for example observations of interaction styles between younger and older workers or between managers and older vs. younger employees. Also, analyzing communication data (organizational memoranda, surveys, charts) for biased language as McCann and Giles (2002) suggest, might provide interesting insights. Similarly, a more systematic analysis of organizational practices (e.g., average participation in further education, number of promotions, average rating of performance feedback, and proportion of new recruits) that compares older and younger workers at the same job level should be encouraged. However, with age climate being an atmospheric and rather intangible construct it largely depends on the perception of these more objective factors. Thus, an important supplement to the existing scale would be a second scale with items on the perception of age discriminatory acts and practices within the respondents’ company. Sample items could be ‘In my company, older employees’ (a) ‘...are often offered trainings’, (b) ‘...are often recruited’, (c) ‘...are often promoted’. Future research should conduct a participating observation and in depth interviews with older workers to derive a large set of items. These would then need to be evaluated and tested in a second step. It would be very promising to compare ratings on the current PACS which assesses perceptions of the company-specific image of older workers with this second scale assessing perceptions of company-specific age discrimination.

Third, in establishing relationships between age climate and older workers' organizational commitment and work ability, a first step has been made towards the validation of the construct and the measure used. Future research should investigate additional correlates of PAC. Research on the effects of negative stereotypes has revealed a number of meaningful relations with additional important outcomes. For example, stereotypes have been shown to predict well-being (K. T. Brown, 1999; Contrada et al., 2001; Major & O'Brien, 2005) and self-esteem (Do, 2006; Whitbourne & Sneed, 2002). Age stereotypes in particular have been found to relate to memory performance (e.g., Levy, 1996) and other behavioral outcomes (e.g., Bargh, Chen, & Burrows, 1996). Furthermore, older employees experienced low levels of job involvement and increased alienation from their job when they perceived that younger workers received preferential treatment and that others in the organization believed that performance deteriorates with age (Miller et al., 1993). Correlates can also be identified when looking at research on other sub-group climates. Racial climate, for example, has been shown to be related with measures of job satisfaction (Holcomb-McCoy & Addison-Bradley, 2005) and performance (Mattison & Aber, 2007). These two variables are promising also for future research on the predictive validity of age climate perceptions, given that, for example, 15% of the variance in reports of subjective well-being are associated with external circumstances (Argyle, 1999). Job-related well-being corresponds partly with positive social relationships and an optimal level of stimulation in the work environment. Hassell and Perrewé (1993) hypothesized that negative labels attached to aging can lead to the avoidance of older people and to lower expectations regarding their competence. This could in turn result in easier tasks assigned to older workers. Eventually, an unfavorable age climate might, e.g., through lower job challenges, have a variety of negative consequences on the affected employees' job-related well-being. Findings on a negative correlation between age discrimination and job satisfaction (Orpen, 1995), support this idea and suggest a negative relationship between age climate and job-related well-being. Such a relationship is also backed by a recent review on

psychological climates, which has found that job satisfaction is often related with climate perceptions (Parker et al. 2003). Moreover, in this meta-analysis job satisfaction mediated the effect of climate perceptions on job performance.

This indirect link between age climate and performance (see also Kopelman, Brief, & Guzzo, 1990, regarding climate and productivity) is also supported by stereotype research. It is plausible to assume that negative age stereotypes are activated more frequently in older employees who perceive the age climate in their company to be less favorable. Stereotype activation, in turn, can have the effect of a self-fulfilling prophecy (Jussim & Fleming, 1996). Two mechanisms provide an explanation for this effect and both suggest a contamination-hypothesis: stereotype threat and self-stereotyping (O'Brien & Hummert, 2006). Stereotype threat, on the one hand, is defined as “being at risk of confirming, as self-characteristic, a negative stereotype about one's group” (Steele & Aronson, 1995, p. 797). One could hypothesize, that it is evoked anxiety or worry that is responsible for the finding, that activation of a negative stereotype impairs the performance of persons who are subject to these stereotypes (e.g. Cadinu, Maass, Rosabianca, & Kiesner, 2005 and Sekaquaptewa & Thompson, 2003, regarding gender; Stone, Lynch, Sjomeling, & Darley, 1999, with regard to race). This effect has also been found for *age* stereotypes. Experimental work has demonstrated that activating negative old age stereotypes negatively affected older adults' cognitive performance (Hess et al., 2003). Self-stereotyping, on the other hand, describes the assimilation of the negative attributes others ascribe to a certain group, by a member of that group. In principle the idea is that already in our youth, we learn negative age stereotypes and internalize them. When we grow older, we might not be able to reevaluate these stereotypes. Consequently, we will be convinced that they are accurate. In support of this postulated mechanism, studies have shown that older employees underestimate their competences and abilities. Interestingly, their self-evaluation was much more similar to the age stereotype than to their actual capacities (Filipp & Mayer, 1999). Such negative expectations regarding their

own capabilities could be responsible for a corresponding decrease in performance (see Levy & Langer, 1994, with regard to memory). When investigating the relationship between age climate and job performance, future research is encouraged to include also contextual performance measures like organizational citizenship behavior and such counter-productive work behaviors as absenteeism and tardiness, next to indicators of core-task performance.

A different perspective on PAC is to regard it as a moderator in the relationship of age and such performance measures (Ng & Feldman., 2008). A positive age climate might increase the negative relationship of age with counterproductive behaviors, while a negative age climate might decrease or even nullify these effects. This way, a negative age climate would deprive older workers of one advantage that makes them attractive for employers. Age climate could function as a moderator in the relationship between age diversity and group productivity, similar to the concept of an age-diversity mindset or value-in-diversity beliefs (van Knippenberg, Haslam, & Platow, 2007).

Fourth, future research should study the mechanism behind the relationships of PAC with organizational commitment and work ability. One promising field of investigation is support at the workplace. More specifically, social support, perceived supervisor support, and perceived organizational support might play a mediating role in these relationships (e.g., Frese, 1999; Rhoades & Eisenberger, 2002). As indicated in study 1, another relevant set of mediators could be role ambiguity and role conflict, which have been found to be related with measures of performance and work-related attitudes (e.g., Fisher & Gitelson, 1983; Tubre & Collins, 2000).

Fifth, while study 2 identified the use of SOC-strategies as one important moderator in the relationship between age climate and work-related outcomes, other moderators seem worth investigating, above all, the type of job. We know that age stereotypes exist not only towards persons but also regarding certain jobs (Cleveland & Landy, 1987). The professions of management trainee or computer programmer, for example, have been rated to be more

likely younger persons' jobs, while being a plant manager or comptroller were regarded as older persons' jobs (Finkelstein et al., 1995). In recent years, this has led to a vast underrepresentation of older workers in industries which are characterized by innovation and fast expansion (Filipp & Mayer, 1999). Given the findings that older workers in 'old jobs' are likely to be regarded more positively than older workers in 'young jobs' (Cleveland & Landy, 1987), it is plausible to assume that the former will show a lower decrease in work-related outcomes under conditions of a less favorable age climate than the latter.

Finally, future research should answer the following two more general questions. First, to which degree do age climates differ between different cultures? Early research on age stereotypes has already identified cultural differences between, for example, Chinese, Americans and the American deaf, in the degree to which older individuals are perceived negatively (Levy & Langer, 1994). But also more recent research on age stereotypes in the workplace has shown that "compared to Hong Kong respondents, UK respondents had a more negative view of older workers in terms of their ability to cope with change" (Chiu et al., 2001, p.645). Second, to which degree does a favorable age climate effect younger workers? For example, it would seem promising to investigate whether younger employees' organizational commitment suffers or profits from a positive perception of older workers in the company. It is possible that also younger workers see their future with their current employer jeopardized if older workers are not appreciated.

5. Suggestions for a Successful Aging Workforce Management

5.1 Age-Friendly Recruitment and Retirement Practices

The results presented in this dissertation can be used and complemented by other research to derive suggestions for successful aging workforce management that might also include optimizing the age climate in a company. First of all, the HR philosophy of a company should be based on the conservation model of Yeatts, Folts, and Knapp (2000),

which suggests that employees of all ages yield a high rate of return over long periods of time if they are adequately educated, trained, and managed. Such a philosophy results in older worker-friendly human resource management practices that assist employees in maintaining an acceptable fit with their jobs or support them to switch jobs within the company. As a first step, employers should ensure that the relevance of aging workforce management is communicated and received throughout the company. The management should show long-term commitment to this issue. Furthermore, managers and supervisors should act as role models regarding attitudes towards older workers, given that cognitive research and theory suggest that stereotypes may develop from repeated observations of similar events (Fiske & Taylor, 1984; Holyoak & Gordon, 1984; Park & Hastie, 1987). Particularly, derogatory language about older workers used at work can have a substantial negative impact on the age climate (McCann & Giles, 2002). For example, if expressions like “young blood” and “old timers” are part of acceptable discourse, these can become a normative aspect of work life and impact age norms. At the same time, managers should pay attention to show appreciation for all groups of employees in order not to create a climate of envy between age groups due to preferential treatment which could replace or endanger a positive age climate.

With regard to recruitment and retirement policies companies should explicitly and continuously recruit older qualified workers to demonstrate both internally and externally that this group has a lot to offer (Hansson et al., 1997) as well as to directly influence the age structure towards a more balanced distribution (Perry et al., 1996). Hereby, older workers appear to be particularly well suited for assignments and roles where contextual performance composes a large part of the performance criteria (Farr et al., 1998). Examples are exerting extra effort to assist others with work and personal problems, supporting the organization, volunteering suppositions for improvements, and helping new employees to orient themselves in the organization. Older workers may be very effective in assignments involving quality control and providing ideas for quality improvements (London, 1990). The explicit

recruitment of older workers also offers the opportunity to build age-diverse teams, which can have beneficial effects also for older employees' cognitive development. In one study, for example, dyads of previously unacquainted older and younger individuals were brought together to solve either a difficult life-task or a technical problem (Kessler & Staudinger, 2007). In contrast to the technical domain, life-tasks represent a domain in which the older adults are expected to have higher expertise relative to younger adults due to their greater experience. It was hypothesized that creating a situation in which older participants could share their expertise with a younger partner would stimulate their cognitive performance. Indeed, following a 30-minute discussion of a difficult life-task with a younger partner, older participants showed an increase in cognitive performance as measured by speed and work fluency. In other words cognitive performance of older individuals can be improved through positive reinforcement of their self-esteem (Kessler & Staudinger, 2007). Thus, in areas where older individuals have the status of an expert high performance can be expected when they are given the chance. Another more applied example is Ford's experience with an older workforce in attempting to rebound from the crisis that hit the auto industry in the early 1980s (Savoie, 1990). The experience of older workers provided valuable knowledge, particularly with regard to problem-solving efforts focused on improving product quality. According to Savoie, the older workers were just as creative and involved in decision making as their younger counterparts and their participation in extensive training and education efforts was the same as for younger workers. Particularly in the light of longer working lives and the possible threat of substantial knowledge loss due to the contemporary retirement of a large part of the workforce, the explicit consideration of the company's age distribution in planning and execution of hiring and retiring decisions will become more and more indispensable. Therefore, by specifically including older workers in the hiring policies first experiences with an increasingly important segment of the labor market can be made that will help the company to gain a competitive advantage (Hedge et al., 2006). In summary, creating flexible

work arrangements for mature staff and including new roles that retain a high status, for example, as mentor, moderator, consultant, trainer, project manager, or team leader will prove beneficial for both, the aging worker and the company (e.g., Beehr & Bowling, 2002; Hedge et al. 2006; Humple & Lyons, 1983; Meier, 1988; Rosen & Jerdee, 1985a). Through these arrangements organizations can reduce labor costs, gain staffing flexibility, reduce training costs (if employees who are already trained are employed), gain more consistency in staffing over economic cycles, and retain valuable workers (Hedge et al, 2006).

5.2 Age-Friendly Knowledge Transfer and Knowledge Generation

Practices

The results of study 3 suggest that a positive age climate is related to a successful knowledge and experience management. Thus, it is up to each companies to either highlight and tap older employees' technical and procedural know-how that they have gained from their longer experience (relative to younger employees), or neglect or even nullify this comparative advantage. A structured knowledge and experience management strategy that includes knowledge generation as well as knowledge sharing and storage with a long-term perspective is needed and has to be advertised both internally and externally as a strength of the company. Such a strategy should at acknowledge the threat of knowledge loss due to demographic change, thereby highlighting the resource older employees present.

An explicit commitment to further training for employees of all ages that supports lifelong learning should implemented in everyday procedures and practices to break the stereotype of older employees not being able or willing to learn (Hedge et al., 2006). It is important to note that continuous learning is the best way to ensure constantly updated knowledge, high trainability, and, through repeated positive reinforcement, training motivation. Age-specific and need-based education offers have to go along with age-heterogeneous ones that are age-fair in their methods and focus (Farr et al., 1998; Jaworski,

2005; Sterns & Doverspike, 1988, 1989). For example, trainings should be structured in a way that participants experience learning success early in the program, thus promoting self-confidence in their ability to learn (Warr, 1994). Age-specific trainings should adapt to age-related physiological declines by reducing noise levels, providing adequate lighting, and using adequate size of print on all media. These measures could in fact benefit learners of all ages. Further, the acquired experience and the specific learning motivation of older workers have to be considered, as well as their preference for less teacher-centered lectures, more interactive teaching styles, and less paced or time-pressure situations (Sterns & Doverspike, 1988). By engaging older workers in further education it can be guaranteed that learning skills are continuously used and remain accessible for all employees whenever required. In addition to task-related trainings also training outside the narrow borders of the individual field of application should be offered in order to both strengthen individual competencies and create the opportunity for horizontal careers when vertical ones are not an option. This way a perspective can be opened for (older) employees who otherwise would see no development opportunities (Farr et al., 1998).

Furthermore, a number of concrete measures to guarantee knowledge sharing should be planned and implemented. Examples are mentoring programs for new entrees into the company (e.g., Belous, 1990; Doeringer & Terkla, 1990; Marshall, 1998), multiplier programs in order to spread knowledge that has been acquired through training, and a systematic approach of succession planning, especially for experts with key know-how (Farr et al., 1998). It might be worth to include active knowledge transfer activities among the tasks of all experts in the company. Through such programs, companies can guarantee the necessary transfer of skills and know-how and simultaneously demonstrate its appreciation of older workers' expertise. Furthermore, such a role complements the increased importance of the generativity motive in older individuals (e.g., McAdams, de St. Aubin, & Logan, 1993), that is, the desire to pass on one's experience. By providing older workers the opportunity to

fulfill an intrinsically motivating task (knowledge-sharing), companies can increase older workers' job satisfaction and job performance (Farr et al., 1998). Another approach toward active knowledge sharing is the implementation of a job rotation system. This way continuous learning can be guaranteed, know-how remains with the company and the potential of reciprocal substitution offers higher flexibility both for employees and the organization. As a side-effect, if the rotation takes place among members of one team, team spirit will be strengthened through reciprocal teaching and carriers of expertise will be esteemed highly (Campion, Cheraskin, & Stevens, 1994). Finally, in order to maintain access to knowledge of retired employees, an active alumni-network should be creative, where former employees function as potential advisors or consultants. This would offer them a high status and provides companies with easy (and due to the project-based nature financially attractive) access to their skills and expertise. We do not expect that any of the previously mentioned personnel and knowledge management practices will affect a company's overall age climate when used in isolation. Instead, companies need to make a true commitment to creating an aging-friendly environment by taking a multi-pronged approach. Hereby it might be helpful for companies to conduct a benefit analysis where costs of promising aging workforce management strategies are balanced against replacement costs, which include recruitment, relocation, and training of new workers (Rix, 1990).

5.3 Age-Friendly Health Management Practices

If older workers are to be perceived as active, productive and healthy members of the company, the organization needs to commit to taking care of the health of its aging employees. This can be done by issuing and implementing a general health management strategy that makes employee health a top priority and includes a long-term perspective (Leibold & Voelpel, 2006). This strategy should focus on two aspects: First, working conditions have to be designed to minimize a negative impact on employee health. Second,

additional measures have to be taken in order to strengthen employee resilience against the negative effects of the remaining stress. The descriptive findings of study 3 suggest a number of measures for each of the two aspects. In order to optimize the working conditions ergonomic adjustments, specifically geared towards accommodating the aging body, should be made. They need to be combined with ergonomic coaching, however, such that employees can maximize the benefit from these interventions (Waldman & Avolio, 1993). These measures could be paired with regular confidential health condition checks that help identify health problems and possible causes as early as possible. Specifically in blue collar jobs, systematically implementing job rotation into the work organization allows for strain to be distributed according to ability and momentary resilience. The task variety additionally prevents massive strain on single parts of the body. Optimal work conditions are found in autonomous work groups. Here the combination of job rotation, job enrichment, and job enlargement together with hierarchically and serially complete tasks, offers the best possibility to preserve physical health and avoid monotony, mental fatigue, and strain, and will pay off especially during longer working lives (Miller, Dhaliwal, & Magas, 1973). An additional approach that might help protecting employee health consists in flexible work hours or the opportunity of sabbaticals with minimal wage but a guaranteed job. Both measures would allow the aging employee to recover from pronounced and/or prolonged strain, thus offering one more degree of freedom that can contribute to sustainable health.

Regarding employee fitness, again several measures are suggested by our data. Since back pain is one of the three major single reasons for days of sick-leave in most Western societies (e.g., Labar, 1992), the first recommendation is to implement a regular preventive back training for all employees. A second step would be to offer a company-facilitated sports program together with the necessary infrastructure. This could include team sports, cardiovascular and endurance training and equipment or incentives for employees to more independently pursue fitness activities (e.g., discounts to external fitness centers). Finally,

companies should show commitment to employees' nutrition by offering nutrition seminars and subsidizing healthy meal plans (Hansson et al., 1997). All these measures should again be internally and externally advertised as representing the company's commitment to fostering the employee's long-term positive development. As a result, a direct reduction of sick-leave days and a higher output of employees due to lower strain can be expected across all stages of an employee's career. Consequently, the perception of healthier and abler aging workers will allow for a spillover effect on the age climate, with a positive impact on employee commitment and finally on turnover. A company with a high reputation as an aging-worker friendly employer will be very attractive on an ever more competitive and senior labor market, especially for aging experts and employees in key positions.

5.4 Conclusion

A starting point for companies on their way towards a more aging-friendly management of their workforce is to assess the age climate and to discuss results in focus groups with HR decision makers and company's executives. Furthermore, it will be important to review and, if necessary, revise policies, training programs, recruiting methods, job designs, evaluations, and compensation programs in order to eliminate unintentionally biased language and employment practices. This way age discrimination complaints and costly litigations can be prevented (Dennis, 1988; McCann & Giles, 2002). In addition, cognitive research and theory indicate that some aspects of stereotypes may be explicitly taught (Holyoak & Gordon, 1984; Park & Hastie, 1987). This suggests that organizations may directly influence the content of decision makers' stereotypes by espousing certain values but not others. Therefore, an educational program, especially but not exclusively for managers, that aims at dispelling myths regarding older workers and provides facts concerning the achievements, productivity, attendance, health and retraining abilities of older workers is recommended (Dennis, 1988). Only if senior managers and HR staff are committed to the

success of anti-age discrimination efforts and if older employees' strengths, specifically their experience and know-how, are appreciated can the age climate of a company and consequently the aging workforce be successfully managed.

I wish to conclude with the words of Greller and Nee (1990), two pioneers of research on the aging workforce:

Changing demographics will turn companies into case studies of successful and unsuccessful adaptation. How each employer forecasts, plans, and takes action to accommodate the change is what will determine the difference. Although the older workers are not the only resource, they represent one of the most available alternatives. There is no way any employer can avoid the aging of its workforce. (p. 191).

The ability of any organization to survive depends precisely on their ability to successfully adapt to a changing environment. Thus, governments, the private sector and non-profit organizations must prepare for the impact the demographic tidal wave will have on the future makeup of the workforce. In part, preparation entails confronting our own stereotypes of aging and older adults. There are three good reasons to do this. First, the older we get, the less age says about us. Older workers are, as a group, even more diverse than younger workers. Thus, any image we develop about older workers must take into account this large (and increasing) degree of heterogeneity. Second, stereotypes about older workers and older adults in general will, if they do not already, eventually apply to us all. This dissertation has illustrated that negative age stereotypes in the workplace pose a significant threat to positive development. It is therefore in our own interest to ensure that culturally endorsed age images become more balanced and hence, more accurate. This brings us to our third and final point: Aging brings about not only developmental losses but also gains. Given a supportive context, older workers and employers can both expect to benefit from adults' potential for productive contributions, well past traditional retirement ages. For organizations, this means giving due attention to their own age climate.

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APPENDIX

Items of the Psychological Age Climate Scale (PACS)

In my company older employees are seen as ...

1. cooperative [kooperativ]
2. reliable [zuverlässig]
3. resilient [belastbar]
4. open minded [aufgeschlossen]
5. productive [produktiv]
6. creative [kreativ]
7. risk-loving [risikofreudig]
8. competent [kompetent]
9. flexible [flexibel]
10. motivated [motiviert]
11. effective [effektiv]
12. goal oriented [zielstrebig]

Note. All items were evaluated using a 4-point rating scale, 1 (disagree) to 4 (agree).

I have written this PhD-thesis independently and I have not submitted it at another University for the conferral of a Degree.

Place	Date	Martin Noack
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